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27 September 2011

Online at <https://mpra.ub.uni-muenchen.de/33775/>
MPRA Paper No. 33775, posted 28 Sep 2011 17:25 UTC

Regulation, Governance and Informality
An Empirical Analysis of Selected Countries

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ABSTRACT

The Informal Economy provides employment to more than 60 per cent of the labour population in the developing world despite being a site unfettered by regulations and social norms of fairness governing pay and work conditions. In assessing the factors behind an informal agent's decision to formalize, it is asserted that rigidity in regulatory mechanism is the primary cause that impedes the process of formalization. However whether flexible regulations can encourage formalization by making gains of formalization more accessible and certain remains a question. In this paper we argue that flexible regulations does not necessarily manifest into the incentives that are essential for formalization. Reducing rigidities in regulation has a significant pay off only in the ambit of good governance. More specifically we hypothesise that degree of intensity of regulation will hardly matter in containing informality; rather what matters is the quality of governance and capability of the institutions to put the regulations into effect. Using secondary data for 46 countries over the period between 1980 and 2008, we empirically investigate into the linkages between governance, regulation and informal employment by developing static and dynamic panel data models and establish that in curbing informality what turns out to be crucial is the interaction between quality of governance and regulation.

Keywords: Formalization; Governance; Informal Economy; Panel data; Regulation

1. INTRODUCTION

The informal economy has been occupying a key position in the development-discourse ever since it was 'discovered' in Ghana in the early 1970s¹. A great deal of literature has emerged in the past forty years directed towards 'formalizing' the concept of informality and to integrate it within mainstream development economic theory. Unfortunately however, the informal economy has not yet received the attention that it merits (Marjit and Kar 2011) given its size² and economic importance.³

Despite employing almost three-fourths of the labor population in the developing world, the informal economy, by and large, comprises of economic units and workers that remain outside the world of regulated activities and protected employment relationships (Chen 2006). According to Hart (2006), the label 'informal' may be popular because it is both positive and negative. "To act informally is to be free and flexible; but the term also says what people are not doing—not wearing conventional dress, and not being regulated by the state" (Hart 2006: 28). Loyaza (1994) claims that the informal sector, however, face the disadvantages of working outside the legal system—it is a site unfettered by the regulations and social norms of fairness governing pay and work conditions that are more at play in the formal sector. The inherently exploitative nature of the informal sector stems directly out of the *missing regulation* associated with the notion of informality. The unregulated informal economy thus manifests itself in underpayment of workers, violation of minimum wage laws, abysmal working conditions and lack of mechanism of workers voicing their concerns to their employers. While this may be the consequence of informality from the micro perspective, from macro view point, "high informality rates limit government resources, which could be used productively, and depress the growth of aggregate demand, hampering a country's successful integration into the world economy" (Bacchetta *et al* 2009: 127). Successful formalization strategies, thus, does not only contribute towards improving the conditions of the labour market but also are preconditions for overall growth and development. These arguments seem to justify why formalization of the informal agents (thereby curbing the size of informality) demands careful attention in the formality-informality discourse. The pertinent question then becomes: What constitutes successful strategies of formalization that will generate incentives attracting informal agents to join the formal economy?

Although formalization aims to bring a substantial part of the unregulated economy under the coverage of regulation, existing literature documents that attempts in tackling informality through legislating strict and rigid regulations proves to be self-defeating and even increases the level informality in an economy. In fact, De Soto (1989) claims that rigid regulations are a cause of informality rather than solution to it. He stresses on the fact that the decision to remain formal or informal depends primarily on the costs and benefits of formalization. Rigid regulations are almost certain to increase costs of and reduce the perceived benefits from the

process of formalization. Recent studies by Marjit and Kar (2011), Amin (2006), Chen (2006), Guha-Khasnobis *et al* (2006) among many others reach similar conclusion.

Given the positive association between rigid regulations and size of informality, the process of formalization is, thus, almost certain to fail with rigid regulations in place. So does this actually mean that the sufficient condition to curb informality and enhance the process of transition from informality to formality is to make gains of formalization more accessible and certain by removing rigidities in regulation and making them more flexible?⁴ Put differently, will some kind of reforms in the existing body of regulation prove to be sufficient in providing incentive to workers to formalize by increasing the benefits of regulation and reducing its cost?

This paper argues that we should exercise caution regarding the process of adding flexibility to the regulatory mechanism to solve the problem of informality as flexible regulation need not always directly manifest into the incentives essential for formalization. We argue that *adjusting regulation to curb informality will bring about the desired effects only when the regulatory institutions have the capability and willingness to put the regulations into effect.* This proposition implies that strengthening the incentive mechanism of formalization requires improving the quality of institutions that have the authority to put the flexible regulations into effect. In other words, it is the quality of governance and institution and the extent to which the regulations are put into effect – in brief, the interaction between governance and regulation - that is important, not the number and quality of regulations on the informal sector. Therefore, instead of only concentrating on the quality of regulation, one should explore the interaction between regulations and quality of institutions deeply.

This paper adds to the growing body of literature of informality by trying to empirically capture the dynamics between regulation, governance and informality using standard econometric techniques. Recent studies (Jonnasen 2011; Adaman and Mumcu 2010; Kanbur 2009, Loayza *et al* 2006; Schneider 2002) have related institutions and governance to informality in theoretical and empirical framework to highlight that good governance has a major role to contain informality and that the impact of regulation is largely contingent upon institutional capacities and the desire and the capability to enforce the same. Our results complement these findings by providing a formal econometric model. We use secondary data on 46 countries from the period 1980 to 2008 to explore the dynamics between regulation and quality of institutions in the context of curbing the size of the informal sector.

The paper is organized as follows. Section 2 presents a brief review of existing literature relating to regulation, institutional capabilities and informal economy. In Section 3 we describe the data used in our analysis. In Section 4 descriptive statistics are reported and graphical analysis of the relation between our study variables is presented. In Section 5, we present the

econometric models and report quantitative results based on the models. Section 6 concludes.

2. LITERATURE REVIEW

The dynamics between regulation and informality has often been explored in development literature. The initial idea was that the informal sector was primarily composed of agents whose primary motive was tax evasion. In that way informality was seen to be akin to illegality. According to Chen (2006), however, the proposition that it was the desire to evade taxes that led agents to operate in the informal sector is an over simplification of the causes of informality. Chen claims that the cost-benefit analysis of working in the regulated sector is important in explaining the choice of working in the informal sector. She points out that economic agents operate informally not to evade taxes but because “the regulatory environment is too punitive, too cumbersome or simply non-existent” and also that agents “would be willing to pay registration fees and taxes if they were to receive the benefits of formality” (Chen 2006: 80).

That the nature of regulation itself leads to its evasion is also documented by Schneider (2002): “The increase of the intensity of regulations is another important factor which reduces the freedom for individuals engaged in the official economy....Regulations lead to substantial increase in labour cost [and] these costs provide another incentive to work in the informal economy” (Schneider 2002: 28). Summarizing Johnson, Kaufman and Sheifer (1997), Schneider further argues that countries with burdensome regulation tend to have a higher share of the unofficial economy in total GDP. It is empirically found that a one-point increase of regulation index, *ceteris paribus*, is associated with 8.1 percentage point increase in share of informal economy. Loyaza (1996) finds evidence that regulations entail a substantial compliance costs in Latin America as well as Asia. Amin (2008) using data of 1948 retail stores in India analyze the effect of labour regulations on employment at store level and conclude that stricter labour regulations encourage firms to operate in the informal retail sector. That burdensome regulation may perpetuate informality is also claimed by Marjit and Kar (2011). They argue that it is possible that imposition of high tax burden may create more informality in the system. They also point out ironically efforts to formalize the informal sector through formal regulations often have an adverse effect on entrepreneurial talent and may lead to loss of employment accentuating the poverty population in the economy. That association of the informal with unstructured has been a powerful impetus for government intervention leading to major policy failures is well documented by Guha-Khasnobis et al. (2006). They present an important case study of Nepal where government’s effort to nationalize forests led to greater deforestation since the government regulatory body could not realize that increasing power of small local communities that were already present and had better structures to deal with the deforestation would have been a better measure of tackling deforestation rather than replacing them by formal state structures. Chen (2006) thus

correctly summarize: “excessive regulation not only hurts one’s attempt to formalize but also his/her effort to earn a livelihood in the informal economy”.

Thus informality can essentially be viewed as a direct outcome of the quality and coverage of regulation. Theories and empirics having strongly established the fact the rigid regulations are mainly responsible for cutting down on one’s incentive to formalize. Thus the natural response to this would be to explore into the possibility of a regulation system which would be more flexible and provide incentives to formalize. Recent works however does not regard flexible regulation or deregulation as the sufficient condition to tackle problems of informality. For curbing informality, removing rigidity may be a necessary condition but the issue of whether introducing flexibility will manifest into the incentives necessary for formalization demands careful analysis. Analyzing consequences of flexibility in labour regulations, Chen (2006) argues that de-regulation of labour markets is often associated with the rise of informalization. She claims that in such cases “workers are caught between two contradictory trends: *rapid flexibilization* of the employment relationship (making it easy for employers to contract and expand their workforce as needed) and *slow liberalization* of labour mobility” (Chen 2006: 89) Thus to protect informal workers from the ‘economic risks’ and ‘uncertainty associated with flexibility and informalization’ the policy of enhancing flexibility in labour regulations seems to be inappropriate and self-destructive. Reflecting on this, recent literature (Jonnasen 2011; Adaman and Mumcu 2010; Boragen Aruoba 2010; Kanbur 2009; Loyaza et al 2006; Chen 2005; Schneider 2002) argue that in reducing the level of informality, the impact of regulation is largely contingent upon the institutional capacities to enforce the laws and regulations that are legislated. These studies argue that what is crucial in context of curbing informality is not simply making regulations flexible but the quality of the institutions that are endowed with the responsibility to enforce the legislated regulations. According to Kanbur (2009) the central determining factor behind the impact of regulation on economic activity is the nature and the intensity of enforcement of regulation. Thus the success or failure of formalization measures depends on the measures themselves as much as on the specific political, economic, social or cultural circumstances of their implementation. For instance, Schneider (2002) argues that a deterioration in the quality of public goods (such as the public infrastructure) and of the administration is often coupled with the consequence of even stronger incentives to participate in the informal economy. Adaman and Mumcu (2010) in an interesting paper using a strategic form game with incomplete information reach a somewhat similar conclusion. They show how perceived governance effectiveness determines a firm’s decision to remain formal or informal. The model constructed by them characterizes informality as a unique self-fulfilling equilibrium outcome that is inversely related to government effectiveness.

These findings demonstrate that lack of proper enforcement—due to institutional failures—reinforces informality (Dreher and Schneider 2010) and thus government should put more

emphasis on improving enforcement of laws and regulation, rather than increasing their numbers (Schneider 2002). Assuming that most of the poor operate outside the formal sector, Marjit and Kar (2011) find “income level of a typical poor is positively affected by weak governance” (Marjit and Kar 2011: 28) suggesting, again, that weak governance perpetuates the level of informality. In this context, Guha-Khasnobis *et al* (2006) cite an important case study by Andersson and Pacheco (2006) which illustrates the differential impact of a decentralization programme adopted in Bolivia on the actual policies adopted by the municipalities. They show that simply assigning formal property rights is not sufficient to ensure that timber practices are improved and income is increased. Municipalities that were well connected to higher level government agencies were able to utilize effectively the new property rights assigned to them. Thus in analyses of formal property rights reform, “these findings illustrate the value of considering the fit between existing local institutional arrangements and the formal government policies”.⁵

Thus recent literature on informality essentially points out that it is the quality of governance and capability of institutions to enforce the regulations—and not simply the coverage of regulations—that determine the size of the informal sector⁶. Based on existing literature we hypothesize that adjusting the coverage of regulations would be completely pointless in enhancing formalization in presence of poor quality institutions. For encouraging formalization (and hence curbing informality) greater emphasis should be put on improving quality of formal institutions and the overall level of governance. The objective of this study is essentially to test the validity of this hypothesis.

3. DATA

In this paper we intend to empirically document the relation among regulation, governance and size of informality⁷. To that end we start by considering data on informal employment⁸ (proxy to size of informality), regulation and quality of legal system (proxy to quality of governance) for 46 countries over the period 1980 to 2008. However, since reliable statistics on informal employment are not readily available for all the countries included in our analysis for every year - particularly among LDCs - the number of observation corresponding to each country differ substantially, varying between 2 to 13⁹. Apart from considering these variables we also consider few other variables which we have used in our regression analyses as control variables in the subsequent section. Details about the data, including a list of countries, are available in the Appendix.

3.1 Size of Informality (INF)

In this study we use data on informal employment as a proxy to size of informality. The study is based on the informal employment data available from World Bank (Key Indicators of Labor Market [KILM])¹⁰ and International Institute of Labor Studies (IILS)¹¹. However, since deficiency of reliable informal employment statistics is pronounced for a large number of

countries and for large time periods, for incorporating some those countries in the analysis, proximate informality figures have been used. For instance, for some countries informal employment (as a percentage of total employment) is taken as the difference between total employment (in percentage) and total wage employment (in percentage), to arrive at a proximate figure where total Employment figures obtained from ILO and wage employment figures obtained from KILM. And in other cases the vulnerable employment (as a percentage of total employment) figures available from World Bank Data Bank have been used as proximate estimates of informality.

3.2 Regulation

Data on regulation has been primarily drawn from Economic Freedom of the World (EFW) Database 2010 (The Fraser Institute). In this report, the extent and nature of regulation legislated in various countries is captured through, namely, index of credit market regulation, index of labour market regulation and index of business regulation. All the indices are in form of scores assigned on a specific scale. The simple average of these three indices is computed to arrive at the index of overall regulation. A brief description of data pertaining to the different categories of regulation is presented below:

- (A) **Credit Regulation (CMR):** This category reflects the domestic credit market conditions. Scoring takes into account the extent to which the banking industry is dominated by private firms, whether foreign banks are permitted to compete in the market, the extent to which credit is supplied to the private sector and whether controls on interest rates interfere with the market in credit. Countries that use a private banking system to allocate credit to private parties and refrain from controlling interest rates receive higher ratings for this regulatory component.
- (B) **Labour Market Regulation (LMR):** Many types of labor-market regulations infringe on the economic freedom of employees and employers. Among the more prominent are minimum wages, dismissal regulations, centralized wage setting, extension of union contracts to nonparticipating parties, and conscription. A country which allows market forces to determine wages and establish the conditions of hiring and firing, and refrain from the use of conscription have been given higher scores
- (C) **Business Regulation (BR):** This regulation-category is made up of components designed to identify the extent to which regulations and bureaucratic procedures restrain entry and reduce competition. High scores have been allotted to countries which allow markets to determine prices and refrain from regulatory activities that retard entry into business and increase the cost of producing products.
- (D) **Overall Regulation (REG):** Scores on overall regulation is the simple average of credit market regulation, labour market regulation and business regulation. Zero-to-10 rating scale; higher ratings indicative of greater flexibility in the system or greater economic freedom, lower ratings imply presence of rigidity in the system.

3.3 Index of Governance (LP)

Index of Governance essentially captures the quality of institutions in an economy. It is proxied by the Index of Legal System derived from the Economic Freedom of the World Database 2010. The data corresponding to the index of legal system are in form of scoring/ranks: higher scores assigned to countries with independent judiciary, impartial courts, protected property rights, easy enforceability of contracts etc.

3.4 Control Variables

Our study pre-dominantly explores the relationship among regulation, quality of governance and size of informality. However, since the relationship between these variables gets influenced by several other variables we try to incorporate a representative set of these variables in our regression analysis so as to control for the effects that these variables might generate on the estimated relationships among the study variables. In this study, we use four such variables, namely, log of GDP per capita (constant 2000 US \$) (LGDPPC), index of size of government, index of access to sound money and index of trade openness (proxied by index of freedom to trade internationally)¹². To control for the impact of growth on the level of informality, log of GDP per capita is used in our analysis (Loyaza et al. (2006) find that growth has a significant negative effect on the size of informality).

The index of size of government (SOG) measures the degree to which a country relies on personal choice rather than government budgets and political decision making, that is, it measures the extent to which countries rely on political process to allocate resources and goods and services. Countries with low levels of government spending as a share of the total, a smaller government enterprise sector, and lower marginal tax rates earn the highest ratings in this area. The reason for inclusion of this variable as a control variable is that the presence of government must influence the share of formal employment – by either providing direct employment opportunities to the workers or creating a space for formal transactions.

The index of access to sound money (SM) incorporates two issues: one, the consistency of monetary policy (or institutions) with long term price stability and two, the ease with which other currencies can be used via domestic and foreign bank accounts. High rating have been given to those countries which follow policies and adopt institutions that lead to low (and stable) rates of inflation and avoid regulations that limit the ability to use alternative currencies. The index of access to sound money is used in our analysis with the following objective: since informal employment gives much flexibility to producers (they do not have to adhere to minimum wage laws etc.), they would like to prefer to employ workers from the informal sector in presence of highly volatile financial conditions and unstable money market in order to avoid risk. In other words, unstable money market does not encourage business activities to be thrived and thereby let the workers to find livelihood in the informal sector.

The index of trade openness (FTI) proxied by index of freedom to trade internationally comprises of components that measure restrictions on international trade such as tariffs, quotas, hidden administrative restraints and exchange rate and capital controls. Higher ratings have been assigned to those countries which have relatively more flexible trade barriers: low tariff, a trade sector which is larger than expected, easy clearance and efficiency of customs etc. Recent theoretical literature (Marjit and Kar 2011; Maiti and Marjit 2008; Marjit *et al* 2007, Marjit and Beladi 2005; Kar *et al* 2003) has identified a number of mechanisms through which trade can affect informal employment and informal wages. In most cases, trade reforms increase informal employment. Thus we intend to control for the possible effects of trade openness on informality in exploring the linkages among regulation, governance and size of informality.

Among the control variables used, GDP per capita (at constant 2000 USD) figures have been derived from the World Bank Databank and all other indices have been derived from the Economic Freedom of the World Database.

4. STYLIZED FACTS

This section provides stylized facts pertaining to the three key variables of our analysis. We begin by analyzing the present state of informality across the world in brief and then go on to examine the relation among the three variables somewhat informally before going for formal regression.

4.1 Status of Informality across the Globe

The importance of the informal economy primarily stems out of the fact that this sector employs more than 60 percent of the labour force in LDCs. Not only is informality a reality in the third world nations, it also is the means of livelihood of around 20 to 30 percent of the working population in the developed nations. Our sample reveals a somewhat similar picture. Table 2 shows the informal employment figures for the developed and the less developed countries for the decade of 1990 followed by the decade of 2000. Three observations are worth noting. Firstly, for both the decades informal employment in less developed countries is almost double than that of developed countries; secondly, informal employment exhibits a persistent nature, that is, for both - the less developed and the developed - informal employment has remained almost stable over both the decades, and thirdly, developed countries registers a three percent drop in the level of informal employment.

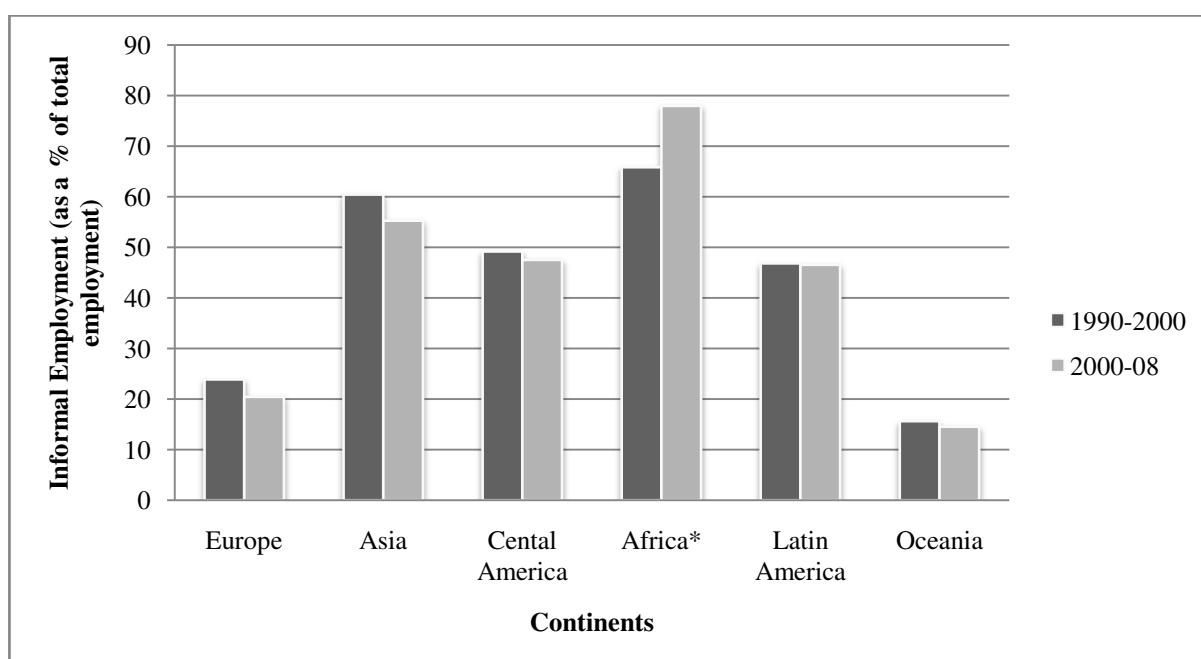
Table 1. Mean Informal Employment (in %) in Developed and Less Developed Countries

Countries	Years	
	1990-2000	2000-08
Developed	31.80	28.74
Less Developed	62.48	61.13

Source: KILM, ILS and own estimation.

Figure 1 shows informal employment for five regions, namely, Europe, Asia, Central America, Africa, Latin America and Oceania. For both, 1990s and 2000s, Africa (excluding South Africa) exhibits highest average informal employment among all the geographical regions and Oceania exhibits the lowest.

Figure 1. Mean Informal Employment in Six Continents



Note: (*) indicates that in estimating mean informality for Africa we have not considered South Africa.

Source: KILM, ILS and own estimation.

Table 2 complements Figure 1 to indicate the variation in size of informality across continents. Highest variation in informal employment is observed for Asia perhaps due to the fact that the nations from Asia included in our sample come from both the ends of spectrum of informal employment, that is, our sample includes developed Asian countries like Japan (which exhibits low levels of employment in the informal sector) as well as developing Asian countries like India and Bangladesh (having extremely high informal employment). Variation

in case of African nations are not however significant since the spread of informal employment is almost same for all the African nations (excluding South Africa). The two Americas (Central and Latin America) exhibit moderate levels of informality coupled with fairly low variation for both the decades. Low mean and variation is persistently displayed by Oceania followed by Europe. This is no surprise since these regions house most of the developed nations of the world.

Table 2. Standard deviation of informality rates across continents

<i>Continents</i>	1990-2000	2000-08
Europe	12.91	13.07
Asia	24.08	23.22
Central America	14.57	11.47
Africa*	16.18	10.65
Latin America	8.16	8.34
Oceania	5.78	4.76

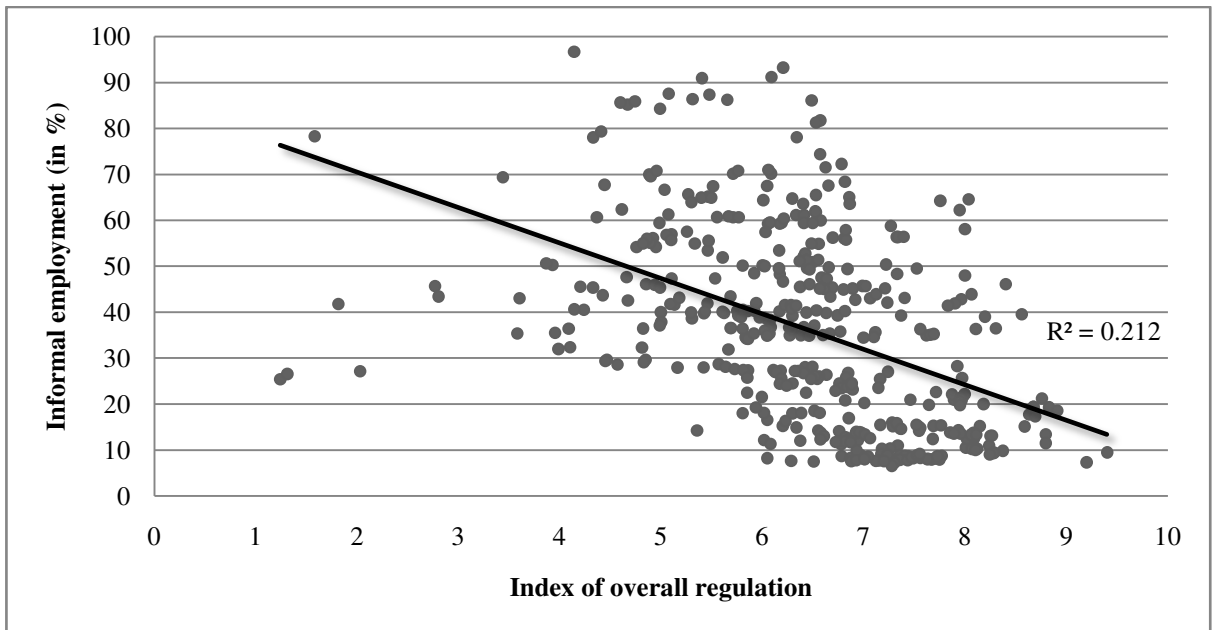
Note: (*) indicates that in estimating mean informality for Africa we have not considered South Africa.

Source: KILM, ILS and own estimation.

4.2 Linking Informality with Regulation and Governance

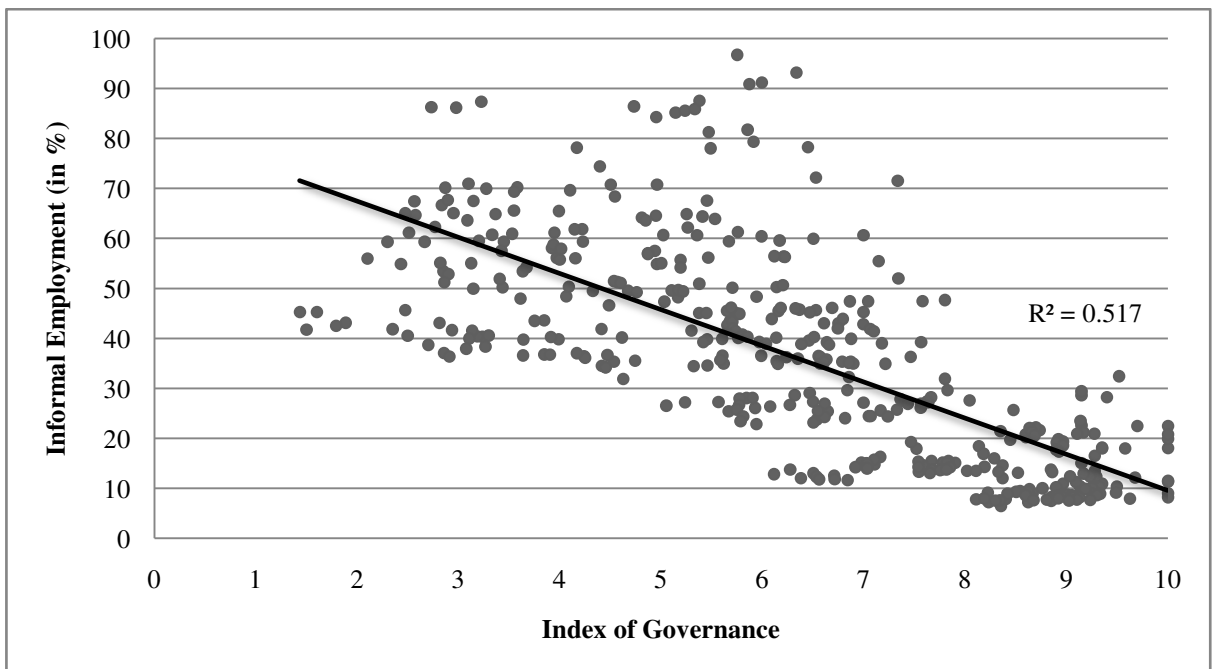
In order to analyze the linkages between regulation and informality and quality of governance and informality, we start with a visual exercise. Figures 2 and 3 shows scatter plots that represent the relationship between Index of Overall Regulation and Informal Employment and Index of Governance and Informal Employment. The graph using Index of Overall Regulation indicate that countries that have more flexible regulations have lower share of informal employment confirming that rigid regulations do indeed perpetuate informality. The correlation matrix presented in the Appendix also shows that credit market, labour market and business regulations all are negatively correlated to informality. The graph using Quality of Governance (as proxied by Index of Legal System) also shows a somewhat similar relationship indicating countries with weak governance (such as, Bangladesh, Brazil, Colombia, Georgia, India, Pakistan, Zambia, Zimbabwe etc.) have a larger share of workforce employed in the informal sector. However there is at least one caveat regarding such visual evaluation. When evaluating the impact of regulation on size of informality we cannot say to what extent other related variables (like quality of institutions, say) exert their influence on the relationship between informality and quality of governance. Assessing the impact of a particular variable on another, essentially, calls for computation of marginal effects controlling for all other variables that might possibly affect the relationship. For evaluating public policy the goal should be to find the causal effect between variables of our interest, which is carried out in the next section using multiple regression analysis.

Figure 2. Relation between Informal Employment (in %) and Index of Overall Regulation



Source: KILM, IILS, EFW Database and own estimation

Figure 3. Relation between Informal Employment (in %) and Index of Governance



Source: KILM, IILS, EFW Database and own estimation

5. REGRESSION ANALYSIS

5.1 Methodological Issues

The formal empirical analysis of this study is based on the estimated equation:

$$Y_{it} = \alpha + \beta X_{it} + \theta Z_{it} + \mu_i + \varepsilon_{it}$$

where i denotes country and t denotes time. Since our analysis is based on panel data, the disturbance term is composed of two parts—a time invariant country (individual) specific effect μ_i and an independent and identically distributed (i.i.d) error component ε_{it} . Explanatory variables are split into variables of interest X_{it} and control variables Z_{it} .

Given our research design, the panel data model is preferred over pure time-series or cross-section models atleast for two reasons. Firstly, in the regression model that we use, it is difficult to specify and include all background conditions that influence effectiveness of policy or may be correlated with it. This implies that we have to contend with various sources of omitted-variable bias. Since in pure cross-section we cannot control for time invariant regional unobservable variables, any potential problem of omitted variable bias may become much more severe (Rodrik 2008). However, by using panel data models we can control for time invariant country specific effects which can in turn tackle reduce the severity of this problem. Secondly, since number of data points for each country included in our analysis is limited (minimum=2 and maximum=13), analyzing countries individually would not have been possible for most of the countries.

Static panel data models can be estimated either by generalized least squares (GLS) or ordinary least squares (OLS) method depending on the assumption made about the relationship between the set of explanatory variables and the individual specific effect. If it is assumed that explanatory variables are uncorrelated with the individual specific effect in all time periods, the model is called the Random Effects (RE) Model. Such models are estimated by the GLS method, as such specification result in non-spherical variance covariance matrix. In absence of such assumption, the model is called the Fixed Effects (FE) Model. This is estimated by the standard OLS method eliminating the individual specific effect by 'within group transformation'. Though Baccheta et al (2009) argue that the GLS technique may be regarded to be a more appropriate method, we estimate both versions of panel data model.¹³

The scheme of our regression analysis is as follows: We start off with the standard static panel model regressing informality on overall index of regulation, and each of the three categories of regulation separately. In each equation, following Loayza et al (2005), we also include interaction variables which are constructed by multiplying the index of governance and the index of regulation. These interaction terms are included to capture the capacity of the institutions to implement the regulations. For instance, in the first model we regress informality on Index of Overall Regulation and the respective interaction term (Index of overall regulation x Index of governance) along with a set of control variables; in the subsequent

models we repeat the same exercise replacing the variables of interest used in first model by different indices of regulation and the respective interaction terms. This is done in order to analyze how the effect of regulation on informality evolves with changes in quality of governance.

Static panel estimators used in this study, however, cannot account for the possible endogeneity between implementation of regulation and informality. It is quite likely that the size of informal economy is by itself a likely factor in determining a country's implementation of regulation. This reverse effect is a potential source of bias in the estimated coefficients. To address this endogeneity bias we implement the Arellano Bond Generalized Method of Moments (GMM) estimator that uses lagged values for all variables as instruments.

5.2 Results and Discussion

5.2.1. Static Panel Regression Results

Table 3 present the static panel regression results for different specifications of the basic model.

Table 3: Static Panel Regression Results

Dependent Variable: Informal Employment (Inf)

	Model 1		Model 2		Model 3		Model 4	
	RE	FE	RE	FE	RE	FE	RE	FE
LGDPPC (t-1)	-31.27*** (-13.55)	-28.71*** (-7.25)	-31.85*** (-13.83)	-30.44*** (-7.19)	-31.42*** (-13.29)	-28.13*** (-6.94)	-30.73*** (-13.19)	-27.31*** (-6.99)
SOG	0.12 (0.61)	0.09 (0.41)	0.14 (0.67)	0.12 (0.57)	0.27 (1.28)	0.23 (1.01)	0.12 (0.62)	0.07 (0.35)
SM	0.41* (1.76)	0.36 (1.53)	0.44** (1.88)	0.39* (1.68)	0.45* (1.87)	0.39 (1.61)	0.43* (1.84)	0.38 (1.59)
FTI	-0.33 (-1.29)	-0.28 (-1.07)	-0.37 (-1.50)	-0.36 (-1.37)	-0.32 (-1.11)	-0.23 (-0.79)	-0.16 (-0.58)	-0.08 (-0.26)
REG	0.68* (1.73)	0.70* (1.77)						
CMR			0.57** (2.18)	0.58** (2.15)				
LMR					-0.02 (-0.04)	0.01 (0.01)		
BR							0.94*** (2.88)	0.96*** (2.89)

	Model 1		Model 2		Model 3		Model 4	
	RE	FE	RE	FE	RE	FE	RE	FE
LP*REG	-0.08** (-2.10)	-0.07** (-2.05)						
LP*CMR			-0.05*** (-2.04)	-0.06* (-1.92)				
LP*LMR					-0.03 (-0.83)	-0.03 (-0.87)		
LP*BR							-0.10*** (-2.74)	-0.10*** (-2.66)
Constant	151.34*** (16.99)	140.79*** (9.37)	153.22*** (17.32)	147.22*** (9.24)	153.203*** (16.52)	139.93*** (8.90)	147.64*** (16.16)	133.74*** (8.81)
Wald Chi-sq, Prob> chi-sq	244.81 0.00		257.22 0.00		226.83 0.00		236.76 0.00	
F-Statistic Prob> F		12.208 0.00		12.84 0.00		11.84 0.00		13.30 0.00
R sq. (within)	0.27	0.27	0.27	0.27	0.26	0.26	0.28	0.28
R sq. (bet.)	0.81	0.81	0.81	0.81	0.82	0.81	0.82	0.82
R sq. (overall)	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
No. of Obsv.	254	254	254	254	251	251	251	251
No. of countries included	40	40	40	40	40	40	40	40

Notes:

- (1) ***, **, * indicates coefficient is significant at 1%, 5% and 10% level of significance respectively.
- (2) Wald Chi-Square is used to assess the overall model fit for Random Effects (RE) Model and F-statistic is used to test the overall model fit for Fixed Effects (FE) Model.
- (3) Figures in parenthesis denote z-statistic and t-statistic for RE Model and FE Model respectively.

Source: Own estimation.

In Model 1 we report the results obtained by regressing informality on index of overall regulation and its interaction term with governance along with the set of control variables for both random effect model and fixed effect model. Both the versions—Random Effect and Fixed Effect—show a very good overall model fit as indicated by the Wald Chi-Square and F-statistic respectively. The index of overall regulation has a significant positive association with informality for both versions of the model. This essentially means that as regulatory system is made more flexible - instead of inducing workers to join the formal sector and thereby curbing informality - informal employment seems to rise. However, when we allow impact of regulation on informality to vary with quality of governance, the positive association of the index of regulation with informality seems to be mitigated when quality of governance rises. Therefore for low levels of governance, increasing flexibility of regulations will have an adverse effect on the process of formalization in both the types of models. As governance improves, the amplifying effect of these types of regulation on informality dampens. As for the set of control variables, results indicate GDP per capita of the previous period is significantly related to informality in a negative way implying that economic growth does adversely affect informality. The coefficient of sound money—for only Random Effects—is also significant but positive which means that an increasing access to sound money will induce greater informality. The indices of size of government and trade openness, although are positive, but fail to be significant.

Models 2, 3 and 4 reports the results obtained by regressing informal employment on different categories of regulation along with their interaction terms with governance. The set of control variables for each of the model are identical to 1. All the three specifications show a very good overall model fit for both fixed and random effect versions. When testing for association between informal employment and each category of regulation separately we find that both credit market regulation and business regulation are positively and significantly related to informal employment for both random effect as well as fixed effect specification which implies that as credit market and business regulations are made less rigid, at low levels of governance, informality tends to rise. However, the respective interaction terms are significant and negative implying that with rise in quality of governance, flexible business and credit regulations does have an informality-curbing effect. However, in case of labour regulations we observe that neither the coefficient of labour market regulation nor that of its interaction term appears to be significant in both random effect as well as fixed effect model. This is in fact a puzzling result since it is very unusual that increasing the flexibility of labour regulation even in presence of good governance will not affect informality! We shall see later if this puzzle gets resolved when we use the GMM regression to account for the possible endogeneity in the subsequent section. The control variables in models 2 and 4 give a more or less consistent result. For both the specifications, the coefficient of one period lagged value of Log of GDP Per Capita is negative and significant. Index of Sound money is also significant for both the cases (however, index of sound money is only weakly significant for the fixed effect versions for equations with explanatory variables as credit market regulation and business regulation and insignificant for that with labour market regulation as explanatory variable) but is negative. The other two control variables fail to show significance for all the model specifications. For checking whether the findings obtained from static

panel regression are robust enough we shall go for the GMM estimation coping up with the problem of endogeneity if any.

5.2.2 Arellano Bond GMM Regression Results

The Arellano Bond GMM results are reported in Table 4.

Table 4. Arellano Bond GMM Regression Results

Dependent Variable: Informal Employment (INF)

	Model 1	Model 2	Model 3	Model 4
INF (t-1)	0.47*** (7.03)	0.43*** (6.33)	0.50*** (7.39)	0.48*** (7.38)
SOG (t-1)	-0.50** (-2.08)	-0.41* (-1.79)	-0.45* (-1.90)	-0.46** (-1.97)
SM (t-1)	0.22 (0.93)	0.23 (1.00)	0.21 (0.94)	0.16 (0.69)
FTI (t-1)	0.65*** (2.85)	0.68*** (3.08)	0.80*** (3.25)	0.78*** (3.31)
REG	0.33 (0.74)			
CMR		-0.08 (-0.24)		
LMR			0.63* (1.78)	
BR				0.59 (1.64)
	Model 1	Model 2	Model 3	Model 4
LP*REG	-0.09** (-2.24)			
LP*CMR		-0.05* (-1.75)		
LP*LMR			-0.11*** (-2.82)	
LP*BR				-0.11** (-2.59)
Constant	15.47*** (3.65)	18.03*** (4.46)	12.11*** (2.96)	13.72*** (3.66)
Wald Chi-Square	122.58	130.83	126.23	125.15
Degrees of Freedom	6	6	6	6
P-value	0.00	0.00	0.00	0.00

No. of instruments	62	62	62	62
No. of Observ.	213	213	210	210
No. of countries included	39	39	39	39

Notes:

- (1) ***, **, * indicates coefficient is significant at 1%, 5% and 10% level of significance respectively.
- (2) Wald Chi-Square is used to assess the overall model fit.
- (3) Figures in parenthesis denote z-statistic.

Before analyzing the GMM results we would first like to point out the changes in the structure of the model that we have used. First, the GMM regression technique uses lagged value of the dependent variable as an independent variable. Since informal employment and log of GDP per capita are highly correlated, using both these as independent variable may lead to the problem of multicollinearity. In fact, the reason we had used GDP per capita as a control variable in the static panel regression was to control for economic growth. This function is now being undertaken by the lagged informality term, rendering GDP per capita superfluous. So owing to these facts, we decide to drop log of GDP per capita from our set of control variables. After having made this change we proceeded with the GMM technique keeping other control variables intact. However, the results that we obtained were not impressive—apart from lagged informality, all other control variables are insignificant. We subsequently tried a different specification of the basic model— we used one period lagged value of the control variables in our regression. Results improved significantly. Three out of four control variables are significant in all the model specifications. We therefore report results pertaining to this model only.

All the four specifications show a good model fit as indicated by the value of Wald Chi-square. We find that, unlike results from the static panel model, coefficients of indices of overall, credit market and business regulation are insignificant. This implies that, for low levels of governance, regulations do not affect informality. So legislating regulations with the view to provide formal workers more security (thereby trying to attract informal workers to the formal sector) or relaxing credit norms for formal entrepreneurs (as a part of the incentive scheme designed for informal entrepreneurs to start entrepreneurial activities in the ambit of formal sector) will be totally meaningless in presence of weak institutions which have little or no capability of implementing these regulations. However, labour market regulations exhibit a somewhat differential impact on informality. The coefficient of labour market regulation shows significance (although at 10 percent level) and its positive sign possibly indicates that in presence of weak governance, flexible labour regulations allow “formal” employers to hire workers “informally” making the entire process of legislation of pro-formalization regulations superfluous. The interaction terms with governance for all the model specifications, however, are negative and significant implying as quality of governance improves, flexible regulations do help in curbing the size of informality, thereby enhancing the process of formalization.

As for the control variables, the coefficient of lagged informal employment and index of trade openness are positive and show significance at one percent level for all the model specifications implying that past period’s informality as well as past period’s trade openness have a positive impact

on the current period's size of informality. Coefficient of size of government is significant but negative for all the specifications. This indicates that enhanced opportunity for increased formal transactions due to presence of government regulations across all the sectors in the economy will reduce informality. Lagged value of index of sound money, however, does not show significance in any of the specifications possibly due to the problem of multicollinearity.

The Arellano Bond regression results depart from the static panel results on more than one count:

1. Although the signs of all the interaction terms in the different specifications remain unchanged, the interaction between labour market regulation and governance which was found to be insignificant in the static panel regressions now becomes significant in the GMM set-up.
2. The results of the static panel model led to the conclusion that in presence of weak governance, flexible regulations lead to an increase in informal employment. A similar effect is not found in the Arellano Bond specification — in presence of weak institutions, informality is unaffected by the quality and extent of regulation.
3. The control variables also seem to show differential influence in Arellano Bond specification. Size of Government and trade openness become significant; moreover their signs changes vis-à-vis static panel specification. On the other hand, index of sound money becomes insignificant in the dynamic model.

6. CONCLUSION

This paper empirically examines the linkages between regulation, quality of governance and the size of informality. A simple empirical model was designed to show how formal regulations affect the size of the informal sector with varying levels of governance captured in our analysis through the usage of the interaction term between regulation and governance. The empirical assessment of the model supports the main hypothesis: size of the informal sector is lower (and hence, rate of formalization is higher) where regulations are flexible and the government has the requisite institutional capacity to implement the flexible regulations. This in fact suggests that in context of curbing informality, a sole focus on quality and coverage of regulations will not help the policymakers realize their objectives; rather a complementary action of removing rigidities in regulation and improving quality of governance may have a significant pay-off. Flexible regulations, coupled with weak institutions will be a complete failure.

This paper does not aim to provide any advice on policy issues such as how to tackle informality. Nevertheless, a brief conclusion that is obtained from our analysis is worth mentioning. First of all, the state should emphasis more on capacity building before trying to intervene. Second, a key issue in building capacity is to endow local regional units with greater autonomy—that is, strengthening local governance—so that desired regulation can be properly handled. For devising a policy of providing incentive to the informal agents to formalize, such local bodies must be strengthened as these bodies play the pivotal role to improve the quality of “social contract” between the regulatory

authorities and the citizens (Jonnason 2011). However, although strengthening governance may be a justifiable proposition in an autocracy, its feasibility in a democracy remains uncertain. Recent studies by Marjit and Kar (2011) indicate that the quality of governance is often likely to be determined by electoral motives. They argue that if the government is *forced* to lower tax rate on formal transactions (what we refer in our study as implementation of flexible regulation) in order to encourage formalization, it is left with lower tax revenue for re-distribution, which, in turn, hurts it's chance of returning to power in the election. Therefore, in a democratic system, government lowers the governance level, indirectly favouring redistribution towards the poor by encouraging informality. Therefore, the manner in which the instrument of governance is effectively used to encourage formalization remains an interesting agenda for future research.

ACKNOWLEDGEMENTS

We are indebted to Dibyendu Maiti (Assistant Professor, Institute of Economic Growth) for many useful and detailed discussions. We also express our sincere gratitude to Sugata Marjit (Director and RBI Chair Professor of Industrial Economics, Centre for Studies in Social Sciences Calcutta) and Zakir Husain (Associate Professor, Institute of Economic Growth) for incisive and helpful comments. The usual disclaimer applies.

APPENDIX

1A. List of Countries included in the analysis

- | | | |
|----------------|-----------------|---------------------------|
| 1. Argentina | 17. India | 33. Paraguay |
| 2. Australia | 18. Indonesia | 34. Peru |
| 3. Bangladesh | 19. Italy | 35. Poland |
| 4. Belgium | 20. Japan | 36. Portugal |
| 5. Bolivia | 21. Kenya | 37. South Africa |
| 6. Brazil | 22. Luxembourg | 38. Spain |
| 7. Chile | 23. Malaysia | 39. Switzerland |
| 8. China | 24. Mali | 40. Thailand |
| 9. Colombia | 25. Malta | 41. United Kingdom |
| 10. Costa Rica | 26. Mexico | 42. Uruguay |
| 11. Croatia | 27. Netherlands | 43. Venezuela, Bolivarian |
| 12. Ecuador | 28. New Zealand | Republic of |
| 13. Finland | 29. Nicaragua | 44. Vietnam |
| 14. Georgia | 30. Norway | 45. Zambia |
| 15. Greece | 31. Pakistan | 46. Zimbabwe |
| 16. Honduras | 32. Panama | |

Table 1A: Descriptive Statistics for the Variables

Variables	Mean	SD	Skewness	Kurtosis	Minimum	Maximum	Observations
INF	36.34	21.06	0.49	2.51	6.52	96.70	423
REG	6.43	1.25	-0.78	4.69	1.20	9.40	423
CMR	7.80	1.69	-1.45	6.06	0.00	10.00	423
LMR	5.65	1.43	0.11	2.27	2.30	8.60	372
BR	5.82	1.19	0.12	2.96	2.70	9.40	329
LGDPPC	3.74	0.58	-0.35	2.19	2.28	4.75	423
LP	6.30	2.10	-0.18	2.10	1.40	10.00	422
SOG	6.06	1.40	-0.25	2.49	2.00	9.30	423
SM	8.01	1.92	-1.62	6.01	0.00	9.80	423
FTI	6.97	1.25	-1.45	6.21	1.50	9.30	422

Source: KILM, ILSS, Economic Freedom of the World and own calculation.

Table 2A. Correlation Matrix

	INF	REG	CMR	LMR	BR	LGDPPC	LP	SOG	SM	FTI
INF	1									
REG	-0.57	1								
CMR	-0.56	0.78	1							
LMR	-0.21	0.75	0.33	1						
BR	-0.57	0.78	0.49	0.37	1					
LGDPPC	-0.90	0.54	0.50	0.19	0.59	1				
LP	-0.76	0.69	0.47	0.39	0.77	0.79	1			
SOG	0.43	-0.06	-0.11	0.17	-0.21	-0.45	-0.45	1		
SM	-0.73	0.54	0.45	0.26	0.54	0.56	0.56	-0.16	1	
FTI	-0.41	0.48	0.37	0.22	0.55	0.42	0.55	-0.15	0.63	1

Source: Economic Freedom of the World Report and own calculation

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NOTES

¹ The 'informal sector' was given its due recognition in development literature for the first time in the 1970s following subsequent studies on the poor labour population of Africa conducted by International Labour Office (ILO) Mission to Kenya (1972) and Keith Hart (1973).

² Traditionally, persistent informality ranges between 25 percent to more than 90 percent in developing countries. ILO figures indicate that in recent years informal employment was around 90 percent in India and around 96 percent in Mali.

³ The informal economy forms a cushion to otherwise unemployed workforce (more precisely those who do not manage to secure formal employment) and provides a much needed breathing space to the majority of the workers in developing economies. In the past decade almost 60 percent of workers of the developing world found income opportunities in the informal economy (Baccheta et al., 2009).

⁴ Throughout our analysis we shall repeatedly encounter the concepts of rigid and flexible regulation. So we would at this very juncture try to precisely define the two most important concepts that this paper deals with. Rigid regulations are those that are assumed to sap all the incentives of economic agents to formalize. On the contrary, flexible regulations are designed so as to provide incentive to informal agents to formalize. The phrase flexible regulations as used in this study essentially means regulations designed to encourage formalization which include formalizing property rights of the workers, reducing tax rates on formal transaction, increasing availability of credit to small formal entrepreneurs, removal of price controls etc. More precisely, in line with the definition adopted in the database used for empirical analysis in the subsequent section, flexible regulations are assumed to increase the "economic freedom" of the agents operating in the economy minimizing the intervening role of the state.

⁵ That the policy of building capacity of institutions so that they can handle the desired regulation is extremely important from policy view point is also illustrated by Nugent and Swaminathan (2006). They showed that when government of Indonesia backed the local health centres, this increased levels of voluntary labour supply to the centers.

⁶ Analyzing the linkages between governance effectiveness and informality for Brazil, Antonio Carvalho Neto of PUC, a university in Brazil, commented that “If you go to a shopping centre [in Brazil] there will be two or three workers who have their work papers to show when the inspectors turn up, and the rest just pretend to be customers. This is in big towns. Imagine what it’s like in the interior.” Mr. Carvalho claims Brazil suffers from a duplicity. “The laws are quite good. But half the country is obliged to obey them and the other half takes no notice at all” (The Financial Times, 6 May 2010).

⁷ Given the focus of this paper, the definition of informality used in this chapter identifies it with evasion of regulation. This definition was proposed by De Soto (1989) and has come to become the most popular definition of informality ever since.

⁸ In this study informal employment is simply used as a proxy in measuring size of informality. So we do not strictly differentiate between informal employment and employment in the informal sector.

⁹ Countries with small number of observations have been used in our analysis for their extreme relevance in the study of informality. For instance, although there are only 2 observations corresponding to Mali, it is retained because informal employment in Mali is more than 95 percent of its total employment!

¹⁰ The KILM indicator is a measure of employment in the informal sector as a percentage of total employment, i.e. the ratio between the number of persons in informal sector employment and the total number of employed persons. There are wide variations in definitions and methodology of data collection related to the informal sector and there are as many as five series of employment in the informal sector data based on five different definitions. While one country might have had available information on informal sector employment according to multiple series, only one series is shown in the KILM database; this is the series deemed to be best in terms of definition applied, geographic coverage and/or length of the time series.

¹¹ ILS gives four different measures of informal employment. We have used the series which is based on national definition of informal employment.

¹² Indices of size of government, access to sound money and freedom to trade internationally are composite indices. Index of size of government is represents four aspects of governance, namely, government consumption spending as a percentage of total consumption, transfers and subsidies as a percentage of GDP, government enterprises and investment and top marginal tax rate. Index of access to sound money comprise of four sub-categories, namely, money growth, standard deviation of inflation, inflation in most recent year and freedom to own foreign currency bank accounts. Index of freedom to trade internationally represent four aspects of trade openness, namely, taxes on international trade, regulatory trade barriers, size of trade sector relative to expected, black market exchange rates and international capital market controls. All these indices have been derived from Economic Freedom of the World Database (The Fraser Institute).

¹³ Baccheta et al. (2009) claim that application of standard least squares estimation technique in such analyses will yield biased and/or over-optimistic results since it is confirmed by various (panel) auto-correlation tests that informality rates within countries are highly persistent. So to control for auto-correlation, they suggest, preferred estimator should be generalized least squares, controlling in addition for heteroscedasticity and—depending on the model specification—for sample wide or panel-specific autocorrelation.