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# Determinants of Informal Competition Among Firms in Ethiopia

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**To cite this article:**

Abiy Serawitu. Determinants of Informal Competition Among Firms in Ethiopia. *International Journal of Health Economics and Policy*. Vol. 6, No. 4, 2021, pp. 127-132. doi: 10.11648/j.hep.20210604.13

**Received:** December 12, 2021; **Accepted:** December 27, 2021; **Published:** December 31, 2021

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**Abstract:** The study investigated intensity of informal competition among firms in Ethiopia, using primary data source from the 2015 World Bank Enterprise Surveys for Ethiopia (Ethiopia - Enterprise Survey 2015). The estimated linear probability model (LPM) revealed that the probability prevalence (intensity) of informal competition among firms in Ethiopia is about 38.5%. It indicated that informality is a key problem in Ethiopia. The study also found that prevalence of highest corruption, burden of tax rate and credit access constraint are found to be positively and significantly affecting informal competition of firms in Ethiopia. On the contrary, firm size are found to be negatively and significantly affecting informal competition of firms. Correspondingly, the study revealed that regular inspection and communication of tax officials with firms could not contribute in reducing intensity of informality even if most studies indicated that increase in government enforcement on tax code lead to reduce informality. As many studies indicated that experience of top managers are contributing a lot for reducing informality in an establishment; however, this study exhibited that it does not save firms from informality in Ethiopia. In a nut shell, more research should be conducted as to why tax inspections and experience of top manager could not save firms from informality in Ethiopia.

**Keywords:** Informal Competition, Binary Probit, Firm Size

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## 1. Introduction

Competition is an engine for economic growth in most markets since it induces higher rates of productivity growth; however, competition between formal and informal firms is not necessarily lead to productive. Informal competition is harmful to overall economic performance since the cost advantage informal firms enjoy is a result of ignoring many or all business regulations. There are also cost disadvantages to informality. Some of these disadvantages stem from inaccessibility to formal credit markets and to the courts. This makes informal firms less efficient [4]. Formal firms operating in a context where informal firms are widespread are likely to be negatively affected by the operations of informal firms. While sometimes the informal sector itself has been a source of innovations [21]. On the other hand, informal producers may affect formal firms' innovation decisions are via competition in the product market. By their very nature, informal firms face lower entry costs than formal firms, since they are less affected by regulatory burdens imposed on formal firms [16].

He size of the informal sector is a vital factor in determining the competitive effects on formal firms more in a market generally means more price competition regulation is most importantly a major determinant of the intensity of competition from the informal sector [4].

The government's capacity to enforce regulations also matters in the evaluation of the cost of regulatory obligations firms face. An informal firm's chances of getting caught for not complying with laws and regulations are a direct function of the government's capacity to enforce these. The two points above on the determinants of the size and intensity of informal competition are the central focus of this paper.

### 1.1. Statement of the Problem

Several definitions of informal firms have been obtainable by different studies; these studies rely on Nichter and Gold mark [19] defines informal firms as "businesses that are unregistered but derive income from the production of legal goods and services." One distinguished clarification revealed is the recent study of Iriyama et al. [22]. The study exhibited that informal firms are able to operate more quickly by

avoiding regulations and more cheaply by avoiding taxes and fees. When facing these informal competitors, formal firms respond by engaging in corruption payoffs to regulatory officials in order to follow informal firms to try to achieve equality on speed and low cost.

Informal firms are most common in countries where the legal, economic, and regulatory systems are such that it is costly and procedurally challenging to register firms and operate in the realm of law [7]. For instance, higher tax rates, corruption, extortion, and high cost-benefit of achieving output have been shown to positively influence the extent of hidden business activity and informal activity [13, 24, 5].

Informal competition from informal firm's remains relatively less studied and underexplored in developing countries. According to Iriyama, Kishore and Talukdar [22] on their recent study examined potential competitive advantages of informal firms, including the ability to operate more quickly and at lower costs by avoiding regulations. The study found that one way of formal firms respond in achieve parity on speed and low cost is to engage in corrupt activities such as payoffs to regulatory officials. The extant of literatures in different country levels have informed the determinants and intensity of informal completion in their respective economy; however, the intensity of informal completion among firms in Ethiopia has remained relatively less surveyed. Yet, this study tries to fill this gap by analyzing the Primary data source of 2015 World Bank Enterprise Surveys for Ethiopia.

### 1.2. Objective of the Study

The objective of this study is to examine intensity of informal compaction among firms in Ethiopia.

## 2. Literature Review

Gonzalez and Lamina [8] examined the characteristics of formal firms subject to the practices of competitors in the informal sector in 14 Latin American countries in 2006 using a probit regression mode. The study assumed that formal and informal firms compete with each other and are not in segmented or separated markets as suggested by the dual economic theory. The study revealed that formal firms most resembling informal ones are the ones most adversely affected by informal competition. These formal firms are usually small, credit constrained firms, operating in industries with low entry costs and serving the same kind of consumers as informal firms. They also concluded that informal competition is a threat, especially in countries with low government capacity and highly regulated.

Friesen and Wacker [8] investigated the relationship between formal firms' access to finance and informal competition in 114 developing and transition countries over the period 2006 to 2011, using a nonlinear ordered response model. The study found that the more financially constrained formal firms are, the more they are subject to competition from the informal sector. Lastly, the study concluded that the financial constraint is labeled as the top most determinant of

informal competition against firms. Variables such as corruption, high tax rate and firm size are also found to be basic determinants in the study.

Hendy and Zaki [10] studied the probability of belonging to the informal sector as a function of firm age, tax rate, corruption, entrepreneur gender, age and education, using dataset on micro and small enterprise in Egypt and Turkey. The study concluded that education, high tax Burdon and corruption are considered as the top most reason for informality.

Morrisson [18] analyzed the multiplier effect associated with informality. The study concluded that once a firm joins the informal sector, the social stigma associated to operate informally and to break rules decreases. Then after, more firms and persons are encouraged to join this informal sector. The complexity in the entrance of new firm in terms of tax rates, regulatory burdens and access to finance encourages firms to join the informal sector. As highlighted by De Soto [5], informal enterprises are a consequence of government bureaucracy. As a result, participants in the informal sector in Egypt might choose to remain informal not only to avoid taxes and regulation but also due to the inability of the government to enforce law and regulation [9].

Gonzalez and Lamanna [8] conducted a study entitled who fears competition from informal firms? Evidence from Latin America with the 2006 World Bank Enterprise Surveys for Latin America using probit model. The study found that firm size, capacity utilization, number of buyers, export, financial dependence, tax rate, government capacity, corruption, access to finance are main categorized as the major determinants of informal competition against firms.

McCann and Bahl [14] investigated the influence of competition from informal firms on new product development. Using logistic regression and development of new product as dependent binary variable. The study used irregular payment prevalence, regulatory hopefulness, firm age and firm size as an expiatory variable. The study concluded that irregular payment and firm age are found to the key determinant of informality.

Iriyama et al. [11] studied the threat from informal competitors was largely associated with cost or speed advantages from avoiding entanglements with regulatory institutions. Whether this threat merits response by the focal firms depends on how much of an advantage the focal firms perceives has been gained by informal competitors. When focal firms' managers are negative about the strength of the regulatory environment, they are likely to perceive the advantage gained by the avoidance activities of informal firms to be more significant. In contrast, optimism about the regulatory environment is associated with perceptions of less consequential.

## 3. Research Methodology

### 3.1. Data Source and Sampling Procedure

Data on Enterprise Surveys are collected from key

manufacturing and service sectors in every region of the world. This study used primary data source from the 2015 World Bank Enterprise Surveys for Ethiopia (Ethiopia-Enterprise Survey 2015). The standardized Enterprise Survey questionnaire includes both objective and subjective questions referring to the business environment. Subjective questionnaires are designed on the perceptions of the surveyed firms regarding the key factors that constrain their operations. The questionnaire, include among others; corruption, crime, informality, regulatory and tax, gender, finance, infrastructure, innovation and technology, work place, firm characteristics and the biggest obstacle.

Ethiopia Enterprise Survey 2015 by that time was used three stage stratified random sampling. These stratification were industry establishment, size, and region. Industry stratification was designed as follows: the population was stratified into four manufacturing industries, and three services sectors. Size stratification was defined as follows: small (5 to 19 employees), medium (20 to 99 employees), and large (more than 99employees). Whereas, regional stratification in to six geographic regions: Addis Ababa and Dire Dawa city administrations, and Amhara, Oromia, SNNPR and Tigray regional states. The total number of sampled establishments contacted for the survey was 33% (1056) and as well the ES covers about 848 emprises nationwide. Finally the data set was cleaned by avoiding irregularities like I don't know answerers before putting into analysis.

**3.2. Methods of Data Analysis**

The study used descriptive and econometric methods to examine the relationship between explanatory and dependent variables.

**3.2.1. Descriptive Statistics**

Descriptive statistics were utilized to assess the characteristics of the sample this information was considered to augment the econometric analysis results. Descriptive analysis include among others, tools such as minimum, maximum, mean, percentage, standard deviation, frequency distribution.

**3.2.2. Econometric Model**

The study also employed binary probit regression mode:

$$y_i^* = X_i'\beta + U_i$$

$$\begin{cases} y_i = 1 & \text{if } y_i^* = X_i'\beta + U_i > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases}$$

Where,  $y_i^*$  is the binary latent variable,  $y_i$  is dependent binary variable reflecting the probability prevalence of informal competition among firms. It takes the value of one for the occurrence informal competition and the value of zero otherwise.  $X_i'$  is a vector of explanatory variables that determine informal competition among firms,  $\beta$  is a vector of unknown parameters to be estimated from the probit model

*Table 1. Summary of Explanatory Variables.*

Variables	Measurement	Expected sign
Credit access constraint	Dummy (1 has constraint, 0 otherwise)	+
Access to export	Dummy (1 has access, 0 otherwise)	-
Tax burden	Dummy (1 highest, 0 otherwise)	+
Size of firm	Continuous (log of permanent employees)	-
Gender of top manager	Dummy (1 for female, 0 otherwise)	+
Access to communicate with tax officials	Dummy (1 has access, 0 otherwise)	-
Corruption impediment to current operation	Dummy (1 highest, 0 otherwise)	+
Financial constraint to current operation	Dummy (1 highest, 0 otherwise)	+
Age of firms	Continuous (number of years under operation)	+
Experience of top manager	Continuous (number of years staying in leading)	-

**4. Results and Discussion**

**4.1. Descriptive Analysis**

Descriptive statistics such as mean, minimum and maximum, and standard deviations are used to describe the socio –economic characteristics of the sample Responses under study.

*Table 2. Summary of factors characteristics.*

Variables	N	Mean	Std. Dev	Min	Max
Size of firms	512	94.40385	374.9571	1	7600
Gender of the top manager					
Female (9%)	512	.0885478	.2842578	0	1
Male (91%)					
Age of firms in years	510	13.50885	12.85561	0	89
Experience of top manager in years	512	15.79682	10.71342	1	60
Percentage of firms involved in					
Direct export (9.7%)	512	5.809113	20.76637	1	100
Indirect export (90.3%)					

Variables	N	Mean	Std. Dev	Min	Max
Percentage firms inspected by tax officials last year					
Yes (57.6%)	512	1.423645	.4944401	1	2
No (42.4%)					
No. of times the firm inspected by tax officials	466	5.178112	17.29779	1	300

Source: ES survey, 2014

Out of the total sampled firms, female top manager accounts for 9% while the rest 91% are males. The sampled establishment on average obtains their sale directly from export is about 9.7%. The study indicated that the average size of firm is 94 employees with standard deviation of 374.957. The maximum is 7600 employees while the minimum is 1. The average age of the sampled establishment is about 13.5 years with maximum of 89 years and minimum of 0 years with standard deviation 12.40. The average experience of top manager is 16 years with standard deviation of 10.7134. Likewise, percentage of firms those are inspected and visited by tax officials last year was about 57.6%, on average they are inspected 5 times a year.

#### 4.2. Econometrics Analysis

In order to compute intensity of informal competition,

binary probit model was employed. The model had a Log pseudo likelihood of (-313.81816) after third iteration and the Wald  $\chi^2$  test statistics with 10 degree of freedom=51.97.  $\text{Prob}>\chi^2=0.0000$  revealed that the independent variables included in the model are adequately estimated (i.e., the model is adequate). In addition to this, goodness-of-fit test was carried out to examine whether determining factors of informal competition estimated probability is fit to this type of regression or not, The result shows that the pearson  $\chi^2$  (496)=510.22 and  $\text{Prob}>\chi^2=0.3284$ . As indicated by the goodness-of-fit (gof) tests after probit, the null that the model is fittest is not rejected at all levels of significant in the model, suggesting that the model is fit for probit model.

Table 3. Factors affecting informal competition.

Variables	Coefficients	Robust SE	P> t	Marginal effects
Credit access constraint	.3507068***	.127184	0.006	.1358043
Access to export	-.3194113	.2061	0.121	-.1163837
Tax burden	.2765964*	.147023	0.060	.1076491
Size of firms	-.1784512***	.046435	0.000	-.0681911
Gender - top manager	.136318	.2187715	0.539	.0511053
Access to communicate with tax officials	.2609864**	.120426	0.030	.0987957
Financial constraint to current operation	.0149718	.1264851	0.998	.0057198
Corruption impediment to current operation	.2717678**	.1373332	0.048	.1055688
Age of firms	.019107	.0747143	0.798	.0073013
Experience-top manager	.0160833***	.005939	0.007	.0061459
Cons.	-.4777195	.3170238	0.637	-

Note: Number of observations 510; Wald  $\chi^2$  (10) 51.97;  $\text{Prob}>\chi^2$  0.0000; Log pseudo likelihood -313.81816

\*\*\* Significant at 1%, \*\* at 5% and \* at 10%

The estimated parameters of the above linear probability model (LPM) revealed that the probability prevalence of informal competition among firms in Ethiopia is about 38.5%.

The estimated probit model is also indicated that firm size is significantly and negatively related with an informal completion at 1% level of significant. Similarly, the study revealed that firm size is negatively influencing informal competition. A World Bank study on informality in Latin America points out that “formality rises rapidly with firm size and productivity” [20]. As before, the study argued that firms that are less productive, therefore tending to be more like informal firms, face informal competition more directly than more productive formal firms. The marginal effect result showed that a unit increase in permanent workers in an establishment results in a 0.00068% decrease in the intensity of informal competition as compared to the formal one (i.e., saving from informality) while keeping other variables constant.

Tax burden found positively and significantly influence informal competition. The result of the probit model showed

that intensity of informal completion among firms is increasing as a result of tax burden increases. The plausible reason could be a higher tax rate forces the formal firms to be informal and informal firms remains as informal. Tax rate refers to the tax that a company must pay or withhold in a given year. It also measures the administrative burden in paying taxes [8]. Moreover, from marginal effects, highest tax rate prevalence, citrus paribus, increase intensity of informal competition by 10.8%

Corruption impediment to current operation found positively and significantly influences intensity of informal competition at 10% level of significant. The result of the probit model indicated that informal competition is increasing as obstacles of corruption to the business environment increases. The plausible reason could be a highest corruption drive formal firms to be informal and informal firm's remains as informal. Iriyama et al. [22] found that formal firms can respond to informal competition by engaging in corrupt activities such as payoffs to regulatory officials in an attempt to achieve parity on speed and low cost. From marginal effects,

highest corruption prevalence, *ceteris paribus*, increase intensity of informal competition by 10.6% as compared to firms those perceived it not highest obstacles.

The study also found that credit access constraint to the current operation of an establishment, is significantly influencing informal competition. The result of the probit model disclosed that informal competition among firms increases as financial constraint increases. According to Morrison [18], found that limited access to financial services is one of the main obstacles for informal firms to remain informal. The plausible reason could be a higher obstacle for accessing finance is an encouraging factor for formal firms to be informal and informal firms' leftovers as an informal. Marginal effect indicated that, highest financial constraint, all other variables keep constant, increase informal competition by 13.6% as compared to firms those are perceiving it not highest obstacles.

Similarly, informal competition is 9.9% higher for firms who are communicated and inspected by tax officials over the last year as compared to firms those are not visited. In practical terms, when firms are visited and inspected by tax officials regularly, they are advised how to do their business formally in accordance with the rules and regulation of the tax code, and firms are more likely saving from informality. However, in this case, in a country like Ethiopia, informality does not seem to decrease because there is no a well rigorous system to implement regular inspection. The higher the regulatory burdens, the higher are savings from informality. However, the cost-benefit calculation affects the size of the informal sector as higher cost savings of informality draws more firms to join informality, resulting in a bigger informal sector [4, 14]. Informal firms are most common in countries where the legal and regulatory systems are such that it is costly and procedurally challenging to register firms and operate in the realm of law [7].

Experience of the top manager also found to be positively and significantly influence intensity of informal competition. The result of the probit model indicated that intensity of informal competition is increasing as the experience of top manager increases. The marginal effect result exhibited that a one-year increase in experience of top managers led to an increase informal competition by 0.6%.

## 5. Conclusions

The study hypothesized that firm size is negatively and significantly related with informal completion. The study found that firm size is negatively related with informal competition. Increasing firm size obliged firms to utilize their maximum production capacity and that could assist them to decrease price, and this in turn provide an incentive to overcome intensity of informal competition. The study also hypothesized that experience of top manager is negatively and significantly affecting informal competition. However, the result revealed that experience of top manager is adversely affecting informal competition. That is to say, experience of top managers do not save firms from being involved in

informal competition.

Inspection and communicating with tax official, for instance 6 times in a year are not seem to contribute for reducing intensity of informal competition. The plausible reason could be, in developing country like Ethiopia, there is no a full-fledged system that could help to monitor informality as a whole. The study also found that male headed firms are 10 times greater as compared to female headed firms. This implies that women's are not yet empowered in the sectors under study and it requires due attention by the government.

Similarly, average age of firms and experience of top manager are so adequate to obtain their sale directly from export. However, the prevalence average of firms those are engaging in this activities are about 9.7%. This could be explained by different reasons in literatures; however, it requires deep study for further researchers. Finally, the study found that Prevalence of highest tax burden, corruption, and financial constrained are found the top most aggravating factors the prevalence of informal competition in Ethiopia.

In a nut shell, the estimated linear probability model (LPM) revealed that the probability prevalence of informal competition in Ethiopia is about 38.5%. The result indicated that informality is a key problem and concerned government officials should take due attention in order to revert back the prevailing situation.

## Acknowledgements

First of all and foremost I thank THE ALMIGHTY God for giving me the chance to complete this article after COVID-19 infection. Special thanks to my wife and Mikyas Abiy for their relentless support for the success full accomplishment of this task.

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