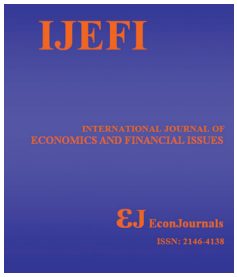

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The Impact of Informal Sector on Income Distribution: Could Concentration of Income be Explained by the Size of Informal Sector?

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ABSTRACT

This paper uses a cross-sectional data to explore the impact that informal sector has on income variation across different income categories. Instead of using GINI coefficient, the paper considers income shares of decile groups of population. The results reflect a dual role of informal sector in economy. On one hand, informal sector could reduce the gap between income earners at the bottom level of income categories. On the other hand, the size of informal sector could exacerbate the gap between top income earners and other categories indicating further concentration of income. Some implications are discussed.

Keywords: Income Distribution, Informal Sector, Concentration of Income
JEL Classifications: E26, O15

1. INTRODUCTION

Informal sector has been a serious headache to developing countries. It has been part of all debates that discuss policies that promote economic growth and poverty alleviation of countries.

Indeed, main reason that explains the study of informal sector is its impact on the development of the economy. The informality of the economy is concomitant with a reduced tax collection for the country, socially unprotected labor and limited investment of size constrained firms. The upshot is underprovided public services, unproductive and underpaid workers and inefficient firms. This a universal threat that undermines the future of many countries considering the sheer size of informal economy in global economy in general and in less developed country in particular. According to some estimates, the scale of employment in the informal sector amounts to as much as 1.8 billion workers out of a total of 3 billion workers worldwide. The estimates are more acute in less-developed countries. For example, in 2008 informal employment was estimated as high as 48% in North Africa and beyond 71% in sub-Saharan Africa (ILO, 2008).

Notwithstanding, more recent literature depicts informal sector as a window of opportunity for many workers and firms which find in informality the chance to generate income and get employed that would be hard or impossible to have in a heavily regulated formal sector. Add to this, informal sector provides a serious venue to individuals and firms to sharpen entrepreneurial culture generating wealth. This venue is not anymore confined to marginal activities but is large enough to accommodate firms in manufacturing operations (Adams et al., 2013).

The undeniable persistence of informal sector in the economy of countries and its seemingly convoluted role in the socioeconomic sphere calls for a special investigation of its impact on income distribution. This investigation is motivated by the fact that it clarifies, for one, further the question of whether it contributes to a better well-being for social groups who were able, because of it, to harness their entrepreneurship culture. Also, this investigation could help explain why this sector is persistent over time and space.

2. INFORMAL SECTOR AND INCOME DISTRIBUTION: CAUSAL RELATIONSHIP

The effort to link between income distribution and informal sector is not novel. Perhaps one of the most apparent and nicely

described causation is the one reported by Rosser et al., 2000; informal sector leads to low tax revenues which in turn leads to poor provision of social services which in turn exacerbates income inequality. Deterioration of this latter undermines the confidence of the economic agents leading to more participation in informal economy.

Further coverage of literature seems to be, however, more interested in the direction of causation that goes from income distribution to informal sector explaining the role of income distribution in determining the size of informal sector. For example, Chong and Gradstein (2004) argue that higher inequality, in conjunction with weak institutions, increases the degree of informality. Winkelried (2005) argues that informal sector expansion or retraction is contingent on the aggregate demand which, itself, is determined by income distribution. Redistributed income that support middle class could decrease informal sector and makes public policies that target informality (such as fiscal policy) more effective. Schneider and Enste (2000) argue that a large social welfare system aimed to flatten the income distribution should increase the size of the informal economy because of strong disincentives to work in the formal economy, although this heavily depends on the nature of the public transfers programs (whether it is targeted or redistributive).

Efforts covering the impact of informal sector on income distribution are still scant, notwithstanding. The literature is not substantially rich in this regards. Except few attempts such as the aforementioned Rosser et al. (2000) or Krstic and Sanfey (2011), it is hard to find further similar readings in the literature. The scarcity in this area of research is more acute in relation to the impact of informal economy on the income variation across different income categories.

One way of contributing to the debate is to encapsulate the paradoxical role of informality in the economy. In other words, it is worth to investigate the impact of informal sector on income distribution while not assuming solely the negative effect of informality on economy (Rosser et al., 2000) but also taking into consideration its potential benefits for individuals and firms, which have difficulty to enter formal business environment. Reconsideration of the link between informality and income distribution in this way has important implications for the related literature. This implies major hypotheses:

1. H_1: It could mean that informality could be an important source of income inequality wherein income concentration becomes more prominent at the top earners.
2. H_2: Equally valid, however, it could mean that informality in the economy could lead to less income inequality wherein income concentration becomes less prominent across the boards as more opportunities are given to more people to share economic wealth.

H_1 is a dangerous outcome due to the potential detrimental impact of income concentration at the top earners on long term economic growth and economic development in general (Easterly, 2007; Berg et al., 2012; Piketty, 2014). In fact, H_1 implies an important point. In the recurrent literature informal sector is treated as an outcome of bad public policies and inadequate formal institutions which ostracize group of players from formal economic environment. Hence, this literature is silent on the homogeneity of this ostracized group of players. The current literature is mostly interested in highlighting the impact of informality on equality between agents who are operating in formal sector on one hand and agents who are in informal sector on the other hand. It does not attract our attention to the inequality that could take place within the informal sector itself. Also, this literature assumes implicitly that all or most players in the informal sector would be ready to join formal sector once the obstacles and constraints that led to informal sector to exist are abolished. It is as if saying, for example, if the high taxes can explain 50% of informality, reducing them would reduce informality by 50% extent.

In contrast to these assumptions, H_1 implies that in informal sector could lead to inequality where concentration of income at top earners constituted of agents operating in formal and informal sector alike exacerbating the gap between top owners and the rest of income groups.

H_2 implies, however, that the gap would narrow across some income categories as a result of the existence of informal economy. This stems from the positive role assigned to the informal sector in terms of generating income opportunities for less fortunate social category who otherwise will be ostracized by the economic sphere because of entry barriers.

3. METHODOLOGY

Due to lack of sufficient longitudinal data that trace the evolution of informal sector and concentration of income across countries over time, this paper undertakes a cross-sectional analysis in order to test the hypotheses. This paper uses two different constructs, which are informal economy and income inequality in order to test the hypotheses. Variables measuring informality in the economy vary across literature. In addition to using direct estimates, ILO (2013), underlines other useful indirect indicators of informality such as working poverty indicator or the vulnerable employment indicator. Working poverty indicator underlines the underemployment of workers and is more appropriate in the context of developing countries wherein the main employment problem is more related to underemployment rather than to mass unemployment; vulnerable employment indicator captures, also, the overall quality of employment where low quality of employment displays a correlation with informal work arrangements underpinned by lack of social protection. Vuletin (2008) reports quite comprehensively a number of used methods for measurement of informal economy. This covers mostly indirect methods and, to a lesser extent, survey-based direct methods. Indirect methods entail deductive process using variables that refer indirectly to informality. For example, there are indirect estimates based on the discrepancy between national expenditure and income statistics; discrepancy between official and actual labor force; indirect methods based on electricity consumption (Kaufmann and Kaliberda, 1996) or methods based on monetary transactions (Feige, 1979) and the currency demand

(Cagan, 1958). In addition to this variety of approaches, multiple ındicators, multiple causes (MIMIC) method is an interesting measurement process of informal sector. This process makes use not only of one indicator but multiple observable indicators in order to measure unobservable construct which is informal sector.

This latter approach is quite useful for the purpose of our paper. MIMIC approach allows the use of multiple observable indicators that manifest simultaneously and correlate strongly in explaining informal sector construct.

Indeed, the paper borrows from the work of Schneider and Enste (2000) and Buehn and Schneider (2012). Hence, it adopts MIMIC method wherein the informal economy is represented as a latent variable using structural equation model (SEM). This method captures conveniently the estimation of the informal economy using different dimensions allowing more accurate approximation of the latent variable (Buehn and Schneider, 2012). These dimensions are divided into two different groups: Group 1- indicators: These are underlined by two variables which are gross domestic product (GDP) growth and Labor force participation; Group 2: Causes: These are underlined by business regulation; unemployment rate; inflation; government transfer payments and government consumption. The former group denotes that level of GDP growth and labor participation rate could signal the size of informal economy in a country; higher share of informality could be associated with lower GDP growth (Loayza, 1997; Winkelried, 2005; La Porta and Shleifer, 2011) and lower participation in labor force would indicate a shift towards informal employment hence an increase activity of informal sector (Giles, 1998).

As for the causes there is a good literature that underscores the increase in the size of informal sector as a result a of deterioration of quality of business regulation (Johnson et al., 1998; Friedman et al., 2000) and as a result of an increase of tax burden (which is, here, proxied by government consumption and government subsidies and transfer payments; Buehn and Schneider, 2012) or as a result to high unemployment rate (Schneider and Enste, 2000) and high inflation rate (Vuletin, 2008)[1].

Unlike conventional literature, which relies mostly on GINI coefficient, this paper uses the concentration of income across different groups of earners as a proxy for the dependent variable income distribution. The use of this proxy is explained by two reasons: The first reason is that the interpretation of GINI coefficient is not accurate. For instance, it is perfectly possible that the GINI coefficient increases while the number of people in absolute poverty decreases. It is also possible that in certain situations where countries with different income distribution have same Gini coefficient.

1 It is to note that the impact of these factors on informal sector is not always straightforward. For example, the impact of unemployment on informal economy could be ambiguous. On one hand, an increase in unemployment could encourage individuals to venture their luck in the informal sector. However, on the other hand, high unemployment rates could be a sign of a serious adverse economic situation, which affect adversely both formal and informal sector (Macias and Cazzavilla, 2010).

The second reason is that the use of income concentration across different groups as a proxy for income distribution is necessary in order to desiccate the impact of informal economy on different levels of income categories, which is the object of the hypotheses.

3.1. Data

Data collection is done mainly from two main databases. The World Bank offers a comprehensive source for the proxies of the latent variable namely informal sector. The United Nations University-WIDER offers also a good access to data on income distribution which is reported by the GINI coefficient but also, for the benefit of this study, by a breakdown of income categories into 10 deciles. The 1st decile (D1) represents the 10% poorest category of country's population while the 10th decile (D10) is the 10% richest category. Each number associated with a given category represents their share of the total country's income. This covers a sample of 34 countries selected on the basis of the available data (Tables 1 and 2). The paper uses the data for the year 2007, being the most recent year for which data on the proxies of both income distribution and informal sector are fully available.

3.2. The Model

This study uses a fairly straightforward SEM model wherein ınformal sector is a latent variable attached to indicators and causes. The dependent variable refers to income gap variation across different groups of income. It is captured by looking at the difference between the group who holds the highest share and the group who holds the second highest share (let's call this variable: Upper income variation). Also, this variation is captured by the difference between the group who holds the lowest share of income and the group who holds the second lowest share (let's call this variable: Lower income variation). Why doing this? This is crucial for testing the role (if any) of informal sector in explaining the gap between the different income categories; in other terms, in order to see whether this gap widens or narrows.

Table 1: Countries included in the sample

Countries
Argentina, Armenia, Australia, Austria, Bangladesh, Belgium, Bolivia, Brazil, Bulgaria, Burkina, Faso, China, Columbia, Costa Rica, Cyprus, Czech, Denmark, Dominican, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Greece, Guatemala, Honduras, Hungary, India, Italy, Jamaica, Jordan, Mexico, Turkey, USA

Table 2: Variables definition and sources

Variables definition	Sources
Inflation	World Bank
Subsidies (%expenditures)	World Bank
Government consumption (%share of GDP)	World Bank
Regulation of business (1=inefficient; 6 efficient)	World Bank
Income deciles. D1=Share of income of 10% lowest income category; D10=Share of income for 10% highest income category VarLowcat=D2-D1 Varhighcat=D10-D9	United Nations World Income Inequality Database-UNWIID
GDP % growth	World Bank
Labor participation rate	World Bank

As mentioned above, our MIMIC model borrows from works such as Schneider and Enste (2000); Buehn and Schneider (2012) and Brambilla et al. (2010). Therefore, it has two components: A measurement component and structural component.

The measurement component captures a set of indicators of informal economy. Our model considers two indicators: Real GDP growth (Y_1) and labor force participation ration (Y_2). On top of this, our model considers a third indicator (Y_3) which is the variation of income.

$$Y_1=\lambda_1\psi_i+\varepsilon_1 \quad (1)$$

$$Y_2=\lambda_2\psi_i+\varepsilon_2 \quad (2)$$

$$Y_3=\lambda_3\psi_i+\varepsilon_3 \quad (3)$$

Where, ψ refers to the latent variable: İnformal economy. i is the number assigned to the country in the sample.

The relationship between income variation (Y_3) and informal economy (ψ) constitutes the main focus of our study.

The structural component of the model refers to the set of factors that cause informal economy. As mentioned above, there are five factors which are: Subsidies; government consumption; unemployment; business regulation and inflation.

All these factors are linked to the latent variable informal economy in the following way:

$$\Psi_i=\alpha_1X_1+\alpha_2X_2+\alpha_3X_3+\alpha_4X_4+\alpha_5X_5+\mu_i \quad (4)$$

X_1 = Subsidies
X_2 = Government consumption
X_3 = Unemployment
X_4 = Business regulation
X_5 = Inflation.

For the purpose of building the model of our study, it is assumed that μ and ε are independent, i.e., E(με')=0' (Macias [2008]; Brambilla et al. [2010]).

By substituting equation 3 into equation 1 and 2, we end up with the following SEM:

$$Y=\lambda\left(\sum_{n=1}^{n=5}\alpha ixi+\mu n\right)+\varepsilon$$

A graphical representation of the model is as follow in Graph 1.

4. ANALYSIS OF RESULTS

The results are compatible with the story told by the paper. The informal sector has dual impact on income distribution. It oscillates between two ends: On one hand it narrows the income gap at lower end of income groups but at the same time it contributes to the widening of income gap at high end of income group (Table 3).

This is an interesting result. The fact that informal sector can exacerbate the concentration of income at the top-end income category while reducing this gap at the bottom highlights the existence of elements that interplay within the informal sector itself.

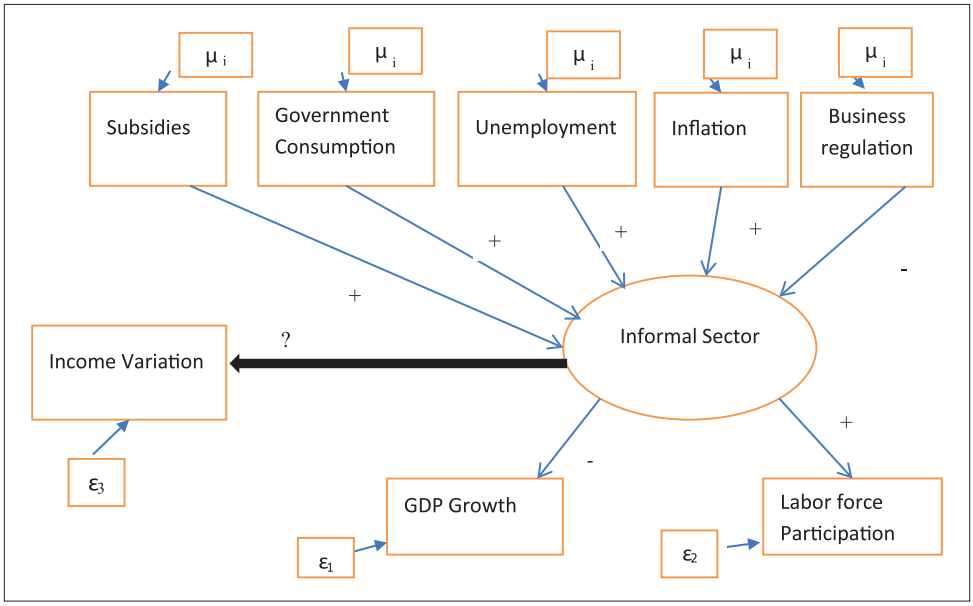
This result not only would imply that informal sector has the potential to open a window of opportunity to households to generate income that otherwise would be difficult to earn, but also has the potential to offer to social categories to share more equally the income available in the economy! This latter defies the stream of thought that associates non-productivity to informal sector (La Porta and Shleifer, 2011) and its role in deterioration of earning inequality (Krstic and Sanfey, 2010; Rosser et al., 2000); in fact, this result could indicate that informal activity generates income that is not confined in only one sector of economy while coexisiting with formal sector at a multilevel of the economy.

Notwithstanding, the informal sector seems, on the other hand, to exacerbate the income concentration at the level of top earners. This result, contrary to the first analysis, would support the analysis that relates informal sector to deterioration of income inequality (Rosser et al., 2000) supporting, potentially, the claims that argue that informal sector is inefficient generating for its employees earnings which are a lot less than those in formal sector (Krstic and Sanfey, 2010; La Porta and Shleifer, 2011). However, further readings in the literature would make these claims less definitive. Indeed, this literature says that the size of informal sector, this time, which, could be determined by the level of income inequality. Higher the inequality, higher is the size of informal sector (Winkelried, 2005). Therefore, the conclusions of this literature, combined with the findings of this paper, would suggest that in fact, the exacerbation of income concentration at the top category of earners due to an increase of informal sector would in turn lead to an increase of the size of informal sector itself. This is in contrast with the view that predicts the ultimate disappearance of informal economic activity and prevalence of the productive formal sector (La Porta and Shleifer, 2011).

Also, the impact on concentration of income would indicate that the informal sector is not necessarily limited to sectors of low-wage goods and commercial services. Perhaps more importantly, it would indicate that informal activities provide to some category of economic operators, a return that exceeds a normal rate of economic growth[2]. In this regards, tax evasion for example, which is prominent in informal economy could lead to exacerbation of income equality due to less effectiveness of progressive taxation in its redistributive role of income (Persson and Wissen, 1984; Bishop et al., 2000; Freire-Seren and Panades, 2008). Moreover, the counterproductive role of taxation in this context, could sustain rent-seeking activities which in turn can have a detrimental effect on income inequality (Shughart et al., 2003) concentrating the income in the hand of those who have greater political influence. This could undermine long-term economic growth (Piketty, 2014).

2 This is analogous to the idea put forward by Piketty (2014) that links the issue of concentration of income to the situation where growth rate of capital is higher than the rate of economic growth.

Graph 1: Structural equation model representation



The signs that are assigned to each path are based on the aforementioned description of the causes and indicators of informal sector. The path of interest of this paper is the one that links informal sector to variation in income distribution

Table 3: Structural equation model results

Structural equation model
Estimation method=mlmv
Log likelihood = -638.72776
Number of obs=34
(1) [GDPgrowth] informal = -1B

Standardized	Coefficient	OIM Standard error	z	P >|z|	[95% Conf.	Interval]
Structural						
GDPgrowth <-						
Labparticipation	–1.250292	0.4254833	–2.94	0.003	–2.084224	–0.4163606
informal	–0.0009739	2.750617	–0.00	1.000	–5.392084	5.390136
_cons	12.02346	4.021803	2.99	0.003	4.140869	19.90605
Labparticipat~n <-						
informal	–0.5464672	0.2465067	–2.22	0.027	–1.029611	–0.063323
_cons	8.066766	1.139723	7.08	0.000	5.83295	10.30058
informal <-						
Regulatory	–0.3554891	0.1387368	–2.56	0.010	–0.6274082	-0.08357
Unemployment	0.224287	0.0844982	2.65	0.008	0.0586737	0.3899004
Inflation	0.2304204	0.0995857	2.31	0.021	0.0352359	0.4256048
Subsidies	–0.147583	0.1469213	–1.00	0.315	–0.4355434	0.1403775
logConGDP	–0.0707346	0.1023024	–0.69	0.489	–0.2712435	0.1297743
Measurement						
Varlowcat <-						
(income variation at bottom income category)						
informal (Beta value)	–0.8286082	0.0893766	–9.27	0.000	–1.003783	–0.6534334
_cons	3.701427	0.9334068	3.97	0.000	1.871983	5.530871
varhighcat <-						
(income variation at highest income category)						
informal (Beta value)	0.8938471	0.0832413	10.74	0.000	0.7306971	1.056997
_cons	2.416499	0.8830287	2.74	0.006	0.6857944	4.147203
Mean						
Regulatory	0.5904693	0.1858468	3.18	0.001	0.2262163	0.9547223
Unemployment	1.489775	0.2490992	5.98	0.000	1.001549	1.978001
Inflation				0.000	1.243827	2.326427
Subsidies				0.000	1.616375	3.033723
logConGDP				0.000	5.9194	9.689825
Variance						
e.GDPgrowth	2.191938	1.110483			0.8120659	5.916503

(Contd...)

Table 3: ***(Continued)***

Structural equation model
Estimation method=mlmv
Log likelihood = -638.72776
Number of obs=34
(1) [GDPgrowth] informal = -1B

Standardized	Coefficient	OIM Standard error	z	P >|z|	[95% Conf.	Interval]
e.Labparticipation	1.298962	0.3180173			0.8038991	2.098897
e.varlowcat	0.3134084	0.1481163			0.1241178	0.7913838
e.varhighcat	0.2010374	0.14881			0.0471203	0.8577193
e.informal	0.4886045	0.1931249			0.2251714	1.060234
Regulatory	1					
Unemployment	1					
Inflation	1					
Subsidies	1					
logConGDP	1					
Covariance						
e.GDPgrowth						
e.Labparticipation	| 0.6529721	0.1892937	3.45	0.001	0.2819633	1.023981
e.varlowcat	–0.2026173	0.2297427	–0.88	0.378	–0.6529047	0.2476701
e.Labparticipation						
e.varlowcat	0.1404898	0.238183				
e.informal	0.6863267	0.1870806				
Regulatory						
Unemployment	–0.0190746	0.1714362	–0.11	0.911	–0.3550834	0.3169341
Inflation	|–0.485628	0.1310533	–3.71	0.000	–0.7424877	–0.2287683
Subsidies	0.6405977	0.1147643	5.58	0.000	0.4156637	0.8655317
logConGDP	0.6015831	0.1094329	5.50	0.000	0.3870986	0.8160676
Unemployment						
Inflation	0.1130964	0.169305	0.67	0.504	–0.2187353	0.4449281
Subsidies	–0.1501283	0.170845	–0.88	0.380	–0.4849782	0.1847217
logConGDP	–0.1264706	0.1687555	–0.75	0.454	–0.4572253	0.2042841
Inflation						
Subsidies	–0.3411873	0.1583701	–2.15	0.031	–0.6515869	–0.0307876
logConGDP	–0.5360169	0.1222246	–4.39	0.000	–0.7755728	–0.2964611
Subsidies						
logConGDP	0.4048018	0.1471956	2.75	0.006	0.1163037	0.6933

LR test of model vs. saturated: chi2 (18) = 22.12, Prob>chi2=0.2265
. estat gof, stats (all)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms (18)	22.125	model vs. saturated
p>chi2	0.226	
chi2_bs (26)	96.234	baseline vs. saturated
p>chi2	0.000	
Population error		
RMSEA	0.082	Root mean squared error of approximation
90% CI, lower bound	0.000	
upper bound	0.182	
pclose	0.311	Probability RMSEA <=0.05
Information criteria		
AIC	1349.456	Akaike's information criterion
BIC	1404.404	Bayesian information criterion
Baseline comparison		
CFI	0.941	Comparative fit index
TLI	0.915	Tucker-Lewis index
Size of residuals		
CD	0.954	Coefficient of determination

SRMR is notreported because of missing values. (1) According to these results, we can reasonably accept the goodness of fit of the model. First major indicator of closeness of fit is χ^2. We do not only contend with the value of χ^2 whose value shows that we cannot reject at 5% the model fits as well as the saturated model (P>0.05) (the saturated model is the model that fits the covariance perfectly). Also, According to the value of pclose measure the probability that the value of RMSEA is less than 0.05. Since pclose is >0.05, we can safely accept that RMSEA is less than 0.05 which is a good indication of the goodness of fit (See Browne and Cudeck, 1993). Moreover, the value of CFI and TLI is close to 1 which shows that the model has a good fit (Bentler, 1990). Lastly, CD (the coefficient of determination) is similar the conventional R2 for the model. The closer to 1 the better the fit. In our model it is the case. (2). The Table 3 shows the signs of the relationships. The ones of interest are the standardized coefficients. Although, they are subject to criticism for a causal interpretation of variables, they are still useful when the variables under consideration have different units of measurements (Bollen 1989; Buehn and Schneider, 2012). Under this rule, one standard deviation in the explanatory variable leads to a response in standard deviation of the dependent variable. The focus, here, is the relationship between the informal sector and the variation of income. An interesting note can be made on the negative sign of the coefficient of subsidies. This is against what the literature predicts. One explanation is that higher subsidies does not necessarily imply higher tax burden should they be properly implemented and covering appropriately their target. In this case, they can be an important tool supporting and driving part of population away from informal economic activities.

5. CONCLUDING REMARKS

This paper highlights the dual effect of informal economy on income inequality. This is done by looking at the variation in the income gap between different groups of income. The relationship is non-monotonic. The gap at the bottom level of income seems to narrow as a result of an increase of informal sector, while the opposite takes place at the high level of income category. Although, informal sector could play a positive role in the economic insertion of a category of employees, it could weaken the economic prospect of country. Informal sector weakens the effectiveness of important rules that promote redistribution of income leading to concentration of income in the hand of high earners, which in turn would undermine long-term economic growth and also exacerbate the size of informal sector. This argument underlines the importance of understanding the interaction between informal rules and formal rules (Ghecham, 2010). Policy makers should be very conscious about this interaction in order to tackle adequately and on specific context basis, the issue of informal sector without losing energy in legislating regulations that would be counterproductive.

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