



# Determinants of the Level of Informality of Informal Micro-Enterprises: Some Evidence from the City of Lahore, Pakistan

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**Summary.** — Recognizing that enterprises operate at varying levels of informality, this paper evaluates the determinants of their degree of informality. Reporting a 2012 survey of 300 informal microenterprises in the city of Lahore in Pakistan, the finding is that the key predictors of their level of informality are the characteristics of the entrepreneur and enterprise, rather than their motives or the wider formal and informal institutional compliance environment. Lower degrees of informality are associated with women, older, educated, and higher income entrepreneurs and older enterprises with employees in the manufacturing sector. The paper concludes by discussing the theoretical and policy implications.

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## 1. INTRODUCTION

Based on the recognition that entrepreneurs and enterprises operating in the informal sector are a persistent and extensive phenomena across the global economic landscape, a burgeoning literature has discussed whether such entrepreneurs and enterprises are driven out of necessity into the informal sector due to their exclusion from the formal sector, whether they voluntarily exit the formal sector, or some combination of the two (Maloney, 2004; Perry *et al.*, 2007; Williams, Nadin, & Rodgers, 2012). The emergent finding has been that there is what Fields (1990, 2005) terms an exclusion-driven “lower tier” and exit-driven “upper tier” of informal sector entrepreneurship and enterprise. However, this literature has so far only sought explanations for entrepreneurs and enterprises operating in the informal rather than the formal sector. Despite the growing recognition that informal entrepreneurs and enterprises often display varying levels of informality in that they conform to the formal rules and regulations in some regards but not others (Andrade, Bruhn, & McKenzie, 2013; Bruhn & McKenzie, 2013; de Villiers, Verreyne, & Meyer, 2014; Kanbur, 2009; Ram, Edwards, & Jones, 2002; Ram, Jones, Abbas, & Sanghera, 2002; Small Business Council, 2004; Verreyne, Meyer, & Liesch, 2014; Williams, 2006; Williams & Martinez, 2014), no studies have so far sought to explain the reasons they operate at varying levels of informality. To start to fill this gap, the aim of this paper is to start to evaluate the determinants of the level of informality of informal micro-enterprises. The reason this is important is because most supra-national agencies and governments are seeking to facilitate the formalization of informal sector enterprises and entrepreneurs (European Commission, 2007; ILO, 2014; OECD, 2012). However, unless the determinants of the level of informality of informal enterprises and entrepreneurs are known, targeted and tailored policy initiatives cannot be developed to enable informal enterprises and entrepreneurs to progress along the spectrum from informality to formality.

In the first section therefore, the literature is reviewed on informal sector entrepreneurship and enterprise in terms of what is known about its magnitude, characteristics, and determinants. Identifying that despite the rapid growth in this

literature, studies have largely failed to analyze the varying levels of informality of informal enterprises and what determines their level of informality, the second section then introduces the data and methodology here used to do so. Reporting a 2012 survey of 300 micro-enterprises employing less than ten employees operating in three sectors where informality is prominent, namely the retail, manufacturing, and instantly consumable food (ICF) sectors, in the city of Lahore in Pakistan, a multivariate-ordered logistic regression analysis and post-estimation exercises are used to identify the key determinants of their level of informality. The third section reports the results. Revealing that unlike previous studies which find that the decision to be informal or formal can be explained in terms of entrepreneurs’ motives and the wider formal and institutional compliance environment, the key determinants of their level of informality are the characteristics of the entrepreneur and enterprise, the final section then discusses the theoretical and policy implications.

Before commencing however, what is here meant by informal sector micro-enterprise needs to be defined. Drawing upon the widely-used recommendations of the 15th and 17th International Conferences of Labor Statisticians (ICLS) and in particular their enterprise-based definition of the informal sector, informal sector enterprises are defined as small or unregistered private unincorporated enterprises (Husmanns, 2005). Breaking this down, small refers to when the numbers employed are below a specific threshold, determined according to national circumstances. Here, this is taken as less than 10 employees, which is the standard definition of a micro-enterprise in Pakistan (Federal Board of Revenue of Pakistan, 2008). An unregistered enterprise in this ICLS definition is one not registered under specific forms of national-level legislation (e.g., factories’ or commercial acts, tax or social security laws, professional groups’ regulatory acts). In this paper in the context of Pakistan, we define as unregistered an enterprise

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not registered with the tax authorities for tax purposes. A private unincorporated enterprise meanwhile, is defined by the ICLS as an enterprise owned by an individual or household that is not constituted as a separate legal entity independent of its owner, and for which no complete accounts is available that would permit a financial separation of the production activities of the enterprise from the other activities of its owner (Husmanns, 2005; ILO, 2011, 2012). For the purposes of this paper therefore, and following this ICLS definition, an informal micro-enterprise in Pakistan is defined as a private enterprise employing under 10 employees which is either: not constituted as a separate legal entity independent of its owner; is not registered with the tax authorities for tax purposes, and/or no complete formal accounts are kept enabling a financial separation of the enterprise from the other activities of its owner/s. This, as will be returned to below, provides a basis for informal sector micro-enterprises to be analyzed according to their varying levels of informality.

## 2. INFORMAL ENTERPRISE AND ENTREPRENEURSHIP: PREVALENCE, CHARACTERISTICS, AND DETERMINANTS

In recent years, there has been a burgeoning literature on enterprises and entrepreneurs operating in the informal sector (Dau & Cuervo-Cazurra, 2014; Kistruck, Webb, Sutter, & Bailey, 2014; Radchenko, 2014; Siqueira, Webb, & Bruton, 2014; Thai & Turkina, 2014; Webb, Bruton, Tihanyi, & Ireland, 2013; Webb, Ireland, & Ketchen, 2014; Webb, Tihanyi, Ireland, & Sirmon, 2009; Williams & Martinez, 2014). Despite this, the amount of research devoted to this subject remains relatively minor when one considers the widespread prevalence of informal sector enterprise and entrepreneurship. Estimates suggest that the informal sector is equivalent to 40–60% of GDP in emerging economies and around 10–15% in developed economies (Schneider & Williams, 2013), and that 1 in 6 (16.6%) of the global non-agricultural workforce are own-account workers or owners of informal sector enterprises and one-third (31.5%) have their main job in informal sector enterprises (Williams, 2015). Moreover, nearly two-thirds of global enterprises have been argued to start-up unregistered and operating in the informal sector (Autio & Fu, 2014). Indeed, in Pakistan, the focus of this paper, the informal sector is estimated to equal 33.5% of GDP (Schneider & Williams, 2013), 32.9% of the non-agricultural workforce are own account workers or owners of informal enterprises, and nearly three-quarters (73%) have their main job in informal sector enterprises (Williams, 2015). Both in the global economy in general and Pakistan in particular, the informal sector is therefore far from some marginal enclave. It is a sizeable segment of the economy.

Although less is known about the nature of informal sector enterprises than formal enterprises, there have been in the last few decades considerable advances in our understanding of the nature of entrepreneurs and enterprises operating in the informal sector not only in Pakistan in particular (Burqi & Afaqi, 1996; Gennari, 2004; Kemal & Mahmood, 1998) but also more widely (Aidis, Welter, Smallbone, & Isakova, 2006; Bureau & Fendt, 2011; Siba, 2015; Thai & Turkina, 2013; Webb *et al.*, 2013). A U-shaped pattern has been identified in relation to the age of owners of informal enterprises, with younger and older people more likely to operate informally, both in Pakistan (Federal Board of Revenue of Pakistan, 2008; Gennari, 2004) and elsewhere (e.g., Asian Development Bank, 2010; Williams & Martinez, 2014), often explained in

terms of the lack of formal jobs and alternative means of social support for younger and older age groups respectively. Informal enterprise is also found to be concentrated among lower-income populations (Ahmad, 2008), although this has been argued to differ across populations, not least depending upon the level of social protection available (Williams, 2014). In economies such as Pakistan with large informal sectors moreover, those with higher levels of formal education and training are not found to be more likely to operate formally as might be supposed but rather, to move from being *shagirds* (unskilled apprentices) to *ustads* (master craftspeople) and self-employed, and receive higher wages (Arby, 2010; Burki & Khan, 1990; Burqi & Afaqi, 1996; Khan, 1983). Indeed, Kemal and Mahmood (1998) find that informal entrepreneurs are better educated than formal workers in a study of 11 Pakistan cities, as do Gurtoo and Williams (2009) in India. Both in Pakistan and elsewhere, women are more likely than men to both start-up their enterprises informally and to continue operating informally (Agarwala, 2009; Kemal & Mahmood, 1998; Mumtaz & Saleem, 2010; Williams & Gurtoo, 2012).

Examining the business characteristics of informal enterprises meanwhile, a recurrent finding is that the older the enterprise, the greater is the likelihood that it is formal (Thai & Turkina, 2014; Williams & Martinez, 2014), although in Pakistan a high proportion of established businesses operate informally (Kemal & Mahmood, 1998). Sectorial variations also exist with informality more prevalent in the distribution and construction sectors, with lower levels of informality in other sectors such as manufacturing (Asian Development Bank, 2010; Gurtoo & Williams, 2009; ILO, 2012). In Pakistan, similar tendencies are identified (Chaudhry & Munir, 2010; Kemal & Mahmood, 1998).

Besides these advances in understanding the prevalence and characteristics of informal enterprise, there has also been progress regarding the reasons for operating informally rather than formally. On the one hand, an exclusion perspective has viewed the growth of informal enterprise across the globe to be connected with the advent of a deregulated open world economy (Castells & Portes, 1989; Davis, 2006; Meagher, 2010; Slavnic, 2010; Taiwo, 2013). Diminishing state involvement in social protection coupled with increased outsourcing and subcontracting to reduce production costs is seen to be driving people into entrepreneurial endeavor as a survival strategy and last resort (Chen, 2012; ILO, 2014; Kantor, 2009; Meagher, 2010; Parizeau, 2015; Taiwo, 2013).

On the other hand, others have viewed informality more as a voluntary decision to “exit” the formal economy, rather than a result of involuntary exclusion (Cross, 2000; Snyder, 2004). This is argued by a diverse array of commentators, ranging from neo-liberals (De Soto, 1989, 2001), through institutional theorists (Webb *et al.*, 2009, 2013) to a range of critical, post-colonial, post-structuralist, post-development, and post-capitalist scholars seeking to unpack the messy logics of monetized transactions (Escobar, 1995; Snyder, 2005; Zelizer, 2005). The drivers underpinning this decision to voluntarily enter informal entrepreneurship have been variously asserted to be firstly, high tax rates (Ahmed & Ahmed, 1995; Arby, 2010; Hussain & Ahmed, 2006; Kemal, 2003, 2007), secondly, public sector corruption (Ahmed, 2009; Buehn & Schneider, 2012; Friedman, Johnson, Kaufmann, & Zoido, 2000; Gulzar, Junaid, *et al.*, 2010), thirdly, stifling bureaucracy and over-regulation (De Soto, 1989; Iqbal, 1998; Kemal, 2007; Shabsigh, 1995) and fourthly, resistance and resentment toward government due to a perceived lack of procedural and redistributive justice and fairness (Ahmed, 2009; FBR, 2008; Kemal, 2003; Torgler, 2003, 2011).

Indeed, institutional scholars have extended this “exit” perspective by identifying additional institutional drivers, including the existence of formal institutional voids (Feige, 1990; Puffer, McCarthy, & Boisot, 2010; Sutter, Webb, Kistruck, & Bailey, 2013), such as poor quality government which results in a low risk of detection and punishment (FBR, 2008; Hussain & Ahmed, 2006; Kemal, 2007), and the existence of asymmetry between the codified laws and regulations of formal institutions and the norms, values, and beliefs that constitute the informal institutions (De Castro, Khavul, & Bruton, 2014; Siqueira *et al.*, 2014; Thai & Turkina, 2014; Vu, 2014; Webb *et al.*, 2009, 2013, 2014; Williams & Shahid, 2014). Indeed, in Pakistan, the discord between civic morality and state morality is widely recognized (FBR, 2008), with many viewing this as the main reason underpinning informality (Chaudhry & Munir, 2010; Kemal, 2007).

However, few scholars today view informal enterprises as either universally necessity-driven or exit-driven. Instead, most evaluate the ratio of exit-driven to exclusion-driven informal enterprises (Williams, 2008, 2009). Such studies reveal that exclusion motives are more prevalent in relatively deprived populations and exit in relatively affluent groups (Gurtoo & Williams, 2009), exit more relevant in developed economies and exclusion in developing countries (Gerxhani, 2004; Maloney, 2004) and exclusion more relevant to women and exit to men (Franck, 2012; Grant, 2013). Fields (1990, 2005) encapsulates this distinction well in his portrayal of an exit-driven “upper tier” and a necessity-driven “lower tier” in urban informal labor markets in developing countries.

Until now nevertheless, these studies have only examined how many enterprises are informal rather than how many display differing levels of informality, the characteristics of informal enterprises and entrepreneurs rather than the characteristics of enterprises and entrepreneurs displaying differing levels of informality, and sought explanations for participating in informal instead of formal enterprise rather than explanations for the differing levels of informality. The only exception is a qualitative study by De Castro *et al.* (2014) of 30 enterprises in the Dominican Republic, which recognizes a continuum of informality and starts to unpack the characteristics and reasons for enterprises operating at varying levels of informality. This paper therefore, begins to fill these lacunae by both enumerating the varying levels of informality of informal micro-enterprises and their differing characteristics as well as explaining the varying levels of informality in the context of a study of 300 informal micro-enterprises operating in the retail, manufacturing, and instant consumable food (ICF) sectors in the city of Lahore in Pakistan.

### 3. METHODOLOGY: EXAMINING THE LEVELS OF INFORMALITY OF INFORMAL MICRO-ENTERPRISES IN LAHORE, PAKISTAN

#### (a) *Setting the scene*

According to the 2010–11 Labor Force Survey 74% of the total labor force in Pakistan operates in the informal sector (Pakistan Bureau of Statistics, 2011) and 73% according to the ILO (2012). This is one of the highest levels of informality in the world. Akin to elsewhere however, although there are studies on the extent and nature of informal entrepreneurship and enterprise (e.g., Guisinger & Irfan, 1980; Kazi, 1987; Nadvi, 1990), little if anything is known about how many enterprises and entrepreneurs operate at varying levels of informality, the characteristics of these enterprises and

entrepreneurs operating at varying levels of informality or the key determinants of their level of informality. In 2012 therefore, a study evaluating the varying levels of informality of informal micro-enterprises and the factors influencing their level of informality was conducted.

#### (b) *Data*

Here, a micro-enterprise survey is reported conducted in the city of Lahore in Pakistan. Following a pilot study of 30 micro enterprises in September 2012, face-to-face interviews were conducted with 300 micro entrepreneurs in Lahore during October 2012–January 2013, with the interviews conducted in either Urdu or the local dialect of Punjabi, a regional language widely used by the owners of microenterprises in Lahore. To select participants, maximum variation sampling was used to gather information from a wide range of participants and is often used as a substitute for random probability sampling in situations where the target population is either invisible or relatively inaccessible (Adom & Williams, 2012; Williams & Gurtoo, 2012). This was achieved by dividing the city into seven contrasting zones ranging from high-income to middle-income and low-income localities. Following this, a spatially stratified sampling method was used to select micro entrepreneurs within each locality employed in three different sectors, namely retailing, manufacturing, and instantly consumable food (ICF). The size of the representative sample for a particular sector was determined based on its prevalence within each locality, using different proxy indicators drawn from the latest census of population (2001) and Labor Force Survey (2010–11) to do so. The outcome was that this sampling frame generated data from heterogeneous types of micro-enterprises from various sectors in a wide range of localities who may possess very different rationales for participating in the informal economy. The intention in doing so was to prevent studying entrepreneurs only from a specific cohort who might have similar reasons for operating enterprises in the informal sector.

The structured face-to-face interview schedule adopted a gradual approach to more sensitive questions, commencing with socio-demographic questions on age, gender, income, and education, followed by questions on the characteristics of the business, such as the type of product or service, premises, business tenure, and reasons for starting the business. The third section then sought data on registration issues, such as the types of registration possessed, reasons for not registering, the advantage of registration, the level of difficulty of registering their businesses, tax morality, type of accounts they keep for their businesses, and why they chose to operate this enterprise. The final section then covered the type of customers and suppliers of the business and the problems they faced.

#### (c) *Variables*

##### (i) *Dependent variable*

Grounded in the above definition of an informal sector enterprise established by the 15th International Conference of Labor Statisticians in 1993 (Husmanns, 2005), three variables are used to construct an index of the level of informality of an informal enterprise, namely: (1) its legal status; (2) its tax registration status, and (3) the types of accounts kept (see Table 1). This enables a four-point scale of the level of informality to be constructed ranging from totally formal through low levels of informality and high levels of informality to totally informal.

Table 1. *Informal entrepreneurship: decision matrix of the level of informality*

	Legal status as company	Tax registration	Formal accounts	Distribution by option (%)	Score	Distribution by score (%)
Totally formal	✓	✓	✓	6.7	3	6.7
Low level of informality					2	30.2
Option 1	x	✓	✓	0		
Option 2	✓	✓	x	30.2		
Option 3	✓	X	✓	0		
High level of informality					1	33.6
Option 1	x	X	✓	0		
Option 2	x	✓	x	1.0		
Option 3	✓	X	x	32.6		
Totally informal	x	X	x	29.5	0	29.5

Source: Informal Enterprise Survey in Lahore (2012–13). Own calculations.

In the context of Pakistan, whether an enterprise is a separate legal entity independent of their owners is determined by their reported legal status. If they reported that they were registered as a limited liability company, they were deemed to have a legal status as a company. Whether they are registered with the tax authorities for tax purposes is determined by whether the enterprise is registered with the tax department under the Income Tax Ordinance 2001, and whether they keep formal accounts is determined by whether they comply with the Companies Ordinance 1984 as opposed to having either no written account, informal records for personal use, or simplified accounts.<sup>1</sup>

As Table 1 displays, 29% of the surveyed enterprises in Lahore operate on a totally informal basis, around 34% at a high level of informality, 30% at a low level of informality, and 7% are totally formal enterprises. As can be seen in the table, those operating with a low level of informality mostly choose not to keep formal accounts, while those with a high level of informality also mostly opt not to formally register with the tax office. As such, formality appears to progress in stages marked by firstly, acquiring a legal status, secondly, registering with the tax office and only after that are formal accounts kept.

#### (ii) Independent variables

Drawing on the above literature review regarding the characteristics of informal entrepreneurs and enterprises, as well as the drivers of informality, the multivariate analyses below are based on a series of additive-ordered logistic regressions where firstly informal entrepreneurs characteristics are examined, secondly, the characteristics of informal enterprises are added followed thirdly, by whether they adopt exit rationales and fourth and finally, variables related to the wider formal and informal institutional compliance environment regarding informality. This enables their individual and net contributions as factors influencing the level of informality of micro-enterprises in Lahore to be measured.

In Model 1, and drawing upon the above literature review, we include the following *characteristics of informal entrepreneurs*:

*Female*: a dummy variable with value 1 indicating that the entrepreneur is a woman and 0 when it is a man.

*Age*: a categorical variable with four categories for those aged 15–24, 25–39, 40–64, and over 65 years old.

*Education*: a categorical variable with five categories for those with no education, primary, secondary, diploma, or university education. This is derived from the number of

years in full-time education reported by the entrepreneur that in Pakistan corresponds to 0, 5, 12, 14, and 16 years in full-time education respectively.

*Household income*: a categorical variable measuring the total monthly household income in six categories: Less than 20,000, 20,000–29,999, 30,000–39,999, 40,000–49,999, more than 50,000, and an indicator for those not reporting their household income.<sup>2</sup>

*Main earner*: a dummy variable with value 0 when the respondent is the main earner of the family and 1 otherwise.

*Other family earners*: a categorical variable with four categories for those families with no family earners other than the respondent, those with one additional earner, those with two additional earners, and those with three or more additional earners.

In Model 2, and again based on the literature review above, we add the following *enterprise characteristics*:

*Own account worker*: a dummy variable with value 1 for those respondents reporting to be an own account worker (i.e., sole trader) and 0 for those reporting to be employers.

*Firm sector*: a categorical variable with three categories for manufacturing, retail, and instantly consumable food items enterprises.

*Business premises*: a dummy variable with value 0 for whether the business is located in fixed businesses premises and 1 otherwise.

*Started business*: a categorical variable with three categories for whether the entrepreneur started the business alone, with other partners, or with family members.

*Bank account*: a dummy variable with value 0 when the entrepreneur has no bank account in the name of the business and 1 otherwise.

*Business size*: a categorical variable with six categories for business with no employees, with one employee, with two employees, with three employees, with four employees, and with five or more (up to ten) employees.

*Sources of financing*: a categorical variable for the self-reported main sources of funding for the business, namely family or relatives, friends or neighbors, self-funding, credit purchases from suppliers, and advanced payments by the customers.

*Applied for a bank loan*: a dummy variable with value 1 for those entrepreneurs reported they have applied for a bank loan to finance the enterprise's activities and 0 otherwise.

*Firm's age (and age squared)*: a continuous variable measuring the number of years since the business was started (and its squared transformation).

*Exclusion drivers:* The results of exploratory principal components factor analysis (see Panel B in Table 6 in the Appendix) suggest that the six self-reported reasons for starting the business can be grouped into three main underlying factors. Based on these results, we have introduced in our analysis two indicators of whether necessity-oriented rationales prevail. These are two dummy variables gathering the responses to whether the main reason was that the respondent *could not get a regular job*, or *needed additional income*. In both cases value 1 refers to those responding yes to the questions and 0 otherwise.

*Entrepreneurial attitudes:* Based again on the exploratory principal components factor analysis, we have created a categorical variable with four categories that refer to the entrepreneurial attitudes of the respondent as the main reason for starting the business using the responses to the statements *it is more profitable than a regular job* and *I prefer to be my own boss*. The resulting categorical variable has value 0 for those responding negatively to both these questions, value 1 for those responding yes to the former, value 2 for those responding yes to the latter, and value 3 for those responding affirmatively to both.

In Model 3, we add a set of dummy variables gathering the self-reported reasons given by the entrepreneur for operating informally to investigate the importance of *exit rationales*:

*Resentment:* a dummy variable with value 1 if the response to the following statement is positive: “The state does not do anything for the people so why should we obey the law” and value 0 otherwise.

*High taxes:* a dummy variable which records a value 1 if the respondent states that “The main reason for not registering my business is: Taxes are too high” and 0 otherwise.

*Burdensome regulations:* a dummy variable with value 1 if the respondent states that “The main reason for not registering my business is: Registration system is very complicated” and 0 otherwise.

*Public sector corruption:* a dummy variable which records a value of 1 if the respondent states that “The main reason for not registering my business is: Registration system is corrupt” and 0 otherwise.

*Unawareness of registration:* a dummy variable with value 1 if the respondent states that “I do not know if I have to register” and 0 otherwise.

Finally, in Model 4, we add two variables that seek to measure the impact of *the wider formal and informal institutional compliance environment regarding informality* in Pakistan.

*Tax morality:* a Likert scale categorical variable with value 1 if the respondent is of the opinion that it is “highly acceptable” to operate informally in Pakistan, value 2 if s/he holds the opinion that it is “somewhat acceptable” to operate informally and value 3 if s/he believes that it “not acceptable” to operate informally. This measures the norms, values, and beliefs of informal institutions regarding informality and whether there is symmetry between these informal institutions and the codified laws and regulations of the formal institutions.

*Risk of doing business informally:* a Likert scale categorical variable with value 1 if the respondent believes it is very risky to operate informally, value 2 if s/he holds the opinion it is somewhat risky, and value 3 if s/he believes it is not risky to operate informally. This Likert scale attempts to measure the formal institutional compliance environment regarding informality.

#### (d) *Methods*

As the dependent variable is an ordinal one, we here use ordered logistic regression. This is preferable to using a simple OLS technique since the assumptions of a non-interval variable would be violated and multinomial regression in which case the information contained in the ordering of the dependent variable would be lost. Indeed, the Brant test to check that the assumption of parallel regressions hold reports an insignificant  $\chi^2$  equal to 4.03 (prob >  $\chi^2$  0.25) for the full specification used in model 4 below.

To interpret the main results of the multivariate-ordered logistic regressions reported, firstly, we show the determinants of the level of informality of micro-enterprises in Lahore and secondly, we outline a representative enterprise using the modal and mean values of the variables used in the multivariate-ordered logistic regression, to report the predicted odds of the level of informality. A first post-estimation exercise allows us to provide evidence of the most and the least relevant drivers for the level of informality and a second gives the overall estimated probabilities for the level of informality at which micro-enterprises in Lahore operate and how it changes once the various drivers are accounted for in our additive empirical strategy. Before doing this however, we report the descriptive findings.

## 4. RESULTS AND DISCUSSION: EXPLAINING THE LEVELS OF INFORMALITY OF INFORMAL ENTERPRISE IN PAKISTAN

### (a) *Descriptive findings*

Of the 300 micro-enterprises surveyed employing less than 10 employees in the Pakistani city of Lahore in 2012, and as Table 2 displays, although 29% were totally informal enterprises and 7% totally formal, nearly two-thirds of the enterprises were neither totally informal nor totally formal (33% displaying a high level of informality and 30% a low level of informality).

What are the characteristics of the entrepreneurs and enterprises, therefore, displaying varying levels of informality? As Table 2 reveals, although very few women entrepreneurs were interviewed (less than 2% of the sample), 10% operating on a totally formal basis were women; that is, five times more than their proportion in the sample. Men, therefore, appear more likely to be operating informally. So too are younger entrepreneurs more likely to operate totally or highly informal enterprises. As the age of the entrepreneur increases, there is a greater likelihood that one or more elements of their enterprise are on a more formal footing. It is similarly the case that the lower the educational level of the entrepreneur the more likely they are to operate a totally informal business. As the education level of the entrepreneur increases, the more likely is it that some elements of their enterprise will be formal.

The level of informality of the enterprise is also closely associated with the monthly household income. As the level of informality of the enterprise reduces, the monthly income received increases. Interestingly, entrepreneurs who are not the sole earners in their household are likely to operate more formally. This is further confirmed when we look at the number of family members contributing to household income. When the entrepreneur is the sole household earner, it is more likely that s/he does business more informally. When other family members contribute to the family income, the share of entrepreneurs doing business more formally increases.

Table 2. *Characteristics of informal entrepreneurs: by level of informality (%)*

	Totally informal	High level of informality	Low level of informality	Totally formal
All respondents	29.5	33.6	30.2	6.7
Female	1.2	1	0	10.0
Age				
15–24	13.8	8.1	3.4	0
25–35	48.3	55.6	39.3	55.0
36–64	36.8	35.4	55.1	35.0
65+	1.2	1.0	2.3	10.0
Highest educational level				
No education	26.1	17.0	5.6	0
Primary	30.7	31.0	24.4	5.0
Secondary	34.1	40.0	45.6	30.0
Diploma	2.3	6.0	16.7	25.0
University	6.8	6.0	7.8	40.0
Gross income				
< 20,000	54.6	21.0	4.4	5.0
20,000–29,999	28.4	38.0	33.3	15.0
30,000–39,999	4.6	11.0	33.3	30.0
40,000–49,999	3.4	13.0	11.1	15.0
> 50,000	5.7	9.0	14.4	35.0
Not reported	3.4	8.0	3.3	0
No main earner	19.5	23.5	20.2	35.0
Other family earners				
-None	53.5	49.5	52.8	21.1
-One	18.6	17.2	13.5	21.1
-Two	17.4	17.2	18.0	21.1
-Three or more	10.5	16.2	15.7	36.8
Sector				
Retail	31.8	22.0	40.5	70.0
Manufacturing	29.7	31.0	41.6	25.0
Instantly consumable food items	38.5	47.0	18.0	5.0

Source: Informal Enterprise Survey in Lahore (2012–13). Own calculations.

Finally, the level of informality of the enterprise varies across sectors. Those operating in the instantly consumable food (ICF) sector are more likely to be totally informal while informal manufacturing and retail sector enterprises are more likely to have taken steps toward formality.

Why, therefore, do informal micro-enterprises operate at varying levels of informality? To understand this, a range of questions were asked that reflect the rationales asserted by the exclusion and exit perspectives and that measure the wider

formal and informal institutional compliance environment regarding informality in Pakistan. As Table 3 reveals, and contrary to the discourse that informal entrepreneurship and enterprise in developing countries is a last resort conducted out of necessity, this is not found to be universally valid. This only applies for the majority of entrepreneurs doing business on a totally informal basis. It does not apply to the majority of entrepreneurs who have taken steps toward formality. Instead, for these entrepreneurs, other rationales prevail.

Table 3. *Main rationales for operating informally: by level of informality (%)*

	Totally informal	High level of informality	Low level of informality	Totally formal
<i>Exclusion perspective</i>				
Could not find regular job	53.4	32.0	22.2	5.0
Needed income	5.7	7.0	4.4	10.0
<i>Exit rationales</i>				
Burdensome regulations	20.5	28.0	11.1	0
High taxes	22.7	19.0	4.4	0
Public sector corruption	21.6	32.0	11.1	0
Resentment	26.1	43.0	22.2	5.0
Unawareness of registration	39.8	26.0	17.8	0
<i>Social climate for doing business informally</i>				
Very risky running business informally	3.6	1.0	13.3	20.0
Highly acceptable to operate informal enterprise	44.3	37.0	21.1	20.0

Source: Informal Enterprise Survey in Lahore (2012–13). Own calculations.

Table 4. Ordered logistic regression for the determinants of the level of informality of informal micro-enterprises in Lahore.

	(1) Model	(2) Model	(3) Model	(4) Model
<i>Entrepreneurs' characteristics</i>				
Female	0.84	0.96	1.14	0.97
Age (15–24)				
25–35	0.49	0.77	0.59	0.98*
40–64	1.00**	0.98**	0.66	0.74
65+	3.55***	4.39***	5.15***	6.35***
Education (No education)				
Primary	1.06***	1.09**	0.83*	0.84*
Secondary	1.28***	0.88**	0.81*	0.87**
Diploma	2.31***	1.96**	1.73*	2.05**
University	1.92***	1.66**	1.76**	1.90***
<i>Household income (Less than 20,000)</i>				
20,000–30,000	1.55***	1.66***	1.62***	1.57***
30,000–40,000	2.73***	2.09***	1.87***	1.96***
40,000–50,000	2.05***	1.13**	1.04*	1.04*
More than 50,000	2.61***	1.57***	1.24**	1.30**
Not reported	1.31**	1.36**	1.25**	1.12
Main earner	0.04	–0.42	–0.66	–0.70
Other family earners (None)				
One	–0.51	–0.72	–0.66	–0.44
Two	0.07	–0.02	0.02	0.20
Three or more	0.46	0.46	0.73	0.79
<i>Enterprise characteristics</i>				
Own account worker		–3.80***	–3.79***	–4.19***
Firm sector (Retail)				
Manufacturing		–1.33**	–1.32**	–1.35**
Instantly consumable food		–0.50	–0.35	–0.84
No business premises		–0.52	–0.66	–0.88*
Started business (Alone)				
With partners		2.14*	2.32*	2.63
Family		0.56	0.42	0.54
Bank account		3.65***	3.43***	3.46***
Business size (No workers)				
One		–1.18*	–0.97	–1.30
Two		–1.14*	–0.94	–1.29
Three		–1.12	–0.57	–0.68
Four		–0.59	–0.23	–0.72
Five or more		–0.98	–0.76	–1.09
Source of financing (family/relatives)				
Friends/Neighbors		1.42	0.90	2.10*
Self-funding		0.84	0.81	1.21**
Credit from suppliers		1.98***	2.11***	2.46***
Advance payments customers		0.38	0.24	0.63
Applied for bank loan		0.47	0.68	0.49
Firm's age		0.09**	0.12***	0.13***
Firm's age (sq.)		–0.00**	–0.00***	–0.00***
Exclusion perspective				
Could not get a regular job		0.01	0.05	0.00
Need additional income		–0.95	–1.14	–1.19
Entrepreneurial attitudes (None)				
It is profitable		0.49	0.65	0.51
To be my boss		0.40	0.51	0.33
Both		0.01	0.06	–0.18
<i>Reasons for operating informally</i>				
Exit rationales				
Resentment			–0.34	–0.29
Taxes			–0.66	–0.47

(continued on next page)

Table 4 (continued)

	(1) Model	(2) Model	(3) Model	(4) Model
Burdensome over-regulations			-0.75**	-0.89**
Perceived state corruption			-0.81**	-0.64*
Unawareness of registration			-0.53	-0.70**
<i>Wider institutional compliance climate</i>				
Risk running unregistered business (Very risky)				
Somewhat risky				-1.32
Not risky				-1.64*
Tax morality (Highly acceptable)				
Somewhat acceptable				1.32***
Not acceptable				1.31**
Cut-off 1: Constant	2.18***	0.95	0.03	-0.60
Cut-off 2: Constant	4.18***	4.07***	3.28**	2.88
Cut-off 3: Constant	6.92***	8.85***	8.47***	8.68***
Observations	259	259	259	259
$\chi^2$	104.40	207.11	237.87	203.13
Prob > $\chi^2$	0.00	0.00	0.00	0.00
Pseudo $R^2$	0.17	0.44	0.46	0.49

Significant at \* $p < 0.1$ ; \*\* $p < 0.05$ ; and \*\*\* $p < 0.01$ .

Robust standard errors used.

Source: Informal Enterprise Survey in Lahore (2012). Own calculations.

Starting with exit rationales, those operating on a totally informal basis, who do not even register their business, lack of awareness of the registration requirements (40%) and resentment (26%) are the main rationales. For those operating on a highly informal basis, who largely register their business but mostly opt not to formally register with the tax office (or keep formal accounts), the most common exit rationales are resentment (43%) and perceived public sector corruption (32%). Finally, those with a low level of informality in that their business has legal status and they are registered with the tax office but do not keep formal accounts, most commonly cite the exit rationale of resentment (22%).

Turning to the influence of the wider formal and informal institutional compliance environment regarding informality, the high acceptability of operating informally is deemed a main rationale for doing so by 44% of totally informal enterprises, 37% of highly informal enterprises but just 21% of enterprises displaying low levels of informality. Meanwhile, the riskiness of operating informally, which is associated with the capacity of the state to punish this behavior, is considered more important by enterprises displaying a higher level of formality, which largely do not register with the tax office and keep formal accounts.

#### (b) Multivariate analysis

To examine whether these associations are significant when other variables are introduced and held constant, Table 4 reports the results of an ordered logistic regression analysis which explores the association between the level of informality and the characteristics of entrepreneurs and enterprises, their motives and the wider formal and informal institutional compliance environment regarding informality. This uses an additive strategy introducing sequentially the various sets of potential drivers, which allows an analysis of their specific contribution to explaining the level of informality.

Model 1 reports the results for the association between the characteristics of the entrepreneur and the level of informality.

Given the small number of women in the sample, the gender coefficient is not significant. Nevertheless, it is positive which suggests as noted above, that women entrepreneurs are more likely to do business formally when able to overcome the barriers making it difficult for them to be independent entrepreneurs. For age, education, and household income, a positive relationship is found with doing business more formally, or, at least, on less informal basis.<sup>3</sup> Specifically, older entrepreneurs aged 40 and over are more likely to operate formally than younger ones (15–24 years old), as are those with higher levels of education and those with higher household incomes, although this latter relationship is likely to be endogenous. No significant association is found between the level of informality and whether the entrepreneur is the main earner or the number of family members earning. Overall, this model explains 17% of the variance in the level of informality as reported by the Pseudo  $R^2$  (compared to a model where no explanatory variables are introduced).

Model 2 adds key enterprise characteristics to these characteristics of the entrepreneurs. None of the entrepreneurs' characteristics in Model 1 change their significance or direction of association. In addition however, this reveals that sole traders are likely to operate more informally, as are enterprises in the manufacturing sector less likely to operate more formally than those in the retail sector. For those in the instantly consumable food sector, the relationship is also negative but not significant when other entrepreneur and enterprise characteristics are controlled for. Neither is whether the business has premises associated with the level of informality. However, starting the business with other partners compared with starting it alone is associated with a higher likelihood of doing business more formally. Having a bank account is also strongly correlated with a higher likelihood of operating more formally. Enterprises with some employees (one or two) are less likely to operate more formally than enterprises with no employees, although this is weak (and disappears in models 3 and 4), while no significant relationship exists for larger micro-enterprises (up to 10 workers). The only source of financing



Table 5. Predicted probabilities for the odds of doing business at various levels of informality: by significant coefficients in Table 4 (in percentages)

	(4) Model			
	Totally Informal	High Level	Low Level	Wholly Formal
<i>Characteristics of entrepreneurs</i>				
Female				
Age (15–24)				
25–35	–7.4	–11.5	18.8	0.1
40–64				
65+	–9.1	–66.7	41.1	34.7
Education (No education)				
Primary	–5.5	–11.9	17.3	0.1
Secondary	–6.1	–11.3	17.4	0.1
Diploma	–8.3	–38.6	46.3	0.6
University	–8.0	–35.5	43.0	0.5
Household income (Less than 20,000)				
20,000–30,000	–9.9	–22.9	32.6	0.2
30,000–40,000	–9.5	–34.4	43.4	0.5
40,000–50,000	–5.6	–17.6	23.0	0.2
More than 50,000	–6.6	–22.8	29.1	0.2
<i>Characteristics of enterprises</i>				
Own account worker				
Firm sector (Retail)	51.2	10.7	–61.4	–0.5
Manufacturing	12.5	10.3	–22.7	–0.1
No business premises	8.6	5.7	–14.2	–0.0
Bank account	–14.8	–55.0	68.3	1.6
Source of financing (family/relatives)				
Friends/Neighbors	–7.2	–41.1	47.5	0.7
Self-funding	–12.0	–7.5	19.4	0.0
Credit from suppliers	–9.0	–45.8	53.9	0.9
Firm's age	–1.0	–1.5	2.5	0.0
Firm's age (sq.)	0.0	0.0	–0.0	–0.0
<i>Reasons for operating informally</i>				
Exit rationales				
Burdensome over-regulations	8.4	6.3	–14.6	–0.00
Perceived state corruption	5.6	5.6	–11.2	–0.0
Unawareness of registration	6.1	6.3	–12.3	–0.0
<i>Wider institutional compliance climate</i>				
Risk running unregistered business (Very risky)				
Not risky	11.7	20.7	–32.3	–0.2
Tax morality (Highly acceptable)				
Somewhat acceptable	–10.5	–14.3	24.6	0.1
Not acceptable	–6.9	–22.3	29.0	0.2
Observations		259		
$\chi^2$		203.13		
Prob > $\chi^2$		0.00		
Pseudo $R^2$		0.49		

Spst command used by Long and Freese (2005) for the changes in predicted probabilities.

Source: Informal Enterprise Survey in Lahore (2012). Own calculations.

with a positive relationship with doing business more formally is receiving credit from suppliers compared with relying on family and friends to finance the enterprise. As a firm ages however, it is significantly more likely to have taken steps toward formality, although this relationship is not fully linear and weakens over time. Overall, model 2 explains around 44% of the variance in the level of informality which amounts to almost 2.6 times more than the variance explained by model 1, highlighting the importance of combining both enterprise end entrepreneur characteristics when explaining the level of

informality. None of the exclusion rationales, it should be noted, are significantly associated with the level of informality. This is similarly the case for the entrepreneurial attitudes derived from our principal components factor analysis.

Model 3 adds to these entrepreneur and enterprise characteristics the exit rationales for doing business informally. Although these must be treated as associations with the level of informality, only the burdensomeness of regulations and perception of public sector corruption are significantly associated with a lower likelihood of doing business formally. No

significant relationship is found for resentment, tax levels, or a lack of awareness of their registration responsibilities. The overall fit of the model however, increases by just 2% when these exit rationales are added, from a Pseudo  $R^2$  of 44–46%.

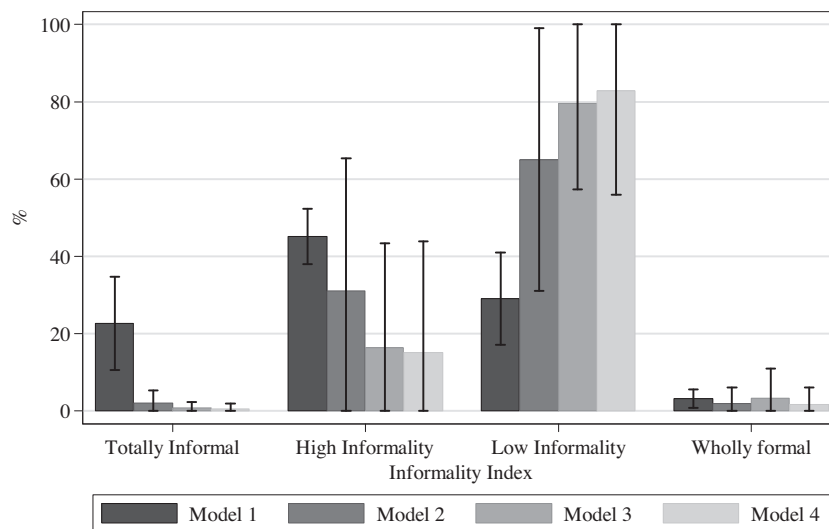
Finally, model 4 presents the full specification adding to the entrepreneur and enterprise characteristics and exit rationales the wider formal and informal institutional compliance environment regarding informality. Although the perceived acceptability of doing business informally, more than the perceived riskiness of operating informally, is more significantly associated with the level of informality, the overall fit of the model increases by just an additional 3% when these indicators of the wider formal and informal institutional compliance environment are added, to a Pseudo  $R^2$  for the full model of 49%.

Overall therefore, the characteristics of the entrepreneurs and enterprises predominantly explain the variance in the level of informality, while the motives and wider formal and informal institutional environment provide relatively little added-value. This is further revealed in Table 5 which takes the significant coefficients in Table 4 and examines how the level of informality is associated with these characteristics by examining how they affect the predicted probabilities for the odds of doing business at various levels of informality. Starting with the view that the level of informality is associated with involuntary exclusion from the formal economy, the finding is that predicted probabilities (not shown in the table) are close to zero, confirming further the finding that this is not significantly associated with the level of informality, when other factors are held constant. Is it the case however, that there is an association between the level of informality and exit rationales? Pursuing informal entrepreneurship due to the over-burdensome state regulations increases the odds of doing business on a totally informal basis by 8% and on a highly informal basis by 6% and, consequently, reduces the odds of doing business with a low level of informality by nearly 15% and makes the probability of doing business on wholly formal grounds to be zero. Likewise, asserting that their main reason for operating informally is public sector corruption increases the odds of doing business on a totally informal basis or on a highly informal basis by almost 6% in both cases and reduces

the odds of operating at low levels of informality by 11% and makes the probability of doing business on a totally formal basis close to zero. This is doubtless because the perceived level of state corruption has an adverse effect on the trust that entrepreneurs have in the state and leads to their voluntary exit from the formal economy (De Soto, 1989; Levin & Satarov, 2000; Torgler & Schneider, 2009).

However, the characteristics of entrepreneurs and enterprises have a larger impact on the odds of doing business at various levels of informality. Take for example, whether the entrepreneur is aged 65 or more. This reduces the odds of being totally informal by 9% and the odds of operating at a high level of informality by 67%, while increasing the odds of operating at a low level of informality by 41% and on a totally formal basis by 35%. Similarly, whether the enterprise has a bank account reduces the odds of being totally informal by 15% and operating at a high level of informality by 55% and increases the odds of operating at a low level of informality by 68% and on a totally formal basis by 1.6%. Similarly, whether they have a university education reduces the odds of operating on a totally informal basis by 8% and on a highly informal basis by 36% and increases the odds of operating at a low level of informality by 43% and totally formal basis by 0.5%. This further reinforces the finding that it is the characteristics of the entrepreneurs and enterprises that influence the predicted odds of operating at various levels of informality more than their motives and the wider formal and informal institutional environment.

To graphically portray this strong association between the characteristics of the entrepreneur and enterprise and the level of informality, Figure 1 shows the predicted probabilities of operating at various levels of informality for a representative entrepreneur and enterprise in Lahore. This representative entrepreneur and enterprise is derived from the modal and mean values of the explanatory variables introduced in models 1–4 of the ordered logistic regression.<sup>4</sup> When only the entrepreneurs characteristics are considered (model 1), this displays that a representative entrepreneur has a probability of being totally informal of 23%, a 45% probability of being highly informal, 29% odds of operating at a low level of informality, and just a 3% probability of being totally formal. However,



Source: Informal Enterprise Survey in Lahore (2012). Own calculations.

Figure 1. Predicted probabilities for the odds of doing business at varying levels of informality for a representative entrepreneur and enterprise (with 95% confidence intervals).

when the characteristics of a representative enterprise are added to the characteristics of a representative entrepreneur, there is a clear fall in the likelihood of higher levels of informality and a sizable increase in the odds of operating at a low level of informality. The same pattern of opting for low levels of informality is further confirmed once representative exit rationales and the wider formal and informal institutional compliance climate are introduced (models 3 and 4). In the final full specification therefore, our representative entrepreneur has a probability of being totally informal of a negligible 0.6%, a 15% chance of being highly informal, 83% odds of operating at a low level of informality, and a small 1.4% chance of being totally formal.

This reveals that the major effect of adding in the significant motives and influences of the wider formal and informal institutional compliance environment has the effect of slightly increasing the odds of doing business at a low rather than high level of informality for the representative micro-enterprise in Lahore. Put another way, these exit motives and the wider formal and informal institutional compliance environment slightly decrease the odds of the representative micro-enterprise operating at a higher level of informality. Overall however, and in sum, it is the characteristics of the entrepreneur and enterprise that explain the vast majority of the variance in the level of informality.

## 5. CONCLUSIONS

The starting point of this paper was that although there has been a burgeoning literature on informal sector entrepreneurship and enterprise, there has so far been little attempt in this literature to enumerate and explain the level of informality of entrepreneurs and enterprises. Reporting a survey of 300 micro-enterprises in the city of Lahore in Pakistan, this has revealed not only that 29% are totally informal enterprises, 33% display a high level of informality, 30% a low level of informality, and 7% are totally formal, but that the major determinants of the level of informality of micro-enterprises are the characteristics of the entrepreneur and enterprise, rather than their motives and the wider formal and informal institutional environment. This, therefore, markedly varies to the literature on why enterprises and entrepreneurs operate on an informal rather than formal basis which emphasizes their motives and the wider formal and informal institutional compliance environment, rather than the characteristics of the entrepreneurs and enterprises.

In terms of theoretical advances therefore, this paper makes three major contributions. Firstly, it reveals that squeezing all enterprises and entrepreneurs into one side or the other of an informal/formal dichotomy fails to recognize that the majority (i.e., two-thirds in this study of Lahore) are neither totally formal nor totally informal. Instead, there is a need to conceptualize a spectrum of enterprises and entrepreneurs from totally formal to totally informal displaying varying levels of informality. Secondly, it reveals the strong association between the level of informality and the characteristics of entrepreneurs and enterprises, showing that in Lahore higher levels of formality are associated with women, older age groups, those with higher levels of education and

higher incomes, and older enterprises with employees and operating in the manufacturing sector. The third contribution is that it reveals that the motives of entrepreneurs and the wider formal and informal institutional compliance environment has relatively little influence on the level of informality compared with the characteristics of entrepreneurs and enterprises. Whether similar associations hold in other localities, regions, and nations when explaining the contrasting levels of informality of entrepreneurs and enterprises now needs to be investigated. Indeed, cross-national studies would be valuable since one could then for example examine whether the characteristics of entrepreneurs and enterprises remain strongly associated with the level of informality even when the cross-national variations in the wider formal and informal institutional compliance climate are introduced and held constant.

In terms of policy implications meanwhile, the major contribution of this paper is that by revealing that it is the characteristics of entrepreneurs and enterprises that are strongly associated with varying levels of informality, rather than motives or the wider formal and informal institutional compliance climate, a very different policy approach to tackling informal enterprise and entrepreneurship begins to emerge. By identifying that higher levels of formality are associated with women, older age groups, those with higher levels of education, and higher incomes, and older enterprises with employees and operating in the manufacturing sector, it intimates that tackling informality requires greater emphasis to be put on initiatives so far seldom considered, such as: the promotion of women's entrepreneurship; improving educational attainment; the introduction of schemes to make greater use of older entrepreneurs as local role models for younger entrepreneurs; the encouragement of business start-ups with other partners rather than alone; schemes to facilitate credit to be given by suppliers; and initiatives to provide easier access to bank accounts. All are strongly correlated with higher levels of formality. These practical policy initiatives here advocated with regard to Lahore significantly differ to the usual approaches advocated to tackle informal enterprises and entrepreneurship which seek wider formal institutional changes such as tax reductions, less burdensome regulations, reduced public sector corruption, and/or greater social protection along with changes in the values, norms, and beliefs of informal institutions (OECD, 2015).

Consequently, if this paper stimulates a theoretical and empirical shift in future studies toward evaluating and explaining the different levels of informality of informal enterprises, then it will have achieved its major objective. What is now required are studies in other socio-spatial contexts, especially cross-national comparisons, to evaluate whether the characteristics of entrepreneurs and enterprises remain strongly associated with the level of informality even when the cross-national variations in the wider formal and informal institutional compliance climate are introduced and held constant. If this then leads to greater policy analysis which recognizes how perhaps different types of intervention are required to further formalize enterprises, and evaluations are conducted of what policy measures can achieve this, along with what entrepreneurs and enterprises should be targeted, then it will have achieved its wider intention.

## NOTES

1. Results of principal component factor analysis applied to the three variables used to construct the informality index (see Panel A in Table 6 in the Appendix) indicate that the three indicators contribute almost equally to the underlying index of informality. Based on this exploratory analysis, we have decided to give equal weight to the three indicators when constructing the aggregate informality index used for analysis in this article.

2. We include the indicator for not reported household income as a proxy to control for the potential issue of endogeneity arising from the relationship between household income and level of informality. On the one hand, whilst higher household income is associated with higher levels of formality, it is also possible that formal enterprises are more productive and generate higher income for the entrepreneur. As will be discussed below, results of those not reporting their household income are very much alike those entrepreneurs with higher incomes (the higher the income of the family, the higher the odds that the firm operates formally) which suggests that it is advisable to introduce the indicator for missing income into the analysis to control for this issue of endogeneity. Ideally, it would have been better to use an instrumental variable approach to properly deal with the potential endogeneity problem (Angrist & Pischke, 2008). Yet, we do not have in our data a good instrument for household income which is uncorrelated with the level of formality, the basic requirement to estimate our multivariate model using an IV approach.

3. It is worth remembering that an ordered logistic regression assumes a proportional effect of the estimated coefficients of the explanatory variables across all categories of the dependent variable. This means that their impact can only be interpreted in the direction that the dependent variable is coded. In order to measure their specific impact on each category of the Likert scale for the level of informality, predicted probability need to be estimated- These results are discussed in Table 5 and Figure 1 below.

4. This representative entrepreneur is a man, aged 25–35, with secondary education, a household income between 20,000 and 30,000, the respondent is the main earner, there are no other earners in the family, responded no to “Could not get a regular job” and “Need additional income” and “Both” to the entrepreneurial attitudes variable, the respondent is an entrepreneur with employees, the enterprise belongs to the instantly consumable food sector, with business premises, no bank account in the name of the firm, two employees work for the firm, the entrepreneur started the business alone, relies on self-funding to finance the business’ activities, and has not applied for a bank loan; the firm’s age is 13 years. As for the self-reported exit motives, the entrepreneur responded no to all of them (resentment, high taxes, burdensome regulations, perceived state corruption, and unawareness of registration). Finally, the representative entrepreneur reported not to be risky to do business informally in Pakistan and that doing business in this way is somewhat acceptable.

## REFERENCES

- Adom, K., & Williams, C. C. (2012). Evaluating the explanations for the informal economy in third world cities: Some evidence from Koforidua in the eastern region of Ghana. *International Entrepreneurship and Management Journal*, 8(3), 309–324.
- Agarwala, R. (2009). An economic sociology of informal work: The case of India. In N. Bandelj (Ed.), *Economic sociology of work* (pp. 315–342). Bingley: Emerald.
- Ahmad, A. N. (2008). Dead men working: time and space in London’s (“illegal”) migrant economy. *Work, Employment and Society*, 22(2), 301–318.
- Ahmed, A. M. (2009). Underground economy in Pakistan: How credible are estimates?. *NUST Journal of Business and Economics*, 2(1), 1–9.
- Ahmed, M., & Ahmed, Q. A. (1995). Estimation of black economy of Pakistan through the monetary approach. *The Pakistan Development Review*, 4, 791–807.
- Aidis, R., Welter, F., Smallbone, D., & Isakova, N. (2006). Female entrepreneurship in transition economies: The case of Lithuania and Ukraine. *Feminist Economics*, 13(2), 157–183.
- Andrade, G. H., Bruhn, M., & McKenzie, D. (2013). *A helping hand or the long arm of the law? Experimental evidence on what governments can do to formalize firms* Mimeograph. World Bank.
- Angrist, J., & Pischke, S. (2008). *Mostly harmless econometrics: An empiricists’ companion*. NJ: Princeton.
- Arby, M. (2010). *The size of the informal economy in Pakistan*. Lahore: State Bank of Pakistan, Working paper no. 33.
- Asian Development Bank (2010). *The informal sector and informal employment in Bangladesh*. Asian Development Bank.
- Autio, E., & Fu, K. (2014). Economic and political institutions and entry into formal and informal entrepreneurship. *Asian Pacific Management Journal*. <http://dx.doi.org/10.1007/s10490-014-9381-0>.
- Bruhn, M., & McKenzie, D. (2013). *Entry regulation and formalization of microenterprises in developing countries*. Washington, DC: World Bank policy research working paper 6507.
- Buehn, A., & Schneider, F. (2012). Shadow economies around the world: novel insights, accepted knowledge and new estimates. *International Tax and Public Finance*, 19(1), 139–171.
- Bureau, S., & Fendt, J. (2011). Entrepreneurship in the informal economy: Why it matters. *International Journal of Entrepreneurship and Innovation*, 12(2), 85–94.
- Burki, A. A., & Khan, M. A. (1990). Returns to human capital in the informal sector: Some evidence. National Workshop on the *informal sector of Pakistan: Problems and policies*. Organized by Quaid-i-Azam University, Department of Economics and Friedrich Ebert Foundation, Islamabad: September 12–14.
- Burqi, A. A., & Afaqi, U. (1996). Pakistan’s informal sector: Review of evidence and policy issues. *Pakistan Journal of Applied Economics*, 12(1), 1–30.
- Castells, M., & Portes, A. (1989). World underneath: The origins, dynamics and effects of the informal economy’. In A. Portes, M. Castells, & L. Benton (Eds.), *The informal economy: Studies in advanced and less developing countries* (pp. 19–41). Baltimore: John Hopkins University Press.
- Chaudhry, M., & Munir, A. (2010). Determinants of low tax revenue in Pakistan. *Pakistan Journal of Social Sciences*, 30(2), 439–452.
- Chen, M. (2012). *The informal economy: Definitions, theories and policies*. Manchester: Women in Informal Employment Global and Organising.
- Cross, J. C. (2000). Street vendors, modernity and post modernity: Conflict and compromise in the global economy. *International Journal of Sociology and Social Policy*, 20(1), 29–51.
- Dau, L. A., & Cuervo-Cazurra, A. (2014). To formalize or not to formalize: Entrepreneurship and pro-market institutions. *Journal of Business Venturing*, 29, 668–686.
- Davis, M. (2006). *Planet of slums*. London: Verso.
- De Castro, J. O., Khavul, S., & Bruton, G. D. (2014). How do informal firms navigate between macro and meso institutional environments?. *Strategic Entrepreneurship Journal*, 8, 75–94.
- De Soto, H. (1989). *The other path*. London: Harper and Row.
- De Soto, H. (2001). *The mystery of capital: Why capitalism triumphs in the West and fails everywhere else*. London: Black Swan.
- de Villiers Scheepers, M. J., Verreyne, M.-L., & Meyer, D. (2014). Entrepreneurial configurations of small firms. *International Journal of Entrepreneurial Behaviour & Research*, 20(6), 562–583.
- Escobar, A. (1995). *Encountering development: The making and unmaking of the third world*. Princeton, NJ: Princeton University Press.
- European Commission (2007). *Stepping up the fight against undeclared work*. Brussels: European Commission.
- Federal Board of Revenue. (2008). *Informal economy in Pakistan*. Directorate General of Training and Research, Syndicate Report

- 36th STP (accessed at: <<http://www.dgtrdt.gov.pk/html/Papers.html>>).
- Feige, E. (1990). Defining and estimating underground and informal economies: The new institutional economics approach. *World Development*, 18(7), 989–1002.
- Fields, G. S. (2005). *A guide to multisector labor market models* Social protection discussion paper 0505. Washington, DC: World Bank.
- Fields, G. S. (1990). Labour market modelling and the urban informal sector: Theory and evidence. In D. Turnham, B. Salome, & A. Schwarz (Eds.), *The informal sector revisited* (pp. 49–69). Paris: OECD.
- Franck, A. K. (2012). Factors motivating women's informal micro-entrepreneurship: Experiences from Penang, Malaysia. *International Journal of Gender and Entrepreneurship*, 4(1), 65–78.
- Friedman, E., Johnson, S., Kaufmann, D., & Zoido, P. (2000). Dodging the grabbing hand: The determinants of unofficial activity in 69 countries. *Journal of Public Economics*, 76(3), 459–493.
- Gennari, P. (2004). *The estimation of employment and value added of informal sector in Pakistan*. Paper presented at 7th Meeting of the expert group on informal sector statistics, February, 2–4. New Delhi: Delhi Group.
- Gerxhani, K. (2004). The informal sector in developed and less developed countries: A literature survey. *Public Choice*, 120(2), 267–300.
- Grant, R. (2013). Gendered spaces of informal entrepreneurship in Soweto, South Africa. *Urban Geography*, 34(1), 86–108.
- Guisinger, S., & Irfan, M. (1980). Pakistan's informal sector. *The Journal of Development Studies*, 16(4), 412–426.
- Gulzar, A., Junaid, N., et al. (2010). What is hidden, in the hidden economy of Pakistan? Size, causes, issues and implications. *Pakistan Development Review*, 49(4).
- Gurtoo, A., & Williams, C. C. (2009). Entrepreneurship and the informal sector: Some lessons from India. *International Journal of Entrepreneurship and Innovation*, 10(1), 55–62.
- Hussain, M. H., & Ahmed, Q. M. (2006). *Estimating the black economy through monetary approach: A case study of Pakistan*. Munich: Munich Personal RePEc Archive, MPRA paper no. 8153.
- Hussmanns, R. (2005). *Measuring the informal economy: From employment in the informal sector to informal employment*. Geneva: Policy Integration Department Bureau of Statistics International Labour Office, Working paper no. 53.
- ILO (2011). *Statistical update on employment in the informal economy*. Geneva: International Labour Organization.
- ILO (2012). *Statistical update on employment in the informal economy*. Geneva: International Labour Organisation.
- ILO (2014). *Transitioning from the informal to the formal economy*. Geneva: ILO.
- Iqbal, A. Q. (1998). *The underground economy and tax evasion in Pakistan: A fresh assessment*. Lahore: Pakistan Institute of Development Economics, Research report no. 158.
- Kanbur, R. (2009). *Conceptualizing informality: Regulation and enforcement*. Cornell University, Dept. of Applied Economics and Management, Working paper 09-11.
- Kantor, P. (2009). Women's exclusion and unfavorable inclusion in informal employment in Kucknow, India: Barriers to voice and livelihood security. *World Development*, 37(1), 194–207.
- Kazi, S. (1987). Skill formulation, employment and earnings in the urban informal sector. *The Pakistan Development Review*, 26(4), 21–29.
- Kemal, M. A. (2003). *Underground economy and tax evasion in Pakistan: A critical evaluation*. Lahore: Pakistan Institute of Development Economics, Research report no. 184.
- Kemal, M. A. (2007). *Fresh assessment of the underground economy and tax evasion in Pakistan: Causes, consequences and linkages with the formal economy*. Lahore: Pakistan Institute of Development Economics, PIDE working paper no. 13.
- Kemal, A. R., & Mahmood, Z. (1998). *The urban informal sector of Pakistan: Some stylized facts*. Lahore: Pakistan Institute of Development Economics, PIDE research report no. 161.
- Khan, S. (1983). An economic analysis of personal earnings in urban formal and informal sectors of employment. *Pakistan Economic and Social Review*, 28(2), 41–61.
- Kistruck, G. M., Webb, J. W., Sutter, C. J., & Bailey, A. V. G. (2014). The double-edged sword of legitimacy in base-of-the-pyramid markets. *Journal of Business Venturing*. <http://dx.doi.org/10.1016/j.jbusvent.2014.06.004>.
- Levin, M., & Satarov, G. (2000). Corruption and institutions in Russia. *European Journal of Political Economy*, 16, 113–132.
- Long, J. S., & Freese, J. (2005). *Regression model for categorical dependent variables using Stata*. TX: Stata Press.
- Maloney, W. (2004). Informality revisited. *World Development*, 32(7), 1159–1178.
- Meagher, K. (2010). *Identity economics: Social networks and the informal economy in Nigeria*. New York: James Currey.
- Mumtaz, K., & Saleem, N. (2010). *Informal economy budget analysis in Pakistan and Ravi Town, Lahore* WIEGO working paper no. 10. Manchester: WIEGO.
- Nadvi, K. (1990). Multiple forms of subcontracting arrangements: Implications for the growth of the informal manufacturing sector. In *Quaid-i-Azam University and Freiderich Ebert Stiftung National workshop on the informal sector of Pakistan*.
- OECD (2012). *Reducing opportunities for tax non-compliance in the underground economy*. Paris: OECD.
- OECD (2015). *Informal entrepreneurship*. Paris: OECD.
- Pakistan Bureau of Statistics (2011). *Labour force survey of Pakistan*. Pakistan Bureau of Statistics, Government of Pakistan.
- Parizeau, K. (2015). When assets are vulnerabilities: An assessment of informal recyclers' livelihood strategies in Buenos Aires, Argentina. *World Development*, 67, 161–173.
- Perry, G. E., Maloney, W. F., Arias, O. S., Fajnsylber, P., Mason, A. D., & Saavedra-Chanduvi, J. (2007). *Informality: Exit or exclusion*. Washington, DC: World Bank.
- Puffer, S. M., McCarthy, D. J., & Boisot, M. (2010). Entrepreneurship in Russia and China: The impact of formal institutional voids. *Entrepreneurship Theory and Practice*, 34(3), 441–467.
- Radchenko, N. (2014). Heterogeneity in informal salaried employment: Evidence from the Egyptian labor market survey. *World Development*, 62, 169–188.
- Ram, M., Edwards, P., & Jones, T. (2002). *Employers and illegal migrant workers in the clothing and restaurant sectors*. London: DTI Central Unit Research.
- Ram, M., Jones, T., Abbas, T., & Sanghera, B. (2002). Ethnic minority enterprise in its urban context: South Asian restaurants in Birmingham. *International Journal of Urban and Regional Research*, 26(1), 24–40.
- Schneider, F., & Williams, C. C. (2013). *The shadow economy*. London: Institute of Economic Affairs.
- Shabsigh, G. (1995). *The underground economy: Estimation, and economic and policy implications – The case of Pakistan*. Washington DC: International Monetary Fund, IMF working paper no. 101.
- Siba, E. (2015). Returns to physical capital in Ethiopia: Comparative analysis of formal and informal firms. *World Development*, 68, 215–229.
- Siqueira, A. C. O., Webb, J. W., & Bruton, G. D. (2014). Informal entrepreneurship and industry conditions. *Entrepreneurship Theory and Practice*. <http://dx.doi.org/10.1111/etap.12115>.
- Slavnic, Z. (2010). Political economy of informalisation. *European Societies*, 12(1), 3–24.
- Small Business Council (2004). *Small business in the informal economy: Making the transition to the formal economy*. London: Small Business Council.
- Snyder, K. (2004). Routes to the informal economy in New York's East village: Crisis, economics and identity. *Sociological Perspectives*, 47(2), 215–240.
- Snyder, K. (2005). Gender segregation in the hidden labor force: Looking at the relationship between the formal and informal economies. *Gender Realities*, 9, 1–27.
- Sutter, C. J., Webb, J. W., Kistruck, G. M., & Bailey, A. V. G. (2013). Entrepreneurs' responses to semi-formal illegitimate institutional arrangements. *Journal of Business Venturing*, 28(5), 743–758.
- Taiwo, O. (2013). Employment choice and mobility in multi-sector labour markets: Theoretical model and evidence from Ghana. *International Labour Review*, 152(3–4), 469–492.
- Thai, M. T. T., & Turkina, E. (Eds.) (2013). *Entrepreneurship in the informal economy: Models, approaches and prospects for economic development*. London: Routledge.
- Thai, M. T. T., & Turkina, E. (2014). Macro-level determinants of formal entrepreneurship versus informal entrepreneurship. *Journal of Business Venturing*, 29(4), 490–510.
- Torgler, B. (2003). To evade taxes or not: That is the question. *Journal of Socio-Economics*, 32, 283–302.

- Torgler, B. (2011). *Tax morale and compliance: Review of evidence and case studies for Europe*. Washington DC: World Bank, World Bank policy research working paper 5922.
- Torgler, B., & Schneider, F. (2009). The impact of tax morale and institutional quality on the shadow economy. *Journal of Economic Psychology*, 30, 228–245.
- Verreyne, M.-L., Meyer, D., & Liesch, P. (2014). Beyond the formal–informal dichotomy of small firm strategy-making in a stable and dynamic environment. *Journal of Small Business Management*. <http://dx.doi.org/10.1111/jsbm.12143>.
- Vu, T. T. (2014). *Institutional incongruence and the informal economy: An empirical analysis*. Paper presented at the European Public Choice Society meeting, Cambridge. <[http://www.econ.cam.ac.uk/epcs2014/openconf/modules/request.php?module=oc\\_program&action=summary.php&id=54](http://www.econ.cam.ac.uk/epcs2014/openconf/modules/request.php?module=oc_program&action=summary.php&id=54)>.
- Webb, J. W., Bruton, G. D., Tihanyi, L., & Ireland, R. D. (2013). Research on entrepreneurship in the informal economy: Framing a research agenda. *Journal of Business Venturing*, 28, 598–614.
- Webb, J. W., Ireland, R. D., & Ketchen, D. J. (2014). Towards a greater understanding of entrepreneurship and strategy in the informal economy. *Strategic Entrepreneurship Journal*, 8(1), 1–15.
- Webb, J. W., Tihanyi, L., Ireland, R. D., & Sirmon, D. G. (2009). You say illegal, I say legitimate: Entrepreneurship in the informal economy. *Academy of Management Review*, 34(3), 492–510.
- Williams, C. C. (2006). *The hidden enterprise culture: Entrepreneurship in the underground economy*. Cheltenham: Edward Elgar.
- Williams, C. C. (2008). Beyond necessity-driven versus opportunity-driven entrepreneurship: A study of informal entrepreneurs in England, Russia and Ukraine. *International Journal of Entrepreneurship and Innovation*, 9(3), 157–166.
- Williams, C. C. (2009). The motives of off-the-books entrepreneurs: Necessity- or opportunity-driven?. *International Entrepreneurship and Management Journal*, 5(2), 203–217.
- Williams, C. C. (2014). Out of the shadows: A classification of economies by the size and character of their informal sector. *Work, Employment and Society*, 28(5), 735–753.
- Williams, C. C. (2015). Explaining cross-national variations in the commonality of informal sector entrepreneurship: An exploratory analysis of 38 emerging economies. *Journal of Small Business and Entrepreneurship*.
- Williams, C. C., & Gurtoo, A. (2012). Evaluating competing theories of street entrepreneurship: Some lessons from Bangalore, India. *International Entrepreneurship and Management Journal*, 8(4), 391–409.
- Williams, C. C., & Martinez, A. (2014). Entrepreneurship in the informal economy: A product of too much or too little state intervention?. *The International Journal of Entrepreneurship and Innovation*, 15(4), 227–237.
- Williams, C. C., Nadin, S., & Rodgers, P. (2012). Evaluating competing theories of informal entrepreneurship: Some lessons from Ukraine. *International Journal of Entrepreneurial Behaviour and Research*, 18(5), 528–543.
- Williams, C. C., & Shahid, M. (2014). Informal entrepreneurship and institutional theory: Explaining the varying degrees of (in)formalisation of entrepreneurs in Pakistan. *Entrepreneurship and Regional Development*. <http://dx.doi.org/10.1080/08985626.2014.963889>.
- Zelizer, V. (2005). *The purchase of intimacy*. Princeton: Princeton University Press.

## APPENDIX

Table 6. Principal Components Factor Analysis: rotated factor loadings and uniqueness measures

Variables	Factor 1			Uniqueness*
<i>PANEL A: Informality Index</i>				
Company registered as limited liability	0.7551			0.4298
Keep formal accounts	0.6266			0.6073
Registered with tax authorities	0.8452			0.2857
Variables	Factor 1	Factor 2	Factor 3	Uniqueness*
<i>PANEL B: Reasons for starting business</i>				
Could not get a paid job	−0.7166	0.4700	−0.1720	0.2360
More profitable than a paid job	0.5418	0.2649	−0.5334	0.3517
Prefer to be my own boss	0.7560	0.1996	0.1013	0.3784
It is a family tradition	−0.0126	−0.9614	−0.0457	0.0735
Need additional income	0.1865	0.0949	0.8283	0.2702
Other	−0.3974	0.0933	0.3519	0.7095

Source: Informal Enterprise Survey in Lahore (2012–2013). Own calculations.

\*Uniqueness indicates the variance that is unique to the variable and not shared with other variables (it ranges from 0 to 1). As a rule the greater the uniqueness is the lower the relevance of the variable in the factor model.

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