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Does Globalisation Affect Informal Employment in Low and Lower Middle Income Countries?

ECO 499: Undergraduate Thesis

Samirah Bint Zulfiqar | ID: 13105045

Department of Economics and Social Sciences
BRAC University

Supervisor:

Dr. Farzana Munshi
Associate Professor, Department of *Economics and Social Sciences*
BRAC University.

Samirah Bint Zulfiqar
13105045
Department of Economics and Social Sciences
BRAC University
samirahzulfuqar@gmail.com

November 4, 2016

Research Advisor
Department of Economics and Social Science
BRAC University
66, Mohakhali, Dhaka

Dear Sir/Ma'am:

I am submitting my paper for **Eco 499: Undergraduate Thesis** titled *Does Globalisation Affect Informal Employment in Low and Lower Middle Income Countries?* to you for your kind consideration and reading. Please find the enclosure.

The research was conducted on the impact that globalisation has on employment in the informal sector, using a selection of countries that fall under the low income or lower-middle income category. The analysis was conducted using secondary data from the World Bank's data bank. The data used includes trade, foreign direct investment, taxes on trade, corruption and GDP per capita for the period of 1990-2014. The mode of estimation is a panel regression analysis.

The paper aims to add to the body of research in this field by focusing on a set of countries that belong to the low and lower-middle income group. The dimension added by this cross-country approach can observe the impact on such countries in isolation.

I am grateful to have the opportunity to submit this paper to you. I sincerely hope that your feedback and opinion would further aid this paper and my research.

Sincerely,

Samirah Bint Zulfiqar

Abstract:

This thesis examines whether increased globalisation causes rise in informal employment for low and lower middle income countries. Previous studies have suggested that increased globalisation does play a significant role in the level of informal employment in an economy. This thesis employs a selection of 20 low income and lower middle income countries for the period of 1990 to 2014. To achieve this, the research employs a random effects panel regression analysis by clustering over countries and using trade-based indicators for globalisation. The empirical analysis finds that while trade does exhibit a positive and significant relationship with informal employment, foreign direct investment exhibits negative and insignificant relationship to informality and trade restrictions exhibit a positive but insignificant relationship with informal employment.

Keywords: globalisation, trade, informal employment

JEL Classification Numbers : E26, F16, F41, F66

Author's email address: samirahzulfiqar@gmail.com

Acknowledgments

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1. Introduction:

Over the past few decades globalisation, trade openness or liberalisation has been attributed to the rise in informal employment. Informal employment refers to the form of employment where workers are paid much lower wages, offerredvery little facilities and made to work in poor conditions in contrast to workers in formal forms of employment. Many of the workers employed informally are deprived of fundamental facilities such as social security and benefits; they are also confined to working in activities that have low productivity and also have lesser opportunities in terms of economic mobility (Huitfeld and Jütting, 2009). The circumstances and conditions under which labour in informal employment has to work, makes informality a serious cause for concern. Therefore, informality and its causes must be examined closely.

This paper aims to establish that trade openness, or decrease in trade restriction, causes informal sector employment in low and lower middle income countries. For many countries, tariffs, a form of trade restriction, have been on a declining trend since 1990; this suggests that globalisation has been on the rise. On the other hand,employment in the informal sector of the economy has been rising in the developing world in the previous twenty years. Many non-standard forms of employment have become more prominentin most of these liberalized regions(McMillan and Rodrik, 2011 and Carr and Chen, 2002). Around the same time period,it was observed that approximately 50% of the jobs in the non-agricultural sector in developing countries was, in fact, informal. Evidence of informality was also found in many nations of the Organisation for Economic Co-operation and Development (OECD) where self-employment in the non-agricultural sector took up 22.5% of total non-agricultural employment in the 1970s, 26.8% in the 1980s, and 31.3% in the 1990s[1](Huitfeld and Jütting, 2009). The aforementioned findings imply that informality is a reality and is a growing cause for concern.

Informal employment has been attributed to various causes in previous studies. Albrecht, Navarro and Vroman (2009), as cited in Heid (2013), observed that variations in the productivity of workers employed in the formal sector lead to high-skilled workers

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[1] The ILO data looks at non-agricultural employment, excluding employment in agriculture as well as fishing, hunting and forestry. Employment in non-agricultural activities is classified into: manufacturing (mining & quarrying including gas, electricity & water supply etc) and trade. Wage employment includes employees and also self-employment to the total of employers, contributing family workers, own-account workers or producer cooperative members.

voluntarily beingclassified to the informal sector. Being informally employed could also be a voluntary decision by a worker as many like Maloney (2004) have emphatically indicated that. This is because self-employment usually allows workers to be self-sufficient.

Higher rates of informality are connected to lower levels of GDP per capita. This indicates that lowering the magnitude of the informal economy may also be crucial in making living conditions and incomes of people in developing economies better (Bacchetta, Ernst and Bustamante, 2009).

This paper bids to investigate the impact globalisation has on informal employment, by focusing on low and lower middle income countries. The paper proceeds by reviewing journal articles and papers available on the focus of the research in Section 2, followed by a description of the methodology used for analysis in Section 3 and then, in section 4 results are reported and described, followed by the conclusion drawn from this study.

2. Literaturereview

A number of studies in the past have focused on determining the impact trade liberalisation has on informal sector employment. Many theorize that trade openness increases competition among domestic producers, which is believed to cause an increase in informal sector employment. This is a result of firms cutting down formal workers to reduce the costs incurred in an attempt to remain competitive. As a result, many economists and policy makers are concerned over the detrimental effects that increased competition of international markets can have on unemployment (Heid, 2013).

2.1 ECONOMIC THEORY ON TRADE, UNEMPLOYMENT AND INFORMAL EMPLOYMENT

The influence of trade on employment is analysed using the fundamental economic theories - the Stolper-Samuelson Theorem and the Heckscher-Ohlin model. Being a vital contribution to neoclassical trade theory, the Heckscher-Ohlin theory goes on to suggest that if a country has abundance of a factor, it exports goods whose production is intensive in that factor (Krugman, Obstfeld and Melitz, 2011). According to the Stolper-Samuelson theory the increase in the relative price of a good, if factor supplies remain constant, increases the nominal and real return to the factor used intensively in the production of that good, while the nominal and real return to the other factor decreases (Krugman, Obstfeld and Melitz, 2011).

The model forecasts that trade liberalisation is a foremost constituent of globalisation. This is because it causes a rise in demand for exportable goods that are labour-intensive, requiring unskilled workers, in developing countries. This leads to an escalation in its price and wages for the people employed in the unskilled labour sector in developing countries. On the other hand, since developed countries are endowed with capital and skilled labour, they are likely to specialize and export goods that are skilled labor-intensive. By taking into consideration certain assumptions, this model forecasts a decline in wage inequality in developing countries. This occurs because the rising trade due to the Stolper-Samuelson Effect will cause a rise in wages of unskilled workers in developing countries while reducing the wage of skilled workers in developed countries (Munshi, 2008).

The theory on informal sector employment and globalisation tends to suggest that trade liberalisation causes increased competition among home or domestic producers. Hence, in attempting to reducethe costs of production and remain competitive, local producers will hire from the informal sector. These workers are likely to be low-priced, owing to the fact that informal firms do not conform to any sort of regulations. Thus, globalisation leads to increased demand for informally produced inputs and an expansion of the informal sector. (Fugazza and Fiess, 2010).

2.2 GLOBALISATION AND INFORMAL EMPLOYMENT CONTEXTUALISED

To trace prior research works that pertain to the topic of analysis, papers that associate trade liberalisation or globalisation[2]as a factor for rise in informality were examined. Among many varying definitions, Maloney (2004) labels the informal sector by recounting it as a wide-ranging collection of small-scale, low-productivity, semi-legal and family-based work.

It must be noted, however, that this analysis uses the International Labour Office measure for informality while also adopting the definition set out by the ILO. The 17th International Conference of Labour Statisticians defined informal employment by adapting the ILO definition as consisting of the total number of informal jobs, either carried out in informal sector or formal sector enterprises, or in households for a given reference period. The workers generally operate at a lower level of organisation and labour relations are

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[2] Carr and Chen (2002) define globalisation as the international exchange of goods and services including the financial flows that take place globally.

formed mostly on casual employment or personal and social connections rather than formal contractual arrangements with guarantee. [3]

Marjit and Beladi (2005) conclude that openness in trade policies such as lower tariffs leads to more unemployment as well as higher informal wages and informal employment in their analysis of developing countries. Similarly, Fugazza and Fiess (2010), who also conducted a cross country analysis, find that results that support the mainstreamview are usually produced by macro-founded data such as ILO measure but on the other hand, micro-founded data tends to produce contradictory results.

Fugazza and Fiess (2010) go on to show that informal employment drops even when informal output shows an increase due to more trade liberalisation. However, their time series analysis observes results that support the view that trade openness may lead to informality. Similar relationship is observed by Goldberg and Pavcnik (2003), whofound a rise in informality after trade liberalisation during the 1980s and 1990s in Colombia but no such observations were inferred in Brazil. Their outcome shows a corroborating relationship for Colombia before major labour market reforms began. This is an important outcome because a number of studies have stressed that labour market reforms do affect the employment in informal sector.

Contrary to the widely acknowledged perception, Goni, Bosch and Maloney (2007) discovered that the rising informality is caused mainly due to drop in rates of finding job in the formal sector and a very tiny part of this is due to trade liberalization, for the case of Mexico. The principal reasons are growing labour costs and reduced flexibility due to Constitutional reform. Findings from Latin America also suggest that much of the rise is caused by growth within sectors. Aleman-Castilla (2006) also employs a similar attitude to analyse informality in Mexico. Aleman-Castilla (2006) proposes that in industries where trade is dominant, low import tariffs may reduce informality and the outcomes also suggest that reduction in informality is lesser in industries with more import penetration while it is greater in industries with greater export orientation. Bosch and Maloney (2006) also discovered that a large proportion of increase in informality in Mexican labour markets

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[3] For the broader ILO Definition refer to Section 3 (Methodology): Pg 10, para 3.

from 1991 was caused by fluctuations within sectors and a similar result is observed for most of the decline to its initial level in 2001.

A comparable effect is also seen for other Latin Americannations (Gasparini and Tornarolli, 2007). According to the analysis of Bacchetta, Ernst and Bustamante (2009), in the case of Latin America, for example, the slight fall in informality in the region all in all is largely determined by the positive developments across Brazil and Chile during the 1990s.

Another study on Latin America is that of Goldberg and Pavcnik (2003), who discover that there is a rise in informality after trade liberalization occurrences during the 1980s and 1990s in Colombia but they were not able to observe such a relation in Brazil. The analysis by Goldberg and Pavcnik (2003), proposes that alterations to tariffs had a very slight impression on the informal economy. The most striking outcome is supportive of Colombia before the start of major labour market reforms.

These outcomes promote that certain jobs which used to be formal previously have turned into informal work (Huitfeld and Jütting, 2009). This is seen in the paper by Marjit(2003) that discovers that modifications in trade policy lead to a drop in the formal sector, meaning that the capital-segment is harmfully affected. Consequently, capital in the informal economy is reallocated to the informal segment that is labour intensive. Similarly, Carr and Chen (2002) in their paper show that globalisation gives rise to transition from secure forms of employment to ones that are less secure, including risky forms of self-employment. Goldberg and Pavcnik (2003) and Stallings and Peres(2000) also observe the trend that trade gives rise to shifts from the formal to the informal sector.

2.3 POVERTY, WAGES AND INFORMALITY

It is believed that the relation present between informality and poverty is powerful due to the fact that majority of the working poor (either wage earners or self-employed workers) in the world are employed informally. According to a report by Women in the Informal Economy: Globalising and Organising which attempts to see links between Informal Employment and Poverty and Growth Linkages, the 2002 Labour Force Survey conducted in

Africa and the 1999-2000 National Sample Survey conducted in India both found an overlap between being employed informally and poverty at the household level.

Previous studies posit that more strict labor regulations are associated with lower formal sector employment and higher informal sector employment. Nataraj et al (2011) conducted a metaregression analysis of the impact of minimum wages on formal and informal employment in low income countries. Having controlled for publication bias, they found that higher minimum wages are related to lower formal employment and a higher share of informal workers.

For El Salvador, Lara (2004) observes that in terms of average real wages, a higher share of the informal labour force earns below the minimum wage when compared to the formal labour force. Similarly, in South Africa, formal workers earn above 1000 rand per month while a large part of the informal workforce earns below 1000 rand per month (NALEDI, 2003).

Sambamurthy (2009) cites Sinha and White's findings on the Indian export industry that though the export oriented garment sector has grown, the lack successful regulatory process and labour laws allows neglecting the security of workers by means of minimum wages and social security facilities.

Bannerjee and Nag (2011) investigate the relationship between trade liberalization and informal wages and discover that elimination of tariff controls from sectors using unskilled labour, rising foreign investment and declining union strength of unskilled worker are the chief factors leading to the increasing incidence of wage inequality. Similarly, Bacchetta, Ernst and Bustamante (2009) find that evidence of disposable income in certain parts of the informal economy suggested that workers got merely 50% of the income of a formally employed worker.

According to Bacchetta, Ernst and Bustamante (2009), the empirical results have shown that there has been a rise in the skill premium both in developed and in developing economies

thereby placing low-skilled workers are in a worse state. Aleman-Castilla (2006) also finds that trade opening in Mexico in the 1990's caused industry wage differentials to rise and the formal–informal wage gap became wider.

2.4 GLOBALISATION AND INFORMAL EMPLOYMENT IN LOW INCOME COUNTRIES

Since the focus of this paper is on low and lower middle income countries, it is crucial to review studies that have been conducted with a similar focus. According to some of the studies discussed already, countries that are growing economically tend to have greater informal sectors and those employed informally work in jobs where the productivity is low. Hence the concerning aspect of this issue is that the international competition will cause a rise in informal employment as workers will begin to lose their jobs in the formal section of the economy (Heid, 2013). Empirical evidence gathered shows the formal sector may involve workers from the informal sector even after trade liberalisation takes place. This was observed in formal manufacturing sectors in South Asia where there was a rise from 3.8 percent per year to 9.4 percent subsequently after liberalization, which created jobs for workers in the informal sector (World Bank, 2001).

Carr and Chen (2002) in their paper find that in the Asian region there is evidence of growth driven by exports which results in the creation of jobs. Many of the lower middle income nations like India and Bangladesh rely on garment export and it is an essential observation for this analysis that the form of employment in these sectors is informal. Carr and Chen (2002) found that more jobs were formed in labour- intensive activities and predominantly in garments for export and also observed informal wages and output in the garment sector, concluding that low wages and bad working conditions make this a form of informal employment.Chen and Doane (2008) also focused on informality in South Asia (including India) and inferred that the types of production that exist usually adopt informal employment.

For Kenya, which is a low income country, a report by the World Bank (2006) on the Kenyan informal economy suggests that there is an increase in the activities and involvement of the people involved in the informal sector of the economy, which is attributed to the privatisation of the public sector and the increase in the unemployment rate specifically

within the youthful population. The report also suggests that poverty is on the rise, most specifically in the urban areas. Along with Kenya, other African nations too experience informal employment. Xaba et al. (2002) suggests that there is a fall in growth of employment in the formal sector despite the fact that the informal sector in Africa continues to grow in terms of output and employment. Uganda, another nation from the low income category, has higher employment in the informal sector and in Southern Africa, such as Zambia, around 43% of employment in urban areas is informal. (Verick, 2006; Xaba et al, 2002).

Another lower income country, Indonesia, where between 1997 and 2003, there was decrease in the formal sector and a rise in the informal sector of the labour market. This was due to increasing numbers of unpaid family workers and self-employed people (Bacchetta, Ernst and Bustamante, 2009). This may also suggest that other factors may play a role in causing informal employment in developing countries.

The review of the economic papers on this topic, demonstrates that various ways in whichtrade liberalisation could impact informal employment are prevalent. Mostly changes in trade show positive relationship to informal employment even though the results may differ from country to country based on policies and industry structures.

3. Methodology

This thesis aims to determine the relationship between globalisation and informality for low and lower-middle income countries. It examines whether globalisation causes informal employment to rise in countries that fall under the aforementioned income group.This research employs a panel regression analysis; the linear model for the regression used is:

$$Y_{it} = \beta_0 + \beta_1 X_{1_{it}} + \beta_2 X_{2_{it}} + \beta_3 X_{3_{it}} + u$$

where Y is the dependent variable assuming the size of informality, β_o is a constant, X is a setof possible independent variables that can explain the dependent variable Y, β is the

coefficients and u is the normal independent and distributed error term. Both *Y* and *X* are estimated over country *i* and time *t* and $X_{1=Globalisation}$, $X_{2=GDP\ per\ Capita}$ and $X_{3=Corruption.}$

Here X_1 refers to globalisation, which is measured by openness to trade and capital in one instance, and trade restriction in another. For openness to trade and capital, FDI inflows (as % of GDP) and Trade (as % of GDP) was employed, whereas for trade restriction, taxes on trade (as % of revenues) was used.

The selection of explanatory variables has been conducted by taking into consideration previous empirical research works. Empirical and theoretical models used are more common where trade openness causes informal employment to rise. A number of studies look at cases for single countries by employing sets of data from labour-force surveys or labour market data. Part of the methods employed in existing research are quantitative and employ the standard models to identify effects of trade liberalization. Some studies used country specific setting while a few also looked at cross-country analysis.

A number of analyses stress more on empirical models as tool for assessment, especially when looking at cross-country outcomes. The study by Bacchetta, Ernst and Bustamante (2009) reflects upon significant cross country disparities and examines the informality rates across nations in Asia, Africa and Latin America. This paper employs country-specific estimates and uses a trade based measure for economic openness which is the total of exports and imports relative to GDP.

Fugazza and Fiess (2010) inspected, in their paper, the empirical connection between informality and trade liberalisation by means of three types of measures for the informal sector while also adopting four indicators for globalisation. These measures of informality are the macro-eclectic and Schneider (2007) measures and also includes the ILO measure used in this research. Fugazza and Fiess (2010) also employed a similar selection of explanatory variables. Their model included corruption and GDP per Capita along with variables for globalisation. They diversified their model by including KOF index of Globalisation measures and compared them in terms of different measures of globalisation, be it trade openness, trade flows or trade restrictions. They used three measures of informality, one of

which was the ILO measure of informality. The ILO measure of informality has been thoroughly conducted after developing a standard set of frameworks to collect data that follows the definition set by the ILO. Cross-country studies such as Fugazza and Fiess (2010) and Bachhetta, Ernst and Bustamante (2009) also used ILO's measure of informality.

Pham (2011) used KOF Index of Globalisation as measure of globalisation like Fugazza and Fiess (2010). While the KOF index is a very thoroughly constructed and well accepted index, this paper diverges from existing academic papers on this topic by conducting the analysis using trade-based data as measures for globalisation, such as Trade, Foreign Direct Investment and Taxes on trade. While the KOF Index does take into consideration many dimensions of globalisation, the main interest of this thesis remains in measures such as Trade, FDI and Taxes on trade. Bachhetta, Ernst and Bustamante (2009) employed various independent variables in their study which included the KOF index as well as trade as % of GDP, revenue from trade taxes, GDP per capita, FDI inflows and corruption and the data for their study was obtained from the same sources that this thesis obtained its data from.

Fixed effects and random effects were then employed to the panel analysis in order to compare the most suitable estimation. In panel analysis, fixed effects estimator or the within estimator is used to carry out time independent effects. In a random effects model, the individual-specific effect is a variable that is random and uncorrelated with the explanatory variables.

3.1.1 EXPLANATORY VARIABLES

The main independent variable is globalisation and in this analysis, three measures of globalisation have been used – trade, foreign direct investment and taxes on trade.

Trade refers to trade as % of GDP which has been defined as the total of exports and imports of goods and services in an economy measured as a percentage of gross domestic product by the World Bank database, which is the source of the data for this variable. Trade has been used in many cross-country studies as an indicator for trade openness including Fugazza and Fiess (2010) and Bacchetta, Ernst and Bustamante (2009) which have used this for analysing the relationship between globalisation and informality. Munshi (2008) also

employed trade as percentage of GDP as a proxy variable for globalisation and categorized it as openness to trade.

FDI refers to FDI inflows % of GDP which is defined as the net inflows of investment and is the total of equity capital, reinvestment of earnings, other long-term capital, and short-term capital in the balance of payments. This is expressed as percentage by GDP. The data is sourced from World Bank World Development Indicators.Bachhetta, Ernst and Bustamante (2009) and Fugazza and Fiess (2010) used FDI inflows as a measure of trade openness when analysing effects of globalisation aon informal employment. Munshi (2008) also employed FDI as percentage of GDP as a proxy for globalisation, terming it as a measure of openness to capital.

Taxes on International Trade refers to taxes on International trade as % of revenues. Bachhetta, Ernst and Bustamante (2009) employed various independent variables in their study which included revenue from trade taxes for analysing impact of globalisation on informal employment . Taxes on trade can show how little restriction there is to trade in a country thus this paper has employed it for a measure of level of trade restriction. The data for this has been obtained from World Bank's World Development Indicators.

Corruption, which forms one of the control variables, has been represented by the CPIA Transparency, Accountability and Corruption index which uses three foremost measurements here including the accountability of the administrative to neglect institutions and also of performance of public employees as well as public access to information on relevant affairs. Data for this has been sourced from the World Bank's World Development Indicators. Bachhetta, Ernst and Bustamante (2009) used corruption in their paper as an independent variable for their model which looked at the relationship between globalisation and informal employment. Fugazza and Fiess (2010) also used corruption in their study which looked at the same relationship. The link between corruption and informality according to Bachhetta, Ernst and Bustamante (2009) is that the level of informal employment depends on quality of institution which includes the degree of corruption among other factors such as rule of law and government stability.

Another of the control variables, GDP per Capita which is GDP per capita (current US$) refers to gross domestic product divided by the mid-year population. The data for this has

been sourced from World Bank's World Development Indicators. For the purpose of analysis, log of GDP per capita was used in order to get more consistent results. Fugazza and Fiess (2010) employed the log of GDP per capita as part of their model. A number of papers such as La Porta and Schleifer (2014), who also conduct a cross-country analysis to look at the relationship between informal employment and development, find that though informal employment is significant in low-income countries, it becomes much less significant in high-income ones, thus GDP per capita is used as an explanatory variable for the analysis as an indicator for the level of development.

3.1.2 DEPENDENT VARIABLE

Our dependent variable,informality, refers to informal employment (% of total non-agricultural employment). Informal employment is the primary dependent variable in this analysis and the indicator used for informality has been obtained from ILO's Key Indicators of the Labour Market. Here the size of informality has been measured as the ratio of informal employment to total employment in the non-agricultural sector. According to the ILO, as defined by Hussmans (2004) informal employment may refer to[4]:

- Own-account workers and employers who are employed in their own informal businesses. It is difficult to separate such workers from the type of firms they own thus the informality in these jobs comes from the type of enterprise they are associated with.
- Members of the family contributing as workers, regardless of whether they work in formal or informal sector enterprises – their work is thought of as informal in nature.
- The informal sector consists of two sections manufacturing and trade.
- For employees possessing informal jobs, whether employed by firms in the formal or informal sector, the employment is considered informal if the terms are not subject to national labour law, income tax policy, social protection or entitlement to employment benefits such as severance remuneration, prior notice of dismissal, paid leave or sick leave, etc.

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[4] Broader ILO definition and conceptual framework of categorising and measuring workers in informal sector employment.

The primary reason for the framework that has been developed by the ILO is to link the enterprise-based notion of employment in the informal sector in a consistent manner with a job-based model of informal employment, thus extending the existent concept to a more comprehensive one. Studies such as the one by Bacchetta, Ernst and Bustamante (2009) and Fugazza and Fiess (2010) have used informality measure of the ILO for their analysis of impact of globalisation on informal employment.

3.2 DATA

The dataset used in analysis is based on a selection of 20 low income and lower middle income countries, containing various indicators of globalisation along with other important macroeconomic indicators as well as the dependent variable indicating informality. The period considered for the analysis is from 1990 to 2014 and the data was sourced from the World Bank's World Development Indicators.

The list of countries selected in the panel are as found in the Appendix. This thesis employed a selection of 20 low income and lower middle income countries, comprising of some countries in South Asia and Latin America. Some prevalent cases of informality observed in the world economy described by Huitfeldt and Jutting (2009) include South Asia and Latin America, where approximately half of the informal workforce comprises of workers who are either in self-employment (that is informal) or are informally-employed wage employees.

But in South Asia, informal wage employment exists mainly in informal businesses, in Latin America, nearly half of those wage-employed informally belonged to formal institutions or organisations (Chen and Doane, 2008 and Tokman, 2008) as cited by Huitfeldt and Jütting (2009). The selection of this thesis focuses on low income and lower middle income countries since many scholars believe that informality is far greater in proportion and more persistent in economies that are developing or emerging. (Tokman, 2007; Schneider and Enste, 2000).

One of the independent variables of interest is globalisation, and it is measuredin two ways: Openness to Trade and Capital (Trade and FDI inflows) and Trade Restrictions(Taxes on Trade). The dependent variable is informal employment while independent variables of interest include Trade, FDI inflows, Taxes on International Trade, GDP per Capita and Corruption.

The full list of countries used in this thesis is available in Appendix A. Longer definitions of the variables used and the detailed data source have been provided in table B.1 in Appendix B.

Table 3.1: Descriptive statistics

VARIABLES	N	Mean	Standard Deviation	Min	Max
Informal Employment	500	4.398	10.72	1	57
Trade	500	230.9	143.8	1	480
FDI Inflow	500	237.3	143.2	1	486
Taxes on International Trade	500	118.4	114.2	1	343
Corruption	500	1.926	1.433	1	5
Log GDP per Capita	500	6.509	0.812	4.714	8.319
Number of countries	20	20	20	20	20

From the table above, we see that the mean of Taxes on International Trade is 118.4 and the standard deviation is 114.2. The smallest standard deviation is observed for log of GDP per capita with 0.812. This means the values are closest to the mean for this variable. The standard deviation of Trade and FDI are almost identical to each other. This suggests the variation or dispersion of the data is identical for FDI and Trade, which are both measures of globalisation and openness. The similarity might have thus been caused.

TRENDS IN KEY VARIABLES 1990-2014:

The following graphs illustrate the trends for a selection of 5 of the 20 countries for the period that this paper is analyzing (1990-2014).

They illustrate the trend that indicators of globalisation followed for the period of this analysis. There was a sharp spike in FDI Inflows for these countries around the late 90's and for most of them, there continued to be higher FDI as % of GDP in the period that followed. Trade as % of GDP also displays a similar trend, by rising up from around the mid 90's and remaining at a higher level than the early 90's. Incidence of Informal Employment for these countries is also found starting from around 2000, in the period after the countries became open or liberal to trade.

These trends suggest that from the 90's the countries became more open to trade, which was also accompanied by rising inflow of FDI suggesting that globalization was on the rise. Rise in informal employment as observed from the mid to late 90's, which may have been an impact of the rising globalisation.

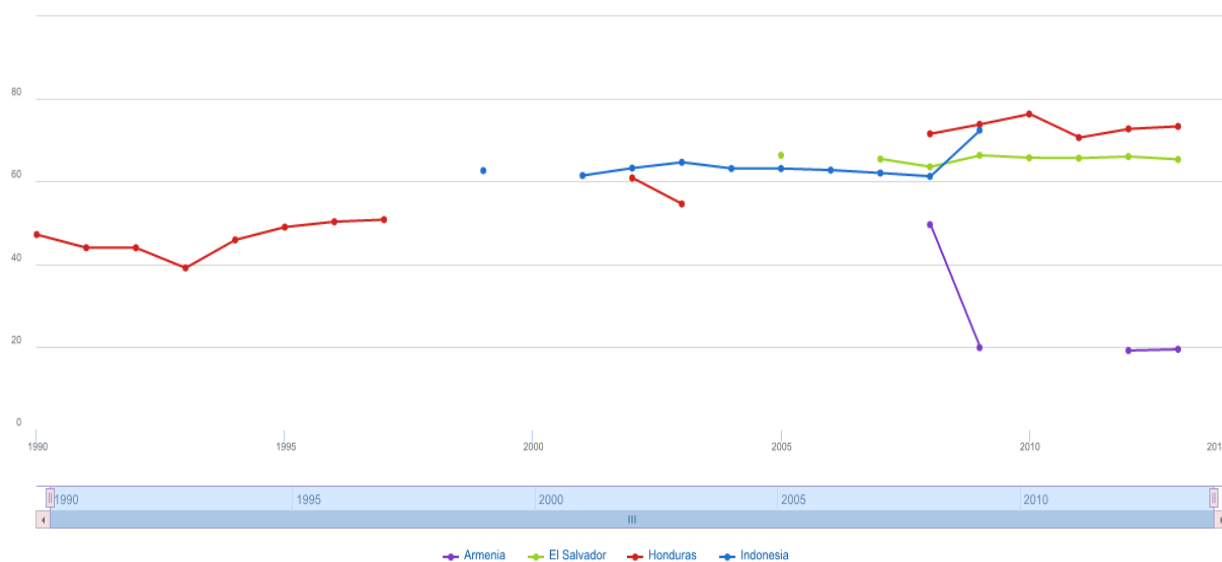*Fig 3.1: Trend in FDI Inflows %GDP from 1990-2014*
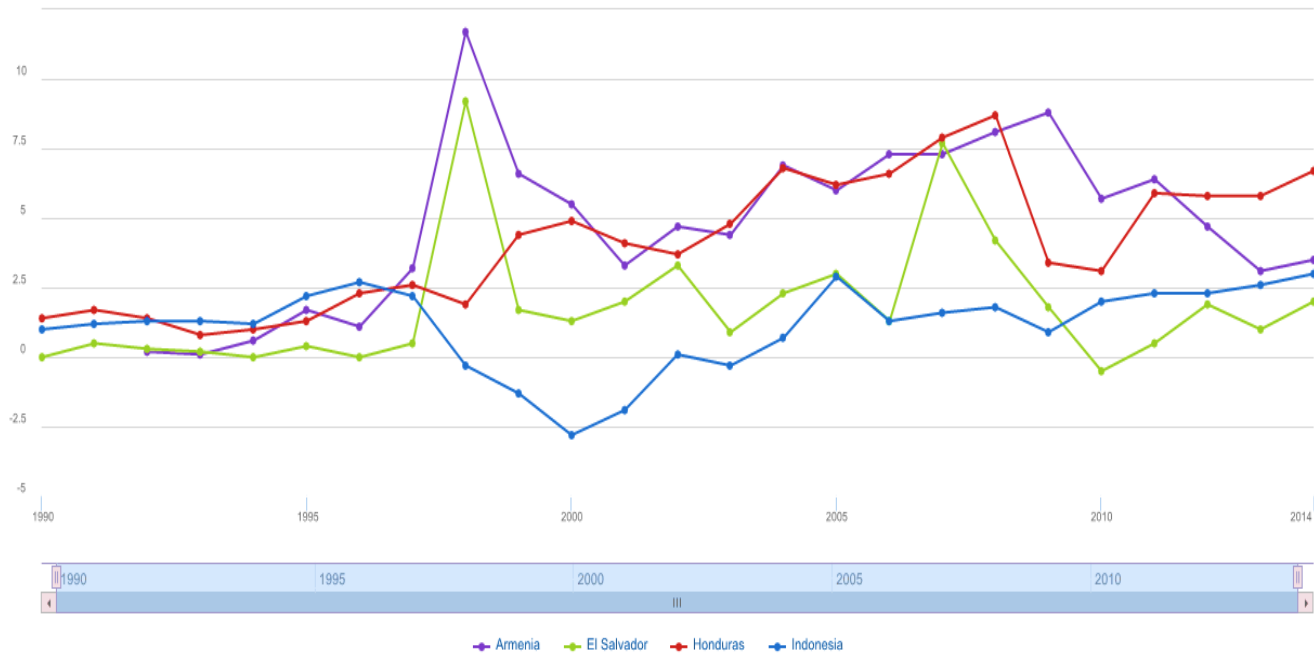
Series : Foreign direct investment, net inflows (% of GDP)
Source: World Development Indicators
Created on: 10/26/2016

Fig 3.2: Trend in Trade % GDP from 1990-2014
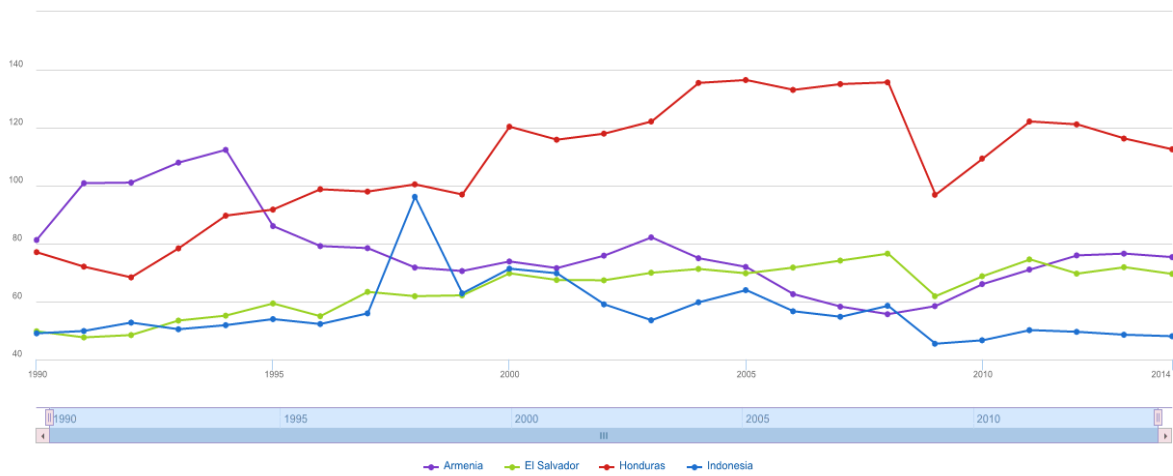
Series : Trade (% of GDP)
Source: World Development Indicators
Created on: 10/26/2016

Fig 3.3: Trend in Informal Employment from 1990-2014

Series : Informal employment (% of total non-agricultural employment)
Source: World Development Indicators
Created on: 10/26/2016

4. Results

The analysis was conducted by first employing a set of random effect panel regression, which was then tested for Heteroskedasticity using a Likelihood Ratio test over Iterated GLS regressions and GLS regressions. The results suggested presence of Heteroskedasticity. A test for serial correlation using the Wooldridge test was conducted but it found no presence of serial correlation. The fixed effects regression was then conducted.

The Hausman test results suggest that it is more suitable to use the Random Effects model. Since the diagnostic tests suggested that Heteroskedasticity exists in the regressions, the cluster option over countries in the random effects regression was adopted for both determinants of globalisation.The full results and description of the diagnostic tests, the Fixed Effects model and Hausman tests can be found in the appendix.

Finally, the corrected Random Effects Model becomes the main model for the analysis. The results are reported and elaborated below:

Table 4.1: Random Effects Regression for Trade Openness and Trade RestrictionsRobust to Heteroskedasticty using Cluster.

VARIABLES	Clustered RE Restriction	Clustered RE Openness	Clustered RE Globalisation
FDI Inflows (%GDP)		-0.00230	-0.00318
		(0.00412)	(0.00390)
Trade(%GDP)		0.00811*	0.00831**
		(0.00422)	(0.00416)
GDP per Capita	2.832**	2.868**	2.885**
	(1.383)	(1.389)	(1.371)
Corruption	0.805	0.915	0.896
	(0.680)	(0.671)	(0.683)
Taxes on InternationalTrade (%Revenues)	0.00257		0.00382
	(0.00521)		(0.00521)
Constant	-15.89*	-17.36**	-17.72**
	(8.277)	(8.417)	(8.484)
Observations	500	500	500
Number of clusters	20	20	20

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

From the table above,it can be seen that in the*clustered random effects regressions,* after correcting for Heteroskedasticity and Serial Correlation, the results indicate that in*Openness*, where the independent variables of interest are *FDI inflows* and *Trade* - Trade (%GDP), showed a positive and significant relationship hence the outcome for this is in line with the theory on globalisation and informality. Carr and Chen (2002), Goldberg and Pavcnik (2003) and Stallings and Peres (2000) also observe the trend that trade gives rise to shifts from the formal to the informal sector.

FDI Inflows shows a negative and insignificant relationship. An explanation for this could be the fact that investment inflows may cause increased production, thereby increasing demand for labour, which may prevent the shift from formal to informal jobs due to trade openness. Bacchetta, Ernst and Bustamante (2009) found similar results but for trade openness. FDI Inflows is one of the measures for openness to trade and capital in this analysis. A point to note regarding this is that the evidence was found to be greatly region-specific by Bacchetta, Ernst and Bustamante (2009). The sample included 20 developing countries which may explain the difference in results from other studies.

It is possible that for developing countries, employment in the informal sector may be determined by market struckture, legislation, government policies, etc rather than globalisation. Fugazza and Fiess (2010), however, found a positive and significant relationship of trade flows with informal employment, suggesting that higher flows from trade result in higher informal employment.

As for the rest of the explanatory variables, *GDP per capita* is significant and has a strong positive relation to informal employment. This indicates that increase in GDP per capita by 1 unit gives rise to informal employment by 28.7%.The established perception in previous research works and theory suggests that high GDP per Capita reflects the level of development in an economy, higher development is supposed to reflect lower levels of informality. Loayza and Rigolini (2006) found that informal economy is larger in countries with lower GDP per Capita suggesting a negative relationship between the two.

It is believed that globalisation, or more specifically increased foreign direct investment or FDI, has brought about easier technology transfer while prompting efficiency in production processes. Hence, when trade liberalisation occurs in economies that are in the process of transition, it is thought to be good for growth which may be reflected by higher GDP per Capita (McMillan and Rodrik, 2011). But emerging nations could also be more globalized or growing in terms of productivity which may increase competition among producers. We know from theory and previous economic papers that this may in turn give rise to informal employment as firms cut formal employees and reduce wages.

Corruption is also positive in relation to informality but is insignificant. This,while establishing the relationship in line with theory, does not corroborate the existing evidence found in previous research papers, where corruption was found to be a significant factor. Fugazza and Fiess (2010) found that corruption was insignificant in their fixed effects model but upon conducting a Generalised Method of Moments the relationship became significant and was positive.

For **Trade Restrictions**, the independent variable, globalisation in terms Taxes on Trade (as % of Revenues) shows a positive but insignificant relationship to informality. Goldberg and Pavcnik (2003) also observed similar results in terms of trade restrictions and informality where increased trade restrictions did not cause lower informal employment in Brazil or Colombia. Relationship between trade restrictions and informal employment has also been found to be negative. Many country-specific studies as well as certain cross country studies such as Fugazza and Fiess (2010) found that the relationship between tariffs, a form of trade restriction, and informal employment was negative and significant and they established that links between trade and informality are market and industry-specific and may also vary from country to country.

To corroborate this notion, it was observed that Markovic (2009) suggests that movements in the labour market during the nineties led to many job losses as technological surplus as well as economical surplus and the rate of unemployment, lower wages and the lack of payment of salaries could have led to the rapid rise in informal employment. For African nations, Sparks and Barnett (2010) suggest that rural-urban migration, structural adjustment policies, labour laws, peace and military situation also play a role in determining informal employment.

Among the other explanatory variables, *GDP per capita* is significant, displaying a positive relationship. This also corroborates existing evidence and theory in previous papers such as Bacchetta, Ernst and Bustamante (2009) and Fugazza and Fiess (2010).*Corruption* in this regression displayed a positive but insignificant relationship.

In order to compare the results achieved by employing all three indicators of globalisation together, the study conducted a third clustered random effects regression, referred as *Globalisation* in the table. The results from this regression suggest that only Trade and GDP per Capita are significant at 5% level of significance. No change was observed for the level of significance for other variables.

5. Conclusion

The objective of the study was to address how globalisation affects informal employment. The popular view is that there is a rise in informality in developing countries due to globalisation. The review of the research papers conducted on the effect of globalisation on the informality and wages looks at numerous studies that investigate the empirical relationship between informality and trade liberalisation. This paper aims to add to the growing literature on this topic by considering a selection of countries in the lower income parts of the world. Since the term 'developing country' is less specific and somewhat ambiguous, it is important that further classification is made when conducting such analysis.

The theory and research works upon which this analysis is based focused on developing countries in their studies at the time. In the present context, this term is no longer a suitable classification of a country. Refer to updated features of the World Development Indicators, World Bank (2016). This study also employs data that relies on measures of globalisation such as Trade and FDI unlike other cross-country analyses on this topic that use Globalisation Index for analysis.

The results of this study suggest that informality has a positive and significant relationship with *trade* but the relationship between informality and *FDI inflows* is not significant. Moreover, the relationship is negative, which may be explained using the increased outputs that result from foreign investment in an economy.Similarly, the research discovered that trade restrictions were also not significant in relation to informality. Other papers like Marjit and Beladi (2005), concluded that openness in the manner of reduced tariffs causes rise in informal employment in their cross-country analysis. Goldberg and Pavcnik (2003) found evidence of rising informal employment due to trade liberalization in the 1990's in Colombia.

Studies suggest low and middle income countries have become more open to trade and there exists rising informal employment in many of these countries. While most research corroborates the view that rising globalisation leads to informality, from the results obtained in this thesis, it is inferredthat for low and lower middle income countries, all dimensions of globalisationmay not play a significant role in causing informal employment, although trade openness does play a significant role.

The results of this paper may differ from evidence available in previous research works due to it having a smaller selection of countries with fewer observations and due to its focus being on a specific income group. Many of the cross country studies look at a wider group of countries, not low and lower middle income ones. Other studies are country specific and use labour force survey, household income and expenditure data for the purpose of analysis.

It might be suggested that for low and lower middle income countries, other factors may be more important in establishing the level of informal sector employment such as market structure, economic policies, investment, regulations, legislations, etc may play a more significant role in determining informality.

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7. Appendices

7.1 APPENDIX A:

List of Countries:

1. Uganda
2. Pakistan
3. Tanzania

4. Ethiopia

5. Philippines

6. India

7. Honduras

8. El Salvador

9. Cote d'Ivoire

10. Nicaragua

11. Armenia

12. Benin

13. Kyrgyz Republic

14. Moldova

15. Mali

16. Ukraine

17. Nepal

18. Madagascar

19. Indonesia

20. Kenya

7.2 APPENDIX B

Table B.1: Data components and definitions

	Full Form	Definition	Source
Trade	Trade as % of GDP	Trade is the total of exports and imports of goods and services in an economy measured as a percentage of gross domestic product.	World Bank national accounts data, and OECD National Accounts data files.
FDI	FDI Inflows % of GDP	Foreign direct investment are the net inflows of investment which include acquiring a long-term management concern (i.e	International Monetary Fund, International Financial Statistics and Balance of Payments databases

		10 percent or greater of voting stock) in a firm operating in the economy from the investors from another economy. It is the total of equity capital, reinvestment of earnings, other long-term capital, and short-term capital in the balance of payments. This is expressed as percentage by GDP.	World Bank, International Debt Statistics, and World Bank OECD GDP estimates.
Corruption	CPIA Transparency, Accountability and Corruption	Transparency, accountability, and corruption in the public sector are used in this measure and the three foremost measurements evaluated here are the accountability of the administrative to oversight institutions and also of performance of public service employees as well as public access to information on relevant affairs.	CPIA Database
Tax on Trade	Taxes on International Trade as % of Revenues	Taxes on international trade (% of revenues) include import and export duties, profits earned by export or import monopolies, exchange profits, and exchange taxes. These have been expressed as percentage of revenues.	International Monetary Fund World Bank
Informality	Informal employment (% of total non-agricultural employment)	Defined in details above.	International Labour Office, Key Indicators of the Labour Market database.
GDP per Capita	GDP per capita (current US$)	GDP per capita refers to gross domestic product divided by the mid year population.	World Bank national accounts data, and OECD National Accounts data files.

Dataset:

The dataset can be accessed at the following link:

https://drive.google.com/open?id=0BxDiYK4W6eFFOURXMVlhclhHYkU

7.3 APPENDIX C

Table C.1: Non Robust Random Effects Panel Regression Estimates for Openness and Restriction

VARIABLES	Openness	Restriction
Trade	0.00811**	
	(0.00366)	
FDI Inflow	-0.00230	
	(0.00384)	
GDP per Capita	2.868***	2.832***
	(0.925)	(0.886)
Corruption	0.915**	0.805**
	(0.388)	(0.383)
Tax on Int'l Trade		0.00257
		(0.00412)
Constant	-17.36***	-15.89***
	(5.601)	(5.477)
Observations	500	500
Number of clusters	20	20

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.3.1 DIAGNOSTIC TESTS AND RESULTS

Heteroskedasticty and Autocorrelation in Non Robust Random Effects Model:

- A GLS regression was conducted followed by an in iterated GLS in order to test for *the Likelihood Ratio Test* to test for presence of Heteroskedasticty in the regressions. Since iterated GLS with only heteroskedasticity produces maximum-likelihood parameter estimates, the LR test was applicable to test for heteroskedascity. The

iterated GLS regression is assumed to be heteroskedastic and GLS is assumed to be homoscedastic.

The LR Test assumes that homeskedastic estimates are nested in heteroskedastic estimates. The Likelihood Ratio Test confirms the presence of Heteroskedasticty as we reject the null in the data for both regressions for globalisations. The results and coefficients of the GLS regression are available in Table C.2 and C.3 of the Appendix.

Table C.2: Results of GLS Regression for Openness. (1) shows Heteroskedastic values. (2) shows Homoskedastic values.

VARIABLES	GLS Openness Heteroskedastic	GLS Openness Homoskedastic
Trade	-0	0.00336
	(2.31e-09)	(0.00329)
FDI Inflow	0	0.000823
	(1.65e-09)	(0.00350)
Corruption	-0	0.798**
	(1.77e-07)	(0.344)
GDP per Capita	0	2.925***
	(5.58e-07)	(0.624)
Constant	1***	-17.15***
	(2.84e-06)	(3.748)
Observations	500	500
Number of clusters	20	20

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table C.3: Results of GLS Regression for Restriction. (1) shows Heteroskedastic values. (2) shows Homoskedastic values.

VARIABLES	GLS Restriction Heteroskedastic	GLS Restriction Homoskedastic
Tax on Int'l Trade	0	0.00482
	(1.19e-09)	(0.00407)
Corruption	-0	0.756**
	(6.74e-08)	(0.332)

GDP per Capita	0	3.016***
	(1.84e-07)	(0.590)
Constant	1***	-17.26***
	(1.04e-06)	(3.728)
Observations	500	500
Number of clusters	20	20

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

- When testing for autocorrelation using *Wooldridge test for autocorrelation in panel data*, both Openness and Restriction showed presence of no autocorrelation. The null hypothesis is no serial correlation. We accept null so there is no autocorrelation.

- **Fixed vs Random Effects**: Fixed and Random effects estimation was then carried out.

  The random effects assumption is that the individual specific effects are uncorrelated with the independent variables. The fixed effect assumption is that the individual specific effects are correlated with the independent variables.

  We commonly use the Durbin-Wu Hausman test to decide which model is better. The null hypothesis of the Hausman Test is that the random effects assumption holds. Upon conducting *Hausman Test* on these regressions, it was found that the *random effects model is the more suitable for Openness and Restriction*since we failed to reject the null.

- Upon testing the Fixed Effects Model for Heteroskedasticity using the *Modified Wald statistic for groupwise heteroskedasticity in fixed effect model*, it was found that Heteroskedasticity was present for Openness and Restriction. The null hypothesis is homoskedasticity (or constant variance) is present but here we reject the null and conclude that there is heteroskedasticity.

Table C.4: Fixed Effects Regression Estimates

VARIABLES	FE Openness	FE Restriction
Trade	0.0100**	
	(0.00389)	
FDI Inflow	-0.00354	
	(0.00404)	
GDP per Capita	3.003**	2.545**
	(1.227)	(1.192)
Corruption	0.918**	0.892*
	(0.451)	(0.455)
Tax on Int'l Trade		0.00176
		(0.00422)
Constant	-18.39**	-14.10*
	(7.362)	(7.208)
Observations	500	500
R-squared	0.071	0.057
Number of clusters	20	20

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$