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An Econometric analysis

Effects of Mothers Profession

Highlights

Monetary Policy and Inflation

Protection of Indigenous Peoples

Discovering Thoughts, Inventing Future

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Protection of Indigenous Peoples the Owner of Traditional Cultural Expressions in Indonesia

By Ayu Citra Santyaningtyas & Endang Sri Kawuryan
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Abstract- Indonesia has 33 provinces with different ethnics and cultures that the presence is highly valuable.[1] Therefore, Indonesia is known as the rich country with great diversity of art legacies and traditional culture expressions. This diversity is possibly prominent due to various ethnics living in Indonesia with their high level of creativity to invent the art and traditional cultural expression.

As a multicultural ethnicity, Indonesia is a set of different types of people from various characters and original culture. Indonesia has a lot of artistic and cultural expression that comes from indigenous peoples which is inherited and can be used by anyone and at any time (the common heritage of mankind).

Keywords: protection, indigenous peoples, owner, traditional cultural expressions, Indonesia.

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Protection of Indigenous Peoples the Owner of Traditional Cultural Expressions in Indonesia

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Abstract- Indonesia has 33 provinces with different ethnics and cultures that the presence is highly valuable.[1] Therefore, Indonesia is known as the rich country with great diversity of art legacies and traditional culture expressions. This diversity is possibly prominent due to various ethnics living in Indonesia with their high level of creativity to invent the art and traditional cultural expression.

As a multicultural ethnicity, Indonesia is a set of different types of people from various characters and original culture. Indonesia has a lot of artistic and cultural expression that comes from indigenous peoples which is inherited and can be used by anyone and at any time (the common heritage of mankind). As a national asset that has existed for hundreds of years ago, needs to be addressed more seriously in providing protection to traditional cultural expressions (EBT), which can be useful for the welfare of the nation because it has a high economic value. but ownership of traditional cultural expressions that vary have been used by foreigners, especially the developed countries without distribution of profits to Indonesia. at this point the protection of traditional cultural expressions in Indonesia simply by copyright (copyright) which in practice is very difficult and needs to urgently regulate specific legal rights (sui generis) regulating the use of traditional cultural expressions for the sake of national interests and the interests of indigenous peoples as the owner of expression traditional culture.

Keyword: protection, indigenous peoples, owner, traditional cultural expressions, Indonesia.

I. Introduction

Traditional cultural expressions is a state asset with huge potential for the prosperity of the nation because it has a high economic value, but ownership widely recognized (claimed) by foreign parties in the absence of benefit sharing, resulting in a conflict of interest between developed countries and developing countries like Indonesia. Our weakness in developing protection systems lack appropriate systems and adequate protection and limited system of protection of traditional cultural expressions. Struggle Indonesia as a developing country for their legal protection continue to be held to formulate a proper protection for traditional knowledge, at the international level in 2000 formed ICGRTKF (Inter-governmental Committee on Genetic Resources, Traditional Knowledge, and Folklore) by WIPO to discuss possible Possibility holding of a binding agreement, in an effort to protect international law, then at the national level the Government is conducting the discussion on the bill (the bill) on SDGPTEBT (Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions). While existing namely Law No. 28 of 2014 on Copyrights have not been fully able to provide protection for traditional cultural expressions.

That requires a new legal regime that is responsive and specifically relating to the rights and obligations in the use of traditional knowledge and traditional cultural expressions and needed the protection of the indigenous peoples as owners of traditional cultural expressions.

a) Protection of indigenous peoples as owners of traditional cultural expressions

Protection of traditional cultural expressions have deep meaning for human dignity and considers important with regard to indigenous peoples. Despite the recognition of indigenous rights and cultural heritage has been gaining momentum in international law since the adoption of the UN Declaration on the Rights of Indigenous Peoples, states have interpreted the right to develop "on their own terms" in order to Achieve the welfare of indigenous peoples.[2] While traditional cultural expressions as a supporter of the international economy has emerged and brought the wound for the indigenous owners of traditional cultural expressions.[3]

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[1] Eva Damayanti, Hukum Merk Tanda Produk Industri Budaya, PT. Alumni, 2002, P.12

[2] Klaus Bosselmann, Introduction to State Sovereignty, Indigenous Governance and International Law, in Democracy, Ecological Integrity and International Law, No. 116,2010, P. 116 ; J. Ronald Engel, Laura Westra and Klaus Bosselmann, Democracy, Ecological Integrity and International Law, Cambridge Scholars Publishing, 2010, P.50

[3] Samuel P. Huntington and Lawrence E. Harrison, Culture Matters: How Values Shape Human Progress, April ,No.3, 2001, P.27; Richard D. Lamm, The Culture of Growth and the Culture of Limits, Soc. Cont, No.9, 1999, P. 163

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Attempt to show the indigenous owners of cultural expression of traditional order Increasingly protected intensified through international forums, Including the Year of the UN International Indigenous Peoples of the World (United Nations International Year for the World's Indigenous), the which aims to preserve, protect and develop embodiment of the past, present and future of Reviews their culture as heritage, designs, ceremonies, technologies, visual and performing arts and literature, as well as the right to sue redress of cultural property, intellectual, religious and spiritual they are taken without the consent of free and fair or Contrary to the laws and customs. The first international conference on Cultural and Intellectual Property Rights of The natives held in New Zealand in 1993, the roomates managed to Mataatua Declaration states that:[4]

1. The right to protect traditional knowledge is part of the right to Determine fate
2. Indigenous people should Determine for itself what constitutes intellectual property and their culture
3. Protection tools that exist are inadequate
4. The code of conduct should be developed to be adhered to the outside when the recorded knowledge traditional and customary
5. An agency should be established to conserve and monitor the works and commercialization of this knowledge, to recommend to the indigenous people on how they can protect Reviews their cultural history and to negotiate with government regarding the laws that Affect the traditional rights
6. An additional system regarding cultural and intellectual property rights should be established Recognizes that: (1) collective ownership and passed retroactively, (2) protection against debasement of culturally significant items (protection against the abuse of objects cultural significance), (3) co-operative rather than competitive framework (framework that is concerned with cooperation than competition), (4) first beneficiaries to Be direct Descendants of the traditional guardians of the knowledge (most eligible is a descendant of the keepers of traditional knowledge).

Furthermore, It also has conference held in Bolovia indigenous people in Fiji in 1994 and 1995, Efforts intensified further while WIPO to prepare a report on the fact-finding traditional knowledge.

In Indonesia the implementation of protection of traditional cultural expressions made by the Directorate General of the Department of Intellectual Property Law and Human Rights. At this time the traditional cultural expressions which are in Indonesia are being inventoried to find a format appropriate protection. traditional cultural expression is the result of creativity and intellectual made by groups and individuals in the community who demonstrate social and cultural identity based on the standards and values of the spoken or followed from generation to generation, Including: folklore, folk songs and instruments traditional music, folk dances, traditional games, art works such as paintings, drawings, engravings, sculptures, mosaics, jewelry, crafts, clothing, musical instruments and traditional weaving.[5]

Traditional Cultural Expressions safeguards do with the intellectual property rights system. Characteristics of intellectual property rights protection system in providing protection to copyrighted works is an individual and distinct identity of its creator, as well as the period of protection is limited. This is different to the characteristics of traditional cultural expressions that has existed since a long time that the creator is not clear and the communal property and the limited term of protection for Traditional Cultural Expressions are closely linked to the identity of indigenous peoples or those who have it.

In Indonesia, the protection of traditional cultural expressions contained in Article 10 Copyright Act No. 28 of 2014 on "the copyright of the author is unknown protected by the state". In Article 10 it appears that folklore is part of the culture of the area of copyright held by the state. But in fact, traditional cultural expressions still do not get protection. Article 10 of Law No. 28 Copyright 2014 actually directed specifically to protect the native culture of indigenous peoples. But for a traditional society would be difficult to use and are entitled to benefit from the stranger who exploit traditional works without the authorization of the work's creator traditional, through the State.

b) Benefit Sharing of Traditional Culture For traditional communities in Indonesia

Traditional cultural expressions in Indonesia can provide economic value or with a major contribution to the national wealth. It is not realized between Indonesia that traditional cultural

[4] IASTP AUSAID, P. 381

[5] Naskah Akademik Pengetahuan Tradisional, 2006, Jakarta, BPHN dan Ditjen HKI RI, P. 38; Endang Purwaningsih, Perlindungan Hukum Terhadap Kekayaan Intelektual Warisan Bangsa Sebagai Implikasi Yuridis Nilai-Nilai Kebangsaan Menuju Ketahanan Nasional, Negarawan Kementerian Sekretariat Negara RI, Vol.26, 2012, P.4

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products, including textiles, may get a price of 100,000 dollars in the United States per year.[6] At this time the lack of awareness of Indonesia to protect traditional cultural expressions they have encouraged developed countries to take advantage of traditional cultural expressions in Indonesia.[7]

Utilization of traditional cultural expressions is defined as the use of traditional cultural expressions as a commercial asset and consolidation right through the system without benefit sharing of intellectual property. The concept of access to benefit sharing of traditional cultural expressions can be understood from an international perspective. There are two (2) different aspects of benefit-sharing framework, especially the universal distribution of specific benefits and profit sharing. As revealed by Kadri Simm, "shared universal profit sharing represents a potential positive for the company to use traditional cultural expressions that without a specific profit sharing and participate directly in the company." It is also said that the "universal profit sharing have been based on the absence of justice in a situation of use of traditional cultural expressions".[8]

Michael Finger and Philip Schuler has reported that the purpose of the distribution of profits is to enable indigenous peoples to use their traditional knowledge to take advantage of the creativity and their thinking. Profit sharing is also possible their development strategy to gain edge facilities that can be used for the utilization of their traditional cultural expressions.[9] such an arrangement can be beneficial to all members of the indigenous peoples and the general public, especially if the traditional cultural expression tersebutdapat clearly identified and the protection is not going to cost significant transactions, or does not produce what is called the "tragedy of the anti-commons" by Michael Heller and Rebecca Eisenberg.[10]

Maximizing the benefits of this arrangement, commentators advocated the use of property or intellectual property rights by creating a limited monopoly system, or similar to what has been offered in the intellectual property system. Model exclusive rights will enable traditional communities to get a higher return from the use and exploitation of their traditional culture. As Professor Daes disclosed, the results of the traditional culture that can be easily reproduced at a lower cost with the machine, or produced in large quantities, will quickly lose the new values or commercial.[11]

Although the traditional cultural expressions have economic value, indigenous peoples do not view their heritage through the perspective of the property. This legacy will remain the responsibility of society and the individual. Therefore, for indigenous peoples, heritage is a relationship in the community, not the unity of the economic rights.

Naomi Mezey has noted that traditional culture as the property is in contradiction with the core concept. The property is kept, owned, controlled by the owner, and transferable. Traditional culture is collectively owned, and thus, there are no attributes remain self-interested in this property. Claims for traditional cultural property is to improve the traditional culture if something should not be fixed, dynamic and unstable.[12]

Society and government, especially local government, plays an important role in contributing to the protection of the basic potential of traditional culture. The interesting part of the protection of traditional culture is that foreigners are allowed to use and benefit from traditional culture through a profit-sharing arrangement. This arrangement offered to improve the utilization of traditional cultural expressions. An appropriate method for the distribution of profits is through agreement or contract. The method is consistent with the significance of profit sharing that benefit must be received by the participants of the collective interest, which in this case is the traditional cultural expressions.

Significance contract for the utilization of traditional culture refers to access benefit sharing

[6] Kanti Rahayu, Arti Penting Folklore dan Tradisional Knowledge bagi Indonesia sebagai The Country Of Origin, Jurnal Hukum dan Pembangunan, Vol I,No.XI,2013

[7] Lukman Hakim, Upaya Harmonisasi Terhadap Perlindungan Pengetahuan Tradisional "Traditional Knowledge" di Indonesia, Yustika, Universitas Airlangga, Vol. 12, No.2, Desember, 2009

[8] Simm Kadri, Benefit Sharing Frameworks - Justifications for and against benefit sharing in human genetic research, A Report for GenBenefit, 2007, P.18

[9] Bhagirath Lal Das, The WTO Agreements: Deficiencies, Imbalances and Required Changes, Zed Books, World Network, London, 1998, P.128; Michael Finger and Philip Schuler Poor People's Knowledge: Promoting Intellectual Property in Developing Countries (Trade and Development), World Bank Publications; 1 edition, January 29, 2004,183

[10] Michael Heller, The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives, Basic Books, 2010,P.49–78; Michael A Heller and Rebecca S Eisenberg, 'Can Patents Deter Innovation? The Anticommons in Biomedical Research', No.280,2008, P. 698

[11] Erica A. Posner, The International Protection of Cultural Property; Some Skeptical Observation, CHI.J. INT'L, Vol.8, 2007, P.217; Peter K.Yu, Currents and Crosscurrents in the International Intellectual Property Regime, LOY.L.A.L.Rev, Vol.38, No.323, 2004, P.429.

[12] Naomi Mezey, 'The Paradoxes of Cultural Property' Columbia L Rev, No.204, Vol.107,2007, P. 200-205

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of traditional cultural expressions. Therefore, contract or agreement must be understood in the perspective of law. The contract or agreement must also be prepared based Burgerlijk Wetboek which explains the validity of the contract. Participants of the contract or agreement should be legally restricted and proportionate assigned to justify justice for local people. In Section 1320 Burgerlijk Wetboek, stated that the validity of the contract includes four items such as:

1. Agreement
2. Skills
3. A specific case
4. A legitimate case

subjective requirements that must be met in a "contract utilization of traditional cultural expressions" are as follows:

1. Parties are presented to the use of traditional cultural expressions (alien); and
2. The Parties are presented to capitalize on traditional cultural expressions (custodian).

The top of the provision also states that access to benefit sharing of traditional cultural expression is determined based on the principles of decency and fairness. In making the deal, both decency and fairness are key principles that must be attended by participants from the contract if they want to access benefit sharing in the use of traditional cultural expressions. "Agreement" means the legal validation of the contract if the contracting parties wish to accept what the purpose of the contract.

The purpose of the contract is the objective requirements that affect the question whether the contract provides "lawful" purposes that are permitted by law. If these requirements fail to be met, or the purpose of the contract would be contrary to law, decency and fairness, or disrupt morality, then the contract is deemed as invalid.

All three principles (treaties, decency and fairness) is a unity that must be understood by the parties in the access contract profit sharing in the use of traditional cultural expressions. Act No. 11 of 2013 on Ratification of the Covenant Diversity on Genetic Resources, and also access to benefit sharing in the use of traditional cultural expressions by way of fairness and balance, will open up the opportunity to manage the utilization of genetic resources and traditional knowledge. traditional cultural expressions by way of justice and balancing is one such opportunity. Implications This law affects the way to recognize the existence of indigenous peoples, local knowledge and the rights of this community.

II. Conclusion

The use of traditional Indonesian cultural assets with developed countries is very dramatic in recent years. As shown by the newspapers and the electronic media, traditional cultural expressions asset utilization done not only by foreign business people, but also by developed countries. utilization of traditional cultural expressions can lead to frustration among members of indigenous peoples, and therefore the government needs to do to protect the asset protection of traditional cultural expressions. An attempt to provide protection of traditional cultural expressions in Indonesia in improving economic development can be done with access to the sharing of benefits from the utilization of traditional cultural expressions for improving the welfare of indigenous peoples.

References Références Referencias

1. Bhagirath Lal Das, The WTO Agreements: Deficiencies, Imbalances and Required Changes, Zed Books, World Network, London, 1998.
2. Endang Purwaningsih, Perlindungan Hukum Terhadap Kekayaan Intelektual Warisan Bangsa Sebagai Implikasi Yuridis Nilai-Nilai Kebangsaan Menuju Ketahanan Nasional, Negarawan Kementerian Sekretariat Negara RI, Vol.26, 2012.
3. Erica A. Posner, The International Protection of Cultural Property; Some Skeptical Observation, CHI.J. INT'L, Vol.8, 2007.
4. Eva Damayanti, Hukum Merk Tanda Produk Industri Budaya, PT. Alumni, 2002
5. J. Ronald Engel, Laura Westra and Klaus Bosselmann, Democracy, Ecological Integrity and International Law, Cambridge Scholars Publishing, 2010.
6. Kanti Rahayu, Arti Penting Folklore dan Tradisional Knowledge bagi Indonesia sebagai The Country Of Origin, Jurnal Hukum dan Pembangunan, Vol I,No.XI,2013
7. Klaus Bosselmann, Introduction to State Sovereignty, Indigenous Governance and International Law, in Democracy, Ecological Integrity and International Law, No. 116,2010.
8. Lukman Hakim, Upaya Harmonisasi Terhadap Perlindungan Pengetahuan Tradisional "Traditional Knowledge" di Indonesia, Yustika, Universitas Airlangga, Vol. 12, No.2, Desember, 2009
9. Michael A Heller and Rebecca S Eisenberg, 'Can Patents Deter Innovation? The Anticommons in Biomedical Research', No.280,2008
10. Michael Finger and Philip Schuler Poor People's Knowledge: Promoting Intellectual Property in Developing Countries (Trade and Development),

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World Bank Publications; 1 edition, January 29, 2004
11. Michael Heller, The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives, Basic Books, 2010.
12. Naskah Akademik Pengetahuan Tradisional, BPHN dan Ditjen HKI RI, Jakarta, 2006.
13. Naomi Mezey, 'The Paradoxes of Cultural Property' Columbia L Rev, No.204, Vol.107,2007
14. Peter K.Yu, Currents and Crosscurrents in the International Intellectual Property Regime, LOY.L.A.L.Rev, Vol.38, No.323, 2004
15. Richard D. Lamm, The Culture of Growth and the Culture of Limits, Soc. Cont, No.9, 1999.
16. Samuel P. Huntington and Lawrence E. Harrison, Culture Matters: How Values Shape Human Progress, April ,No.3, 2001.
17. Simm Kadri, Benefit Sharing Frameworks - Justifications for and against benefit sharing in human genetic research, A Report for GenBenefit, 2007

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Industry Specific Multipliers to Identify Key Industries of Indian Economy: An Application Ofinput Output Analysis

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Abstract- Using the interindustry input output tables of Indian economy obtained from World Input Output Database (Timmer et al., 2015) for the period 1995-2009, the study attempts to estimate the industry specific multipliers of Indian economy and further identifies the key industries with greatest output andemployment potential. The output and employment multipliers are analyzed after constituting a closed and open Leontief demand driven input output model. The open Leontief model gives type I multipliers of output and employment while closed Leontief model gives type II multipliers. These models are open and closed with respect to household sector. Thus, the study enables the comparative analysis of multiplier effects in terms of employment and output generation for each industry within the Indian economy.

Keywords: key industries, input output analysis, interindustry tables, leontief model, output multiplier, employment multiplier, type i multiplier, type ii multiplier, world input output database (wiod), indian economy.

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Industry Specific Multipliers to Identify Key Industries of Indian Economy: An Application Ofinput Output Analysis

Priyanka Tariyal

Abstract- Using the interindustry input output tables of Indian economy obtained from World Input Output Database (Timmer et al., 2015) for the period 1995-2009, the study attempts to estimate the industry specific multipliers of Indian economy and further identifies the key industries with greatest output andemployment potential. The output and employment multipliers are analyzed after constituting a closed and open Leontief demand driven input output model. The open Leontief model gives type I multipliers of output and employment while closed Leontief model gives type II multipliers. These models are open and closed with respect to household sector. Thus, the study enables the comparative analysis of multiplier effects in terms of employment and output generation for each industry within the Indian economy. The results reveal that Agriculture, hunting, forestry and fishing output and employment , Food beverages and tobacco, Textiles and textile products, Retail trade, except of motor vehicles and motorcycles; repair of household goods, Private households with employed persons are important industries of Indian economy.

Keywords: key industries, input output analysis, interindustry tables, leontief model, output multiplier, employment multiplier, type i multiplier, type ii multiplier, world input output database (wiod), indian economy.

I. Introduction

In the midst of gloom in the global economy with consequential impact on India, highly output and job oriented industries can give positive results in terms of increasing economic growth as they could be considered as the ones creating demand and employment for other segments of the economy and thus acting as leaders of economic growth (ASSOCHAM, 2016). The Indian economy is continuously evolving towards higher value added activities and employment generation has become a key area of concern. Thus, it is crucial to examine the employment and output linkages between the sectors. Using the input output tables, this paper generates a detailed breakdown of how a change in final demand in an industry creates output and employment within that industry and further effects production and employment in overall economy. The importance of a sector with respect to economic growth and development can be measured by determining the output and employment effects of that sector on the whole economy. But, the growth in gross domestic product does not always have the expected positive impact on employment (Ernst and Sarabia, 2008). Also, if the highly linkage sectors in terms of output are dependent on capital intensive intermediate products then, the policy thrust on boosting such sectors will not accomplish employment generating goals (Bhattacharya and Rajeev, 2014). Thus it is crucial to understand which sectors would have increased employment. Thus, the present study investigates the industry specific multipliers by using a symmetric input output tables of Indian economy with greatest output and employment potential. Using an interindustry approach in open as well as closed input output framework, enables us to measure not only the direct and indirect flows of output and job creation but also output andemployment changes attributable to induced effects of interindustry connections.

Input output framework can be used to measure the significance of a sector in terms of its contribution to output and employment through economic impact or multiplier analysis that is the impact of a change in the sectoral final demand on production and employment and backward and forward linkage indices (Valadkhani, 2003). The multiplier analysis rests upon the difference between the initial effect of an exogenous change and total effects of that change. The open input output model with respect to household gives direct and indirect effects while closed input output model with respect to households gives direct, indirect and induced effects (Miller and Blaire, 2009). The extensive literature on input output analysis where most of the studies focusing on measuring linkages and multipliers to identify strategically important sectors of the economy, witnesses methodological improvements such as the direct linkages measured from the column sums of the technical coefficient matrix (Chenery and Watnabe, 1958) replaced with total linkages measured from column sums of the Leontief inverse matrix (Rasmussen,1956). Further, replacement of the row sums of the Leontief-inverse (Rasmussen, 1956) to measure forward linkages with the row sums of the Ghosh-inverse (Beyers, 1976; Jones, 1976).

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a) Objectives of the Study

The objective of the study is to identify the sectors with largest potential for employment and output generation in Indian economy. The specific objectives of the study are:

- Estimate the industry specific output multiplier effects of Indian economy in open and closed input output methodological framework and identify key industries output generating industries for Indian economy.
- Estimate the industry specific employment multiplier effects of Indian economy in open and closed input output methodological framework and identify key employment generating industries for Indian economy.
- Comparing the industry specific employment and output multipliersin open and closed model.

Following the introduction, section 2 deals data sources followed bymethodology in section 3. Section 4 discusses the results. The final section concludes the study.

II. Data Sources

The goal is to build an Input output model based on detailed accounting of interindustry activity in an Indian economy in order to obtain output and employment multiplier effects and backward and forward linkage indices, mainly within the production system. The main data source for this study is World Input Output Database (Timmer et al., 2015) which contains annual time series of input output dataset for 27 European Union (EU) countries and 13 other major countries in the world including India for the period from 1995 to 2009. This database enables us to trace development overtime for an economy through benchmarking to time series of output, value added, trade and consumption from national accounts statistics. The comparison of total output and employment multipliers effects and linkages analysis are facilitated with the help of two wide datasets obtained from WIOD.

- National Input Output tables (NIOT) in current dollars at purchaser's prices for 35 industries for Indian economy. The classification of industries is based on ISIC Rev 3.1.
- Socioeconomic accounts (SEA) provides time series data on Indian economy for number of persons engaged (employees plus self-employed) and labour compensation at sectoral level. This data is denominated in national currency at current prices and thus need to be put on a common basis for the NIOT which is done by using official exchange rates from IMF.

III. Methodology

The methodology undertaken in this study to accomplish the above mentioned objectives is as follows:

- In the beginning, Leontief (1936) demand driven model in open and closed input output frameworkis constructed that follows the methodology presented with Miller and Blaire (2009).
- Output and employment multipliers are obtained using open and closed Leontief input output model.

a) Leontief open model

I-O tables record sales by one producing sector to another and to the final users. The rows of the inter industry transactions table describe the distribution of an industry's output throughout the economy, while the columns describe the composition of inputs required by a particular industry to produce its output. The open input output model, describes the total amount of output induced by the requirement from all industries (direct and indirect effects) to produce output to satisfy the demand for an extra unit of output from an industry (McLennan,2006).

An input output framework with nindustries for an economy can be expressed as a system of linear equations by the following expressions:

$$X_i = \sum^{n}_{j=1} X_{ij} + Y_i, i = 1,2,3.... \quad (1)$$

where, X_{ij} is the output of sector i consumed by sector j, to alltypes of consumption and for final consumption denoted as Y_i. Further the proportion of each input to the output of sector j is denoted by

$$a_{Lij} = X_{ij}/X_j i,\ j = 1,n \quad (2)$$

a_{Lij} 's are called input or technical coefficientsand give the direct input requirement of the i_{th} sector for producing one unit of output of j_{th} sector excluding the indirect effects involved in production process.

Thus, abovementioned equation (1) can now be formulated with equation (2) as so called Leontief production function Equation (3):

$$X_i = \sum^{n}_{j=1} a_{L,ij} X_j + Y_i i = 1,n \quad (3)$$

where, X is endogenous and the column final demand, Y is exogenous.In matrix notation equation (3) can be written as

$$X = A_L X + F \quad (4)$$

where, A_L is the n x n coefficient matrix consisting of standardized elements of a_{Lij}, obtained by dividing each element of the column of the flow matrix by the total input of the buying sector. This equation is a fundamental equation of the open Leontief model.

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Further, equation (4) can be written as:

$$X = (I-A_L)^{-1} * Y \quad (5)$$

where, $(1-A_L)^{-1}$ known as Leontief Inverse or matrix multiplier, gives both direct and indirect requirements of inputs. While direct inputs are those purchased by the sector under consideration, indirect inputs are those purchased by all other sectors in which production has to adjust in order to supply inputs to specific sector.

b) Closed Leontief Model

The household sector receives wages for the work done in production process and spends some or all of this wage income on goods and services. Thus, it is necessary to include household consumption as a new column in the coefficient matrix and including the analogous income as an additional row. Household income is represented, as a proxy by total labour compensation defined as payment for labour services of wage employees and self-employed. The household income coefficient is nothing but the division of labour compensation by total output at basic prices, whereas, household consumption coefficient is obtained by dividing the private household consumption expenditure by total household consumption expenditure. The closed Leontief model for household augmented coefficient matrix would generate a Leontief inverse matrix of dimension (n+1) x (n+1).

$$X = (I_{n+1} - \tilde{A}_L)^{-1} * Y \quad (6)$$

Where, $(I_{n+1} - \tilde{A}_L)^{-1}$ is Leontief inverse matrix for closed Leontief model.

This closed Leontief model describes thedescribes the total amount of output induced by the requirement from all industries to produce output to satisfy the demand from an extra unit of output from an industry, and by the spending of the extra wages and salaries earned (from producing the additional output) by households (McLennan, 2006).

c) Multiplier analysis

Using the demand side input output model, output and employment multipliers are generated following the methodology given with Miller and Blaire (2009).

- *Output Multipliers*

The output multipliers for an industry *j*, is defined as the impact on the production of all industries of the economy due to increase in the final demand of industry *j* by one unit. This impact can be analyzed in terms of three effects. The direct effects are the production changes required to produce the product. This generates the further production changes in industries supplying the increased demand for intermediate goods and services known as indirect effects. Finally, the induced effects occur as households spend their additional income on final goods and services.

The direct and indirect effects of can be derived via summation of column elements of Leontief inverse matrix obtained from equation (5) of open model.

$$\text{Direct + indirect} = \sum_{i=1}^{n} (I-A_L)^{-1} = \text{Type I Output Multipliers} \quad (7)$$

Finally the direct, indirect and induced effects of output multiplier can be derived from the column sum of the Leontief inverse matrix from equation (6) closed model

$$\text{Direct + Indirect + Induced effects} = \sum_{i=1}^{n+1} (I_{n+1} - \tilde{A}_L)^{-1} = \text{Type II Output Multipliers} \quad (8)$$

- *Employment Multiplier*

The employment multiplier of industry j, is the employment generated in all the industries due to increase in the final demand of industry j by one unit. The study takes into account, the direct and indirect employment change in industry j indicated by input output model plus the induced changes in employment resulting from household sector. The first step to calculate employment multiplier is to obtain the fixed labour coefficients for each industry.

$$e_{ij} = L_j/X_j e_j = e_{ij} \text{ if } i = j \quad (9)$$

where, L_j is number of persons engaged (wage employees plus self-employed) and X_j is gross output of industry *j*.

(14)

The direct plus indirect multiplier effects matrix can be obtained by multiplying labour coefficient, e_{ij} for each industry and Leontief inverse matrix from equation (5) of open Leontief model.

$$E(j) = e_{ij} * (I-A_L)^{-1} = L_{ij} \quad (10)$$

Thus, the column sum of the matrix gives the direct and indirect employment changes in industry j due to change in its final demand.

$$\text{Direct plus indirect effects} = \sum_{i=1}^{n} L_{ij} = \text{Type 1 Employment Multipliers} \quad (11)$$

Finally, the direct, indirect as well as induced multiplier effects matrix of industry j can be obtained by multiplyinglabour coefficient, e_{ij} with Leontief inverse of closed Leontief model from equation (6)

$$E(j) = e_{ij*} (I_{n+1} - \tilde{A}_L)^{-1} = L^*_{ij} \quad (12)$$

Similarly, the columnsum of the matrix give total employment multiplier effectsof industry j.

$$\text{Direct + Indirect + Induced effects} = \sum_{i=1}^{n} L_{ij}^* = \text{Type II Employment Multipliers} \quad (13)$$

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IV. Results and Discussion

a) Results of output multipliers from open and closed model

The type I and type II output multipliers for all 35 industriesfor all the years are given in appendix table A and the table below shows top 10 industries with highest type I and type II multipliers. From both the tables, results reveal that type II output multipliers for all the industries are greater than type I output multipliers as the former contains the induced effects generated by household sector through payments for labour services and associated spending on goods produced by various sectors.

Food, Beverages and Tobacco, Textiles and Textile Products, Leather, Leather and Footwear, Rubber and Plastics, Machinery, Nec, have high type I output multipliers for all the years and the multiplier value of each industry contain only the direct and indirect requirement from all the sectors needed to supply to satisfy unit increase in final demand of an industry. Thus, type I output multiplier value of 2.24 for Food, Beverages and Tobacco, implies that every unit increase of final demand for this sector, through direct and indirect effects, theadditional demand created for output in other sectors in 2.24 unit.

Basic Metals and Fabricated Metal have only low type I output multiplier in 2006 and for the rest of the period under study has high type I output multiplier. Transport equipment retained the position in the list of high type I output multipliers till 2002, is nowhere seen till 2009.

Table 1: Industries with highest Type I and Type II Output multipliers

S.No	Sectors	1995		1996		1997		1998		1999		2000		2001		2002	
		Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II
3	Food, Beverages and Tobacco	√ (2.24)	√ (4.43)	√ (2.21)	√ (4.38)	√ (2.21)	√ (4.34)	√ (2.21)	√ (4.23)	√ (2.17)	√ (4.03)	√ (2.21)	√ (4.16)	√ (2.22)	√ (4.28)	√(2.27)	√ (4.33)
4	Textiles and Textile Products	√ (2.27)	√ (4.34)	√ (2.20)	√ (4.27)	√ (2.28)	√ (4.35)	√ (2.22)	√ (4.26)	√ (2.20)	√ (4.11)	√ (2.19)	√ (4.23)	√ (2.19)	√ (4.31)	√ (2.16)	√ (4.20)
5	Leather, Leather and Footwear	√ (2.31)	√ (4.43)	√ (2.30)	√ (4.39)	√ (2.34)	√ (4.48)	√ (2.28)	√ (4.41)	√ (2.23)	√ (4.24)	√ (2.18)	√ (4.31)	√ (2.15)	√ (4.37)	√ (2.09)	√ (4.24)
6	Wood and Products of Wood and Cork		√ (4.13)				√ (4.17)		√ (4.10)		√ (3.85)		√ (3.98)		√ (4.02)		√ (3.99)
7	Pulp, Paper, Paper , Printing and Publishing	√ (2.27)		√ (2.25)		√ (2.31)		√ (2.27)		√ (2.17)		√ (2.16)		√ (2.17)		√ (2.17)	
9	Chemicals and Chemical Products	√ (2.18)				√ (2.27)		√ (2.18)		√ (2.11)		√ (2.13)		√ (2.17)		√ (2.14)	
10	Rubber and Plastics	√ (2.39)		√ (2.35)		√ (2.34)		√ (2.38)		√ (2.28)		√ (2.31)		√ (2.32)		√ (2.33)	√ (3.93)
12	Basic Metals and Fabricated Metal	√ (2.36)		√ (2.29)		√ (2.34)		√ (2.23)		√ (2.12)		√ (2.11)				√ (2.09)	
13	Machinery, Nec	√ (2.32)		√ (2.28)		√ (2.31)		√ (2.25)		√ (2.15)		√ (2.15)		√ (2.13)		√ (2.15)	
14	Electrical and Optical Equipment											√ (2.11)		√ (2.11)		√ (2.05)	
15	Transport Equipment	√ (2.49)		√ (2.45)		√ (2.49)		√ (2.43)		√ (2.37)		√ (2.37)		√ (2.36)		√ (2.35)	
16	Manufacturing, Nec; Recycling	√ (2.52)	√ (4.18)	√ (2.49)	√ (4.13)	√ (2.49)		√ (2.40)		√ (2.16)				√ (2.10)			
18	Construction		√ (4.25)		√ (4.27)		√ (4.35)		√ (4.29)		√ (3.99)		√ (3.97)		√ (4.05)		√ (3.98)
21	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods				√ (4.26)		√ (4.24)		√ (4.32)		√ (4.14)		√ (4.20)		√ (4.30)		√ (4.29)
22	Hotels and Restaurants																
30	Renting of M&Eq and Other Business Activities		√ (4.46)		√ (4.60)		√ (4.59)		√ (4.58)		√ (3.96)		√ (3.99)		√ (4.05)		√ (4.00)
31	Public Admin and Defence; Compulsory Social Security		√ (5.19)		√ (5.25)		√ (5.33)		√ (5.39)		√ (5.04)		√ (4.96)		√ (5.06)		√ (5.06
32	Education																
33	Health and Social Work		√ (4.14)		√ (4.22)		√ (4.29)		√ (4.28)		√ (4.09)		√ (4.03)		√ (4.00)		
34	Other Community, Social and Personal Services		√ (4.59)		√ (4.66)		√ (4.80)		√ (4.94)		√ (4.75)		√ (4.61)		√ (4.53)		√ (4.38)

Note: Symbol √' indicates the sector has high values of type I or Type II output multipliers in particular year
The values in brackets (..) indicates the type I and Type II output multipliers in particular year for a particular sector.
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Table 1: Industries with highest Type I and Type II Output multipliers

S.no	Sectors	2003		2004		2005		2006		2007		2008		2009	
		Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II
1	Agriculture, Hunting, Forestry and Fishing	√(2.31)	√ (4.23)	√(2.28)	√ (3.91)	√ (2.24)	√ (3.72)	√ (2.22)	√ (3.64)	√ (2.23)	√ (3.55)	√ (2.25)	√ (3.70)	√ (2.24)	√ (3.81)
2	Mining and Quarrying	√ (2.19)	√ (4.09)	√ (2.16)	√ (3.76)	√ (2.14)	√ (3.68)	√ (2.18)	√ (3.62)	√ (2.17)	√ (3.60)	√ (2.15)	√ (3.70)	√ (2.17)	√ (3.84)
3	Food, Beverages and Tobacco	√ (2.14)	√ (4.06)	√ (2.12)	√ (3.81)	√ (2.15)	√ (3.78)	√ (2.14)	√ (3.74)	√ (2.19)	√ (3.70)	√ (2.16)	√ (3.80)	√ (2.19)	√ (3.94)
4	Textiles and Textile Products		√ (3.78)				√ (3.42)		√ (3.43)		√ (3.34)		√ (3.54)		√ (3.81)
5	Leather, Leather and Footwear	√ (2.23)		√ (2.20)	√ (3.43)	√ (2.17)	√ (3.37)	√ (2.14)	√ (3.32)	√ (2.17)	√ (3.27)	√ (2.16)	√ (3.38)	√ (2.20)	√ (3.65)
6	Wood and Products of Wood and														
7	Pulp, Paper, Paper , Printing and Publishing	√ (2.19)		√ (2.15)		√ (2.13)		√ (2.08)		√ (2.08)		√ (2.06)		√ (2.06)	
8	Coke, Refined Petroleum and Nuclear Fuel	√ (2.40)	√ (3.95)	√ (2.36)	√ (3.62)	√ (2.32)	√ (3.49)	√ (2.26)	√ (3.44)	√ (2.26)	√ (3.31)	√ (2.24)	√ (3.37)	√ (2.34)	√ (3.66)
9	Chemicals and Chemical Products														
10	Rubber and Plastics	√ (2.14)		√ (2.10)		√ (2.14)		√ (2.13)		√ (2.14)		√ (2.20)		√ (2.19)	
11	Other Non-Metallic Mineral	√ (2.18)		√ (2.12)		√ (2.10)		√ (2.05)		√ (2.07)		√ (2.12)		√ (2.11)	
12	Basic Metals and Fabricated Metal	√ (2.09)		√ (2.06)		√ (2.07)				√ (2.03)		√ (2.10)		√ (2.09)	
13	Machinery, Nec	√ (2.38)		√ (2.30)		√ (2.14)		√ (2.10)		√ (2.10)		√ (2.13)		√ (2.12)	
15	Transport Equipment							√ (1.99)							
16	Manufacturing, Nec; Recycling		√ (3.99)		√ (3.61)		√ (3.54)		√ (3.42)		√ (3.31)		√ (3.47)		√ (3.66)
19	Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel		√ (4.23)		√ (3.12)		√ (3.69)		√ (3.61)		√ (3.53)		√ (3.74)		√ (3.83)
20	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles				√ (2.52)										√ (3.43)
28	Financial Intermediation		√ (3.76)												
29	Real Estate Activities		√ (4.82)		√ (4.32)		√ (4.18)		√ (4.17)		√ (3.97)		√(3.76)		√ (3.49)
32	Education		√ (4.11)		√ (3.53)		√ (3.39)		√ (3.30)		√ (3.33)		√ ()3.14)		

Note: Symbol √' marks the sector having high values of type I or Type II output multipliers in particular year and the values in brackets (..) indicates the type I and Type II output multipliers values in particular year for a particular sector

Type II output multipliers which contains induced effects generated by the wage and salary earners as they spent the extra income on commodities produced by all industries. Food, Beverages and Tobacco has high type II output multipliers for all the years under study. The value 4.43 for the same implies that every unit increase in final demand of this sector, through direct, indirect and induced effects, the additional demand created for output in other sectors in 4.43 unit. Textiles and Textile Products and Leather, Leather and Footwear have high type II output multiplier for all the years except in 2004 and 2003 respectively. The sectors that occupy the highest ranking in type II output multipliers till 2002 are, Renting of M & Eq and Other Business Activities, Public Admin and Defence; Compulsory Social Security and Other Community, Social and Personal Services. Whereas, Agriculture, Hunting, Forestry and Fishing Mining and Quarrying that have low type II output multiplier till 2002, post this period are among the top 10 industries with highest type II output multipliers.

Finally, Pulp, Paper, Paper, Printing and Publishing, Chemicals and Chemical Products, Basic Metals and Fabricated Metal, Machinery, Nec, and Transport Equipment are those industries that have high type I output multipliers but low values of type II multipliers. Thus the key industries for Indian economy in terms of output generation are Food, Beverages and Tobacco for the entire period under study.

b) Results of Employment multipliers from open and closed model

The type I and type II employment multipliers for all 35 industries for all the years are given in appendix table B and the table below shows industries with highest type I and type II employment multipliers. From both the tables, results reveal that type II employment multipliers are greater than type I multipliers for all the industries.

The type I employment multiplier for Agriculture, Hunting, Forestry and Fishing is 2.34, implies due to unit

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increase in the final demand of the sector, the employment generated by the direct and indirect effects on production in all the industries. Whereas, type II employment multiplier for the same industry of value 4.23, implies due to unit increase in the final demand of the sector, the employment generated by the direct indirect and induced effects on production in all the industries.

Agriculture, Hunting, Forestry and Fishing, Food, Beverages and Tobacco, Textiles and Textile Products, Wood and Products of Wood and Cork, Hotels and Restaurants and Private Households with Employed Persons have high values of type I and type II employment multipliers for most of the years under study. Thus, these sectors are the key employment generating sectors of Indian economy.

Table 2: Industries with highest Type I and Type II Employment multipliers

S.No	Sectors	1995		1996		1997		1998		1999		2000		2001		2002	
		Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II
1	Agriculture, Hunting, Forestry and Fishing	√(2.34)	√(4.23)	√(2.23)	√(4.23)	√(2.14)	√(3.74)	√(2.13)	√(3.57)	√(2.03)	√(3.29)	√(2.17)	√(3.45)	√(2.16)		√(2.13)	√(3.48)
3	Food, Beverages and Tobacco	√(1.45)	√(2.97)	√(1.42)	√(2.97)	√(1.31)	√(2.64)	√(1.30)	√(2.57)	√(1.25)	√(2.37)	√(1.30)	√(2.48)	√(1.32)	√(4.28)	√(1.22)	√(2.36)
4	Textiles and Textile Products										√(1.91)		√(2.00)		√(4.31)		√(1.93)
5	Leather, Leather and Footwear												√(1.90)		√(4.37)		√(1.89)
6	Wood and Products of Wood and Cork	√(1.14)	√(2.56)	√(1.16)	√(2.56)	√(1.06)	√(2.36)	√(1.01)	√(2.28)	√(1.15)	√(2.34)	√(1.25)	√(2.52)	√(1.44)	√(4.02)	√(1.65)	√(2.84)
18	Construction														√(4.05)		
19	Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel								√(1.68)								
21	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods		√(2.68)		√(2.68)		√(2.56)		√(2.69)		√(2.49)		√(2.52)		√(4.30)		√(2.36)
22	Hotels and Restaurants	√(1.23)	√(2.57)	√(1.17)	√(2.57)	√(1.10)	√(2.25)	√(1.10)	√(2.20)	√(1.06)	√(2.04)	√(1.10)	√(2.13)	√(1.11)		√(1.04)	√2.08)
30	Renting of M&Eq and Other Business Activities		√(2.45)		√(2.45)		√(2.24)		√(2.24)						√(4.05)		
31	Public Admin and Defence; Compulsory Social Security		√(3.48)		√(3.48)		√(3.13)		√(3.13)		√(2.77)		√(2.71)		√(5.06)		√(2.54)
32	Education		√(2.40)		√(2.40)		√(2.13)				√(1.90)						
33	Health and Social Work														√(4.00)		
34	Other Community, Social and Personal Services	√(1.02)	√(3.00)		√(3.00)		√(2.88)		√(3.04)		√(2.92)		√(2.85)		√4.53)		√(2.58)
35	Private Households with Employed Persons	√(2.90)	√(4.41)	√(2.64)	√(4.41)	√(2.32)	√(3.72)	√(2.12)	√(3.55)	√(1.86)	√(3.13)	√(2.34)	√(3.60)	√(2.84)		√(3.22)	√(4.37)

Note: Symbol '√' marks the sector having high values of type I or Type II employment multipliers in particular year and the values in brackets (..) indicates the type I and Type II employment multipliers in particular year for a particular sector.

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Table 2: Industries with highest Type I and Type II Employment multipliers

S.No	Sectors	2003		2004		2005		2006		2007		2008		2009	
		Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II
1	Agriculture, Hunting, Forestry and Fishing	√ (1.93)	√ (3.06)	√ (1.82)	√ (2.77)	√ (1.61)	√ (2.36)	√ (2.14)	√ (2.18	√ (1.13)	√ (1.60)	√ (1.06)	√ (1.53)	√ (1.03)	√ (1.53)
3	Food, Beverages and Tobacco	√ (1.13)	√ (2.12)	√ (1.02)	√ (1.79)		√ (1.52)	√ (1.34)	√ (1.89)						
4	Textiles and Textile Products		√ (1.76)		√ (1.45)		√ (1.26)	√ (1.11)							
5	Leather, Leather and Footwear		√ (1.75)		√ (1.45)		√ (1.27)	√ (1.16)	√ (1.77)						
6	Wood and Products of Wood and Cork	√ (1.53)	√ (2.53)	√ (1.49)	√ (2.25)	√ (1.33)	√ (2.03)	√ (1.70)	√ (2.36)		√ (1.18)		√ (1.21)		√ (1.6)
18	Construction														
19	Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel								√ (1.70)						
21	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods		√ (2.16)		√ (1.78)		√ (1.51)	√ (1.32)	√ (2.25)		√ (1.01)				√ (1.00)
22	Hotels and Restaurants		√ (1.91)		√ (1.60)		√ (1.34)	√ (1.19)	√ (1.73)						
30	Renting of M&Eq and Other Business Activities														
31	Public Admin and Defence; Compulsory Social Security		√ (2.22)		√ (1.78)		√ (1.53)	√ (1.39)	√ (2.61)		√ (1.01)	√ (.10)			
32	Education														
33	Health and Social Work														
34	Other Community, Social and Personal Services		√ (2.24)				√ (1.49)	√ (1.31)	√ (2.11)		√ (1.04)				
35	Private Households with Employed Persons	√ (3.33)	√ (4.32)	√ (3.29)		√ (2.98)	√ (3.59)	√ (3.31)	√ (3.85	√ (2.46)	√ (2.89)	√ (2.35)	√ (2.75)	√ (2.24)	√ (2.62)

Note: Symbol '√' marks the sector having high values of type I or Type II employment multipliers in particular year and the values in brackets (..) indicates the type I and Type II employment multipliers in particular year for a particular sector

Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods, Renting of M & Eq and Other Business Activities, Other Community, Social and Personal Services are those industries that have only high Type II employment multipliers.

c) *Comparison of employment and output multipliers in open and closed model*

While, comparing the employment and output multipliers in open and closed model it has been found that although agriculture witnesses high output multipliers only after 2002 but it has always remained as employment generating sector from the beginning as evident from high Type I and Type II employment multipliers.

Another, important industry which is Food, Beverages and Tobacco which throughout the period of study holds high values for output and employment multipliers starts losing out in terms of employment generating effects during 2007-2009.Hotels and Restaurants is the only industry which could not make it to the list of highest output multipliers but occupies one in case of employment multipliers for most of the years under study. Whereas, Education sector show contrary results to itself with high employment multipliers during period 1995-2001 and high output multiplier for period 2003-2009.

V. Conclusion

In this paper an attempt has been made to study the industry specific multipliers for the period 1995-2009 by using interindustry input output tableobtained from WIOD, so that important output and employment generating sectors in the Indian economy could be identified. The output and employment multipliers (Type I) obtained through open input output frame work enables us to study the direct and indirect effects of production and employment on overall economy. While Type II multipliers of output and employment obtained through closed input output framework, in addition to aforementioned effects gives induced effects generated due to household sector. The results from multipliers analysis reveal that Food, Beverages and Tobacco, Textiles and Textile Products, Leather, Leather and Footwear, Rubber and Plastics, Machinery, Nec, have high type I output multipliers. Whereas, Food, Beverages and Tobacco has high type II output multipliers for all the years under study. Agriculture, Hunting, Forestry and Fishing, Food, Beverages and Tobacco, Textiles and Textile Products, Wood and Products of Wood and Cork, Hotels and Restaurants and Private Households with Employed Persons have high values of type I and type II employment multipliers for most of the years under study. The comparative analysis of both employment and output multipliers reveals that not all those sectors that appear to have high output multiplying effect are equally efficient in terms of employment generation. The common key industries in terms of both output and employment generation for all or substantial part of the period of study are Agriculture, hunting, forestry and

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fishing output and employment , Food beverages and tobacco, Textiles and textile products, Retail trade, except of motor vehicles and motorcycles; repair of household goods, Private households with employed persons. The limitation of study lies in the inadequacy of multiplier analysis to identify key industries of Indian economy. Thus, policymakers should focus on those industries that not only induce production in other sectors of the economy but also lead to job creation and these key sectors must be identified in open and closed input output framework.

References Références Referencias

1. Bhattacharya, T., Rajeev, M.(2014), Identifying Employment Creating Sectors in India: An analysis of Input Output Linkages, ICDD Working Papers, No.12.
2. Chenery, H.B. and T. Watanabe, 1958. InternationalComparison of the Structure of Production. Econometrica,26, pp. 487-521.
3. Construction industry can help India cope up with global doom and gloom: Study accessed from http://www.assocham.org/newsdetail.php?id=5465 on 6,sep,2016.
4. Drejer, I. (2002), Input-Output Based Measures of Interindustry Linkages Revisited- A Survey andDiscussion, paper presented at the 14th International Conference on Input-Output Techniques, Montréal, Canada, October 10-15, 2002.
5. Ernst, C., Sarabia, M. (2015), The Role of Construction as employment provider: A world-wide input output analysis, Employment Policy Department, Employment Working Paper, No.186.
6. Ghosh, A. (1958), Input-Output Approach to an Allocation System ,Economica, Vol. 25, No. 1, pp. 58-64.
7. Hirschman, A. O. 1958. The Strategy of Economic Development. New Haven: Yale University Press.
8. Jones, L.P. (1970),The measurement of Hirschman linkages,Quarterly Journal of Economics, Vol.90, No.2, pp.323-333.
9. Laumas, P. S.(1976), The Weighting Problem in Testing the Linkage Hypothesis, The Quarterly Journal of Economics, Vol. 90, No.2, pp. 308-12.
10. Leontief, W. (1936), Quantitative input and output relations in the economic system of theUnited States. Review of Economics and Statistics, Vol.28, pp. 105-25.
11. Leontief, W. 1953. "Interregional Theory". In: Leontief, WW, Chenery HB, Clark PG. *Studies in the structure of the American economy*. Oxford University Press, New York, pp. 93-115.
12. Mattas, K. and Shreshtha, C.M. (2006), A New Approach to Determining Sectoral Priorities in an Economy: Input Output Elasticities, Vol.23, No.1, pp.247-254.
13. McLennan, W.(2006), Information Paper : Australian National Accounts: Introduction to Input Output Multipliers, Australian Bureau of Statistics, No. 5246.
14. Miller, R. and Blair, P. 1985. *Input-Output Analysis – Foundations and Extensions*. Prentice-Hall (ed.).
15. Miller, R. E., Lahr, M.L. (2001), A Taxonomy of Extractions, In Regional Science Perspectives in Economic Analysis: A Festschrift in Memory of Benjamin H. Stevens, (Eds, Lahr, M. L. and Miller, R. E.) Elsevier Science, Amsterdam, pp. 407-441.
16. Miller, R.W and P. D. Blair (2009), *Input-Output Analysis-Foundations and Extensions*, Cambridge University Press, U.K. 2nd Edition.
17. Rasmussen's, P.(1958) , Studies in Intersectoral relations, North Holland, Amsterdam.
18. Schultz, S.(1977), Approaches to identify Key sectors Empirically by means of Input Output Analysis, Journal of Development Studies,Vol.14, No.1, pp.77-96
19. Timmer, et al. (2015), An Illustrator Guide to the World Input Output Database: The Case og Global Automotive Production, Review of International Economics, Vol.23,pp.575-605.
20. Valadkhani, A. (2003), An Empirical Analysis of Australian Labour Productivity, Australian Economic Papers, Vol 42, No.3, pp. 273-291.
21. Yotopoulos, P.A., Nugent, J.B.(1976), In Defence of a Test of the Linkage Hypothesis, Quarterly Journal of Economics, Vol. 90, No.20, pp. 334-343.
22. Appendix Table A: Output Multipliers: Type I and Type II

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S.No	Sectors	1995		1996		1997		1998		1999		2000		2001		2002	
		Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II
1	Agriculture, Hunting, Forestry and Fishing	1.37	4.07	1.33	3.97	1.35	3.91	1.33	3.63	1.34	3.41	1.35	3.47	1.35	3.63	1.37	3.80
2	Mining and Quarrying	1.45	3.38	1.44	3.26	1.40	3.29	1.35	3.24	1.32	3.19	1.35	3.33	1.38	3.15	1.33	2.87
3	Food, Beverages and Tobacco	2.24	4.43	2.21	4.38	2.21	4.34	2.21	4.23	2.17	4.03	2.21	4.16	2.22	4.28	2.27	4.33
4	Textiles and Textile Products	2.27	4.34	2.20	4.27	2.28	4.35	2.22	4.26	2.20	4.11	2.19	4.23	2.19	4.31	2.16	4.20
5	Leather, Leather and Footwear	2.31	4.43	2.30	4.39	2.34	4.48	2.28	4.41	2.23	4.24	2.18	4.31	2.15	4.37	2.09	4.24
6	Wood and Products of Wood and Cork	2.08	4.13	2.06	4.13	2.09	4.17	2.08	4.10	1.89	3.85	1.88	3.98	1.85	4.02	1.85	3.99
7	Pulp, Paper, Paper , Printing and Publishing	2.27	3.80	2.25	3.78	2.31	3.91	2.27	3.87	2.17	3.68	2.16	3.75	2.17	3.82	2.17	3.77
8	Coke, Refined Petroleum and Nuclear Fuel	1.94	3.14	1.88	3.03	1.82	2.90	1.82	2.92	1.47	2.08	1.37	1.86	1.57	2.27	1.54	2.15
9	Chemicals and Chemical Products	2.18	3.62	2.17	3.60	2.27	3.76	2.18	3.62	2.11	3.38	2.13	3.42	2.17	3.52	2.14	3.39
10	Rubber and Plastics	2.39	4.04	2.35	3.99	2.34	3.98	2.38	4.03	2.28	3.77	2.31	3.89	2.32	3.98	2.33	3.93
11	Other Non-Metallic Mineral	1.94	3.57	1.88	3.47	1.94	3.59	1.92	3.59	1.83	3.33	1.84	3.42	1.93	3.58	1.91	3.44
12	Basic Metals and Fabricated Metal	2.36	3.93	2.29	3.86	2.34	3.92	2.23	3.79	2.12	3.55	2.11	3.59	2.10	3.56	2.09	3.44
13	Machinery, Nec	2.32	4.03	2.28	3.96	2.31	4.03	2.25	3.91	2.15	3.73	2.15	3.82	2.13	3.82	2.15	3.73
14	Electrical and Optical Equipment	1.91	3.71	1.88	3.63	1.92	3.65	1.80	3.57	2.10	3.55	2.11	3.65	2.11	3.68	2.05	3.55
15	Transport Equipment	2.49	3.95	2.45	3.91	2.49	3.97	2.43	3.91	2.37	3.70	2.37	3.75	2.36	3.74	2.35	3.64
16	Manufacturing, Nec; Recycling	2.52	4.18	2.49	4.13	2.49	4.15	2.40	4.00	2.16	3.64	2.10	3.65	2.10	3.66	1.97	3.38
17	Electricity, Gas and Water Supply	2.08	3.57	2.06	3.67	2.06	3.67	2.06	3.61	2.01	3.62	2.00	3.61	2.03	3.66	2.01	3.50
18	Construction	1.96	4.25	1.94	4.27	1.96	4.35	1.93	4.29	1.87	3.99	1.87	3.97	1.90	4.05	1.89	3.98
19	Motor Vehicles and Motorcycles; Retail Sale of Fuel	1.33	3.06	1.31	3.00	1.29	2.89	1.26	2.82	1.25	2.69	1.25	2.88	1.26	3.10	1.00	2.70
20	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles	1.33	2.68	1.31	2.61	1.29	2.53	1.26	2.47	1.25	2.32	1.25	2.43	1.26	2.55	1.25	2.62
21	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods	1.33	4.11	1.31	4.26	1.29	4.24	1.26	4.32	1.25	4.14	1.25	4.20	1.26	4.30	1.25	4.29
22	Hotels and Restaurants	1.97	3.89	1.89	3.80	1.91	3.77	1.90	3.65	1.89	3.50	1.93	3.64	1.93	3.77	1.95	3.83
23	Inland Transport	1.90	3.87	1.90	3.92	1.92	3.96	1.93	4.00	1.85	3.57	1.86	3.51	1.92	3.61	1.90	3.47
24	Water Transport	1.61	3.81	1.60	3.88	1.61	3.92	1.60	3.97	1.60	3.58	1.63	3.59	1.67	3.66	1.67	3.53
25	Air Transport	1.84	3.81	1.82	3.86	1.83	3.90	1.83	3.94	1.78	3.55	1.80	3.53	1.85	3.62	1.81	3.46
26	Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	1.70	3.81	1.68	3.87	1.69	3.91	1.69	3.96	1.67	3.62	1.71	3.67	1.76	3.79	1.78	3.73
27	Post and Telecommunications	1.24	2.79	1.23	2.77	1.21	2.95	1.22	3.00	1.27	2.95	1.33	3.16	1.31	3.13	1.32	3.50
28	Financial Intermediation	1.28	3.28	1.29	3.32	1.32	3.32	1.33	3.34	1.33	3.07	1.34	3.33	1.34	3.20	1.35	3.12
29	Real Estate Activities	1.14	2.46	1.14	2.52	1.15	2.54	1.14	2.54	1.12	2.38	1.13	2.30	1.13	2.31	1.14	2.31
30	Renting of M&Eq and Other Business Activities	1.57	4.46	1.56	4.60	1.59	4.59	1.57	4.58	1.50	3.96	1.51	3.99	1.53	4.05	1.52	4.00
31	Public Admin and Defence; Compulsory Social Security	1.00	5.19	1.00	5.25	1.00	5.33	1.00	5.39	1.00	5.04	1.00	4.96	1.00	5.06	1.00	5.06
32	Education	1.19	3.71	1.19	3.76	1.20	3.77	1.20	3.81	1.18	3.61	1.18	3.58	1.18	3.59	1.17	3.56
33	Health and Social Work	1.92	4.14	1.96	4.22	2.05	4.29	2.04	4.28	1.96	4.09	1.89	4.03	1.82	4.00	1.70	3.86
34	Other Community, Social and Personal Services	1.75	4.59	1.70	4.66	1.68	4.80	1.61	4.94	1.49	4.75	1.45	4.61	1.43	4.53	1.36	4.38
35	Private Households with Employed Persons	1.75	3.92	1.70	3.91	1.68	3.92	1.61	3.89	1.48	3.58	1.45	3.53	1.43	3.55	1.36	3.44

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S.No	Sectors	2003		2004		2005		2006		2007		2008		2009	
		Type I	Type II	Type I	Type II	Type I	Type II	Type II	Type I	Type II	Type I	Type I	Type II	Type I	Type II
1	Agriculture, Hunting, Forestry and Fishing	1.38	3.58	1.37	3.37	1.36	3.14	1.35	3.06	1.33	2.95	1.32	3.09	1.33	3.21
2	Mining and Quarrying	1.40	2.92	1.35	2.56	1.37	2.42	1.35	2.32	1.37	2.23	1.37	2.35	1.36	2.46
3	Food, Beverages and Tobacco	2.31	4.23	2.28	3.91	2.24	3.72	2.22	3.64	2.23	3.55	2.25	3.70	2.24	3.81
4	Textiles and Textile Products	2.19	4.09	2.16	3.76	2.14	3.68	2.18	3.62	2.17	3.60	2.15	3.70	2.17	3.84
5	Leather, Leather and Footwear	2.14	4.16	2.12	3.81	2.15	3.78	2.14	3.74	2.19	3.70	2.16	3.80	2.19	3.94
6	Wood and Products of Wood and Cork	1.84	3.78	1.78	3.38	1.77	3.42	1.74	3.43	1.75	3.34	1.76	3.54	1.80	3.81
7	Pulp, Paper, Paper , Printing and Publishing	2.23	3.74	2.20	3.43	2.17	3.37	2.14	3.32	2.17	3.27	2.16	3.38	2.20	3.65
8	Coke, Refined Petroleum and Nuclear Fuel	1.62	2.28	1.61	2.20	1.67	2.27	1.59	2.24	1.65	2.19	1.62	2.19	1.84	2.78
9	Chemicals and Chemical Products	2.19	3.41	2.15	3.13	2.13	3.03	2.08	2.97	2.08	2.86	2.06	2.90	2.06	3.06
10	Rubber and Plastics	2.40	3.95	2.36	3.62	2.32	3.49	2.26	3.44	2.26	3.31	2.24	3.37	2.34	3.66
11	Other Non-Metallic Mineral	2.02	3.53	1.99	3.18	1.98	3.14	1.93	3.09	1.95	2.98	1.98	3.15	1.99	3.35
12	Basic Metals and Fabricated Metal	2.14	3.39	2.10	3.09	2.14	3.07	2.13	3.01	2.14	2.92	2.20	3.09	2.19	3.20
13	Machinery, Nec	2.18	3.64	2.12	3.26	2.10	3.17	2.05	3.10	2.07	2.99	2.12	3.17	2.11	3.36
14	Electrical and Optical Equipment	2.09	3.47	2.06	3.14	2.07	3.09	1.00	3.01	2.03	2.90	2.10	3.10	2.09	3.18
15	Transport Equipment	2.38	3.58	2.30	3.27	2.14	3.05	2.10	3.00	2.10	2.90	2.13	3.02	2.12	3.09
16	Manufacturing, Nec; Recycling	1.91	3.14	1.66	2.54	1.54	2.30	1.66	2.27	1.68	2.49	1.55	2.31	1.47	2.20
17	Electricity, Gas and Water Supply	2.04	3.48	2.01	3.25	2.01	3.15	1.99	3.14	2.01	3.07	1.97	3.17	2.00	3.31
18	Construction	1.96	3.99	1.93	3.61	1.92	3.54	1.89	3.42	1.91	3.31	1.96	3.47	1.97	3.66
19	Repair of Motor Vehicles and Motorcycles; Retail	1.26	3.32	1.23	3.12	1.21	2.90	1.19	2.89	1.18	2.85	1.16	3.02	1.16	2.83
20	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles	1.26	2.66	1.23	2.52	1.21	2.33	1.19	2.31	1.18	2.26	1.16	2.35	1.16	2.42
21	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods	1.26	4.23	1.23	3.87	1.21	3.69	1.19	3.61	1.18	3.53	1.16	3.74	1.16	3.83
22	Hotels and Restaurants	1.97	3.75	1.94	3.50	1.91	3.31	1.89	3.27	1.90	3.20	1.91	3.36	1.87	3.43
23	Inland Transport	1.92	3.39	1.89	3.09	1.88	3.02	1.86	2.94	1.87	2.86	1.87	2.93	1.92	3.16
24	Water Transport	1.70	3.36	1.67	3.04	1.64	2.96	1.61	2.86	1.61	2.75	1.61	2.84	1.64	3.00
25	Air Transport	1.82	3.30	1.72	2.91	1.66	2.77	1.69	2.69	1.70	2.70	1.63	2.67	1.61	2.79
26	Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	1.82	3.59	1.79	3.26	1.78	3.18	1.74	3.07	1.75	2.95	1.76	3.07	1.77	3.23
27	Post and Telecommunications	1.34	3.19	1.31	2.96	1.41	2.94	1.36	2.89	1.43	2.86	1.48	3.05	1.43	3.05
28	Financial Intermediation	1.36	3.03	1.34	2.87	1.34	2.85	1.31	2.71	1.32	2.58	1.33	2.68	1.33	2.79
29	Real Estate Activities	1.15	2.26	1.15	2.07	1.15	1.98	1.14	1.91	1.14	1.83	1.14	1.85	1.14	1.90
30	Renting of M&Eq and Other Business Activities	1.53	3.76	1.46	3.21	1.42	2.98	1.35	2.86	1.36	2.62	1.38	2.67	1.39	2.72
31	Public Admin and Defence; Compulsory Social Security	1.00	4.82	1.00	4.32	1.00	4.18	1.00	4.17	1.00	3.97	1.00	3.76	1.00	3.49
32	Education	1.17	3.40	1.16	3.05	1.15	2.91	1.14	2.86	1.14	2.82	1.14	2.91	1.14	2.94
33	Health and Social Work	1.61	3.69	1.38	2.98	1.56	3.18	1.52	3.11	1.52	3.00	1.48	3.05	1.50	3.14
34	Other Community, Social and Personal Services	1.32	4.11	1.24	3.53	1.20	3.39	1.22	3.30	1.17	3.33	1.14	3.41	1.12	3.38
35	Private Households with Employed Persons	1.32	3.24	1.24	2.81	1.20	2.64	1.22	2.59	1.17	2.61	1.14	2.63	1.12	2.58

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AppendixTable A: Output Multipliers: Type I and Type II

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Appendix Table B: Employment Multipliers: Type I and Type II

S.no	Sectors	1995		1996		1997		1998		1999		2000		2001		2002	
		Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II
1	Agriculture, Hunting, Forestry and Fishing	2.34	4.23	2.23	4.23	2.14	3.74	2.13	3.57	2.03	3.29	2.17	3.45	2.16	3.63	2.13	3.48
2	Mining and Quarrying	0.34	1.69	0.33	1.69	0.28	1.46	0.28	1.46	0.25	1.38	0.24	1.44	0.24	3.15	0.19	1.05
3	Food, Beverages and Tobacco	1.45	2.97	1.42	2.97	1.31	2.64	1.30	2.57	1.25	2.37	1.30	2.48	1.32	4.28	1.22	2.36
4	Textiles and Textile Products	0.90	2.35	0.86	2.35	0.81	2.10	0.82	2.10	0.75	1.91	0.76	2.00	0.83	4.31	0.80	1.93
5	Leather, Leather and Footwear	0.62	2.10	0.62	2.10	0.56	1.90	0.55	1.89	0.55	1.77	0.62	1.90	0.68	4.37	0.70	1.89
6	Wood and Products of Wood and Cork	1.14	2.56	1.16	2.56	1.06	2.36	1.01	2.28	1.15	2.34	1.25	2.52	1.44	4.02	1.65	2.84
7	Pulp, Paper, Paper , Printing and Publishing	0.45	1.52	0.47	1.52	0.48	1.48	0.48	1.49	0.47	1.39	0.50	1.46	0.52	3.82	0.50	1.39
8	Coke, Refined Petroleum and Nuclear Fuel	0.25	1.09	0.23	1.09	0.20	0.87	0.21	0.90	0.11	0.48	0.08	0.38	0.12	2.27	0.10	0.44
9	Chemicals and Chemical Products	0.46	1.46	0.45	1.46	0.44	1.37	0.42	1.33	0.37	1.13	0.35	1.13	0.35	3.52	0.31	1.01
10	Rubber and Plastics	0.61	1.76	0.60	1.76	0.55	1.58	0.58	1.62	0.53	1.43	0.50	1.46	0.49	3.98	0.46	1.35
11	Other Non-Metallic Mineral	0.52	1.66	0.50	1.66	0.51	1.54	0.54	1.59	0.46	1.37	0.48	1.43	0.51	3.58	0.50	1.35
12	Basic Metals and Fabricated Metal	0.31	1.40	0.31	1.40	0.31	1.29	0.32	1.30	0.30	1.16	0.29	1.19	0.30	3.56	0.27	1.02
13	Machinery, Nec	0.33	1.52	0.32	1.52	0.32	1.39	0.30	1.34	0.29	1.24	0.29	1.30	0.31	3.82	0.28	1.16
14	Electrical and Optical Equipment	0.28	1.54	0.30	1.54	0.30	1.38	0.31	1.42	0.30	1.18	0.28	1.21	0.27	3.68	0.26	1.09
15	Transport Equipment	0.29	1.30	0.29	1.30	0.28	1.21	0.29	1.22	0.26	1.07	0.26	1.09	0.26	3.74	0.25	0.96
16	Manufacturing, Nec; Recycling	0.49	1.65	0.50	1.65	0.44	1.48	0.44	1.45	0.45	1.35	0.48	1.42	0.49	3.66	0.48	1.26
17	Electricity, Gas and Water Supply	0.27	1.30	0.26	1.30	0.24	1.24	0.23	1.21	0.21	1.19	0.20	1.18	0.21	3.66	0.18	1.01
18	Construction	0.59	2.19	0.60	2.19	0.54	2.03	0.55	2.03	0.49	1.78	0.50	1.77	0.54	4.05	0.51	1.67
19	Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel	0.66	1.87	0.67	1.87	0.65	1.65	0.70	1.68	0.68	1.55	0.67	1.66	0.66	3.10	0.56	1.50
20	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles	0.27	1.21	0.26	1.21	0.23	1.01	0.23	0.99	0.21	0.86	0.21	0.93	0.21	2.55	0.20	0.96
21	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods	0.74	2.68	0.75	2.68	0.72	2.56	0.77	2.69	0.74	2.49	0.73	2.52	0.73	4.30	0.67	2.36
22	Hotels and Restaurants	1.23	2.57	1.17	2.57	1.10	2.25	1.10	2.20	1.06	2.04	1.10	2.13	1.11	3.77	1.04	2.08
23	Inland Transport	0.47	1.84	0.46	1.84	0.43	1.70	0.44	1.74	0.40	1.44	0.39	1.39	0.42	3.61	0.39	1.26
24	Water Transport	0.38	1.91	0.36	1.91	0.33	1.78	0.33	1.81	0.29	1.50	0.27	1.46	0.30	3.66	0.31	1.34
25	Air Transport	0.26	1.63	0.25	1.63	0.23	1.52	0.23	1.56	0.21	1.28	0.21	1.26	0.23	3.62	0.21	1.13
26	Other Supporting and Auxiliary Transport Activities; Activities of	0.30	1.77	0.29	1.77	0.28	1.67	0.29	1.71	0.27	1.45	0.27	1.46	0.28	3.79	0.28	1.36
27	Post and Telecommunications	0.24	1.33	0.24	1.33	0.22	1.31	0.22	1.34	0.23	1.25	0.23	1.34	0.23	3.13	0.25	1.46
28	Financial Intermediation	0.18	1.58	0.18	1.58	0.17	1.41	0.17	1.42	0.14	1.20	0.15	1.35	0.14	3.20	0.13	1.11
29	Real Estate Activities	0.05	0.97	0.05	0.97	0.04	0.91	0.04	0.92	0.04	0.80	0.04	0.75	0.05	2.31	0.05	0.70
30	Renting of M&Eq and Other Business Activities	0.44	2.45	0.42	2.45	0.37	2.24	0.35	2.24	0.30	1.79	0.28	1.78	0.27	4.05	0.25	1.63
31	Public Admin and Defence; Compulsory Social Security	0.56	3.48	0.52	3.48	0.43	3.13	0.38	3.13	0.33	2.77	0.32	2.71	0.31	5.06	0.29	2.54
32	Education	0.64	2.40	0.59	2.40	0.52	2.13	0.48	2.13	0.43	1.90	0.44	1.89	0.47	3.59	0.47	1.79
33	Health and Social Work	0.49	2.03	0.46	2.03	0.44	1.84	0.42	1.82	0.39	1.68	0.39	1.68	0.40	4.00	0.38	1.58
34	Other Community, Social and Personal Services	1.02	3.00	0.91	3.00	0.93	2.88	0.96	3.04	0.94	2.92	0.94	2.85	0.94	4.53	0.90	2.58
35	Private Households with Employed Persons	2.90	4.41	2.64	4.41	2.32	3.72	2.12	3.55	1.86	3.13	2.34	3.60	2.84	3.55	3.22	4.37

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Appendix Table B: Employment Multipliers: Type I and Type II

S.no	Sectors	2003		2004		2005		2006		2007		2008		2009	
		Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II	Type I	Type II
1	Agriculture, Hunting, Forestry and Fishing	1.93	3.06	1.82	2.77	1.61	2.36	2.14	2.81	1.13	1.60	1.06	1.53	1.03	1.53
2	Mining and Quarrying	0.19	0.97	0.16	0.73	0.14	0.58	0.49	0.86	0.09	0.35	0.09	0.36	0.10	0.38
3	Food, Beverages and Tobacco	1.13	2.12	1.02	1.79	0.89	1.52	1.34	1.89	0.60	0.99	0.56	0.94	0.55	0.96
4	Textiles and Textile Products	0.78	1.76	0.70	1.45	0.61	1.26	1.11	1.67	0.46	0.88	0.45	0.86	0.45	0.89
5	Leather, Leather and Footwear	0.72	1.75	0.65	1.45	0.58	1.27	1.16	1.77	0.42	0.86	0.41	0.85	0.41	0.87
6	Wood and Products of Wood and Cork	1.53	2.53	1.49	2.25	1.33	2.03	1.70	2.36	0.71	1.18	0.73	1.21	0.73	1.26
7	Pulp, Paper, Paper , Printing and Publishing	0.47	1.25	0.41	0.99	0.35	0.86	0.76	1.21	0.25	0.57	0.24	0.57	0.27	0.64
8	Coke, Refined Petroleum and Nuclear Fuel	0.11	0.45	0.10	0.38	0.10	0.35	0.31	0.54	0.07	0.23	0.06	0.22	0.10	0.32
9	Chemicals and Chemical Products	0.30	0.93	0.25	0.71	0.21	0.59	0.51	0.84	0.14	0.37	0.13	0.35	0.14	0.39
10	Rubber and Plastics	0.44	1.24	0.37	0.97	0.31	0.81	0.70	1.14	0.20	0.51	0.18	0.48	0.20	0.53
11	Other Non-Metallic Mineral	0.49	1.27	0.43	1.00	0.37	0.86	0.73	1.16	0.23	0.53	0.23	0.54	0.24	0.58
12	Basic Metals and Fabricated Metal	0.24	0.89	0.19	0.66	0.17	0.56	0.48	0.82	0.11	0.34	0.10	0.34	0.11	0.36
13	Machinery, Nec	0.26	1.01	0.21	0.76	0.18	0.63	0.54	0.93	0.12	0.39	0.11	0.40	0.12	0.44
14	Electrical and Optical Equipment	0.24	0.95	0.19	0.70	0.16	0.59	0.50	0.97	0.11	0.36	0.11	0.37	0.11	0.40
15	Transport Equipment	0.23	0.85	0.20	0.66	0.17	0.56	0.48	0.81	0.12	0.36	0.12	0.36	0.12	0.37
16	Manufacturing, Nec; Recycling	0.43	1.06	0.31	0.72	0.24	0.56	0.48	0.74	0.18	0.42	0.15	0.36	0.13	0.31
17	Electricity, Gas and Water Supply	0.18	0.92	0.15	0.73	0.12	0.61	0.55	0.99	0.09	0.40	0.08	0.40	0.09	0.42
18	Construction	0.45	1.49	0.37	1.16	0.32	1.00	0.86	1.44	0.22	0.63	0.21	0.62	0.22	0.66
19	Sale, Maintenance and Repair of Motor Vehicles and Motorcycles; Retail Sale of Fuel	0.58	1.64	0.49	1.38	0.44	1.15	1.05	1.70	0.34	0.83	0.32	0.82	0.32	0.80
20	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles	0.20	0.92	0.17	0.78	0.14	0.62	0.55	0.98	0.10	0.42	0.10	0.42	0.11	0.44
21	Retail Trade, Except of Motor Vehicles and Motorcycles; Repair of Household Goods	0.63	2.16	0.54	1.78	0.46	1.51	1.32	2.25	0.31	1.01	0.29	0.99	0.30	1.00
22	Hotels and Restaurants	0.99	1.91	0.86	1.60	0.74	1.34	1.19	1.73	0.50	0.89	0.48	0.87	0.48	0.89
23	Inland Transport	0.36	1.11	0.31	0.87	0.27	0.75	0.64	1.06	0.19	0.48	0.18	0.46	0.19	0.50
24	Water Transport	0.24	1.10	0.19	0.84	0.17	0.73	0.63	1.11	0.13	0.47	0.13	0.46	0.14	0.49
25	Air Transport	0.19	0.95	0.15	0.71	0.12	0.59	0.50	0.90	0.09	0.39	0.09	0.36	0.09	0.39
26	Other Supporting and Auxiliary Transport Activities; Activities of	0.26	1.18	0.23	0.92	0.20	0.79	0.67	1.18	0.14	0.50	0.14	0.49	0.14	0.52
27	Post and Telecommunications	0.22	1.17	0.19	0.97	0.18	0.83	0.74	1.31	0.14	0.56	0.14	0.56	0.14	0.57
28	Financial Intermediation	0.12	0.99	0.11	0.83	0.10	0.74	0.62	1.15	0.07	0.44	0.07	0.43	0.07	0.46
29	Real Estate Activities	0.05	0.62	0.04	0.48	0.04	0.39	0.33	0.62	0.03	0.23	0.03	0.21	0.03	0.23
30	Renting of M&Eq and Other Business Activities	0.24	1.38	0.20	1.02	0.16	0.82	0.69	1.25	0.11	0.48	0.10	0.45	0.10	0.45
31	Public Admin and Defence; Compulsory Social Security	0.25	2.22	0.21	1.78	0.18	1.53	1.39	2.61	0.13	1.01	0.10	0.84	0.08	0.74
32	Education	0.43	1.58	0.39	1.29	0.33	1.08	0.97	1.63	0.26	0.75	0.23	0.70	0.22	0.70
33	Health and Social Work	0.35	1.42	0.26	1.01	0.26	0.95	0.84	1.45	0.19	0.63	0.18	0.60	0.18	0.61
34	Other Community, Social and Personal Services	0.80	2.24	0.68	1.76	0.57	1.49	1.31	2.11	0.40	1.04	0.35	0.96	0.31	0.91
35	Private Households with Employed Persons	3.33	4.32	3.29	4.03	2.98	3.59	3.31	3.85	2.46	2.89	2.35	2.75	2.24	2.62

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Determinants of Product Diversification Among Micro and Small Enterprises in Wolaita Zone, Ethiopia: An Econometric Analysis

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Determinants of Product Diversification Among Micro and Small Enterprises in Wolaita Zone, Ethiopia: An Econometric Analysis

Tekle Leza [α], Sandraa Rajan [σ] & Berhanu Kuma [ρ]

Abstract- Micro and Small Enterprises (MSEs) promotion and job creation go hand in hand in poverty reduction. Product diversification among MSE sis known to contribute to risk mitigation and stable MSE sector for job creation across the world. This study investigated determinants of product diversification among MSEs in Wolaita Zone, Ethiopia. Multi-stage sampling technique was employed to select 352 enterprises by using Yamane (1967) formula with 5 per cent precision and 95 per cent confident level. Data were collected using interview schedule through face-to-face interview, observation, key informant interview and focus group discussion and data analyses were carried out by using descriptive, inferential statistics and econometric model. Econometrics result indicated that ten variables significantly determined the probability of product diversification decision. The variables are market access, promoter's age, enterprises opportunities, own concentration, risk management, enterprises wealth, investment cost in ICT, strategic location, promoters training and business plan whereas seven variables significantly determined the level of product diversification. The variables are opportunities, own concentration, risk management, enterprises wealth, investment cost in ICT, strategic location, startup capital and business plan. Risk management, enterprise start-up capital, and investment cost in ICT determined diversification decision and level of product diversification positively. The variables, promoter's age, strategic location, enterprises opportunities, business plan, enterprises own concentration determined diversification decision and level of product diversification significantly and negatively. Access to market was positively and significantly determined diversification decision while managerial training determined the level of product diversification positively and significantly Risk management favored the probability of diversification decision and level of diversification in related products. Risk mitigation and business diversification are two sides of the same coin. Following findings are policy recommendation has been made: Enterprise training including on diversification strategies, targeting entrepreneurs the market information dissemination, promoting investment in ICT, business development services (BDS) were among the important government interventions needed for sustainable MSE sector.

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Keywords: heckman two stage, micro and small enterprises, related product diversification, wolaita, ethiopia.

I. Introduction

Mounting poverty level in developing countries is a posing formidable threat to the very sustainability of the economies. The poverty indicators such as Gross Domestic Product (GDP) per capita, low life expectancy, low educational enrolment, many people living below $1.25 a day, nutrition, etc., point to gravity of poverty situation in developing countries. Country specific development programmes are underway in these countries to alleviate poverty.

Micro and Small-scale Enterprises (MSEs) play a pivotal role in the socio-economic development particularly in developing economies. MSEs have greater economic benefits than large firms in terms of employment generation and growth since they use more of what a country is endowed with and less of what it lacks (Admassie and Matambalya, 2002; Habtamu*et al.*, 2013). Unlike large-scale enterprises, which are often capital-intensive and import-dependent for raw materials and machinery, MSEs mostly use locally available resources. By creating employment opportunities for the semi-skilled and unskilled labor, MSEs could increase the household income of the labor force at the micro level and reduce the level of poverty at the macro level, apart from creating the basis for a more sustained industrial development. Moreover, MSEs' nurture of indigenous entrepreneurial and managerial talents which foster economic development, poverty reduction and employment generation (Eshetu and Zeleke, 2008). Needless to say that promoting MSEs has become a preferred development strategy in many developing countries.

Statistics reveal the facts about concrete contribution of MSEs in developing countries. MSEs as well as medium enterprises account for about 30 per cent of employment and 17 per cent of GDP (Beck and Demirguc-kunt, 2005). In developed countries, the share of the enterprises is even larger; about of 50 per cent to GDP and about 60 per cent of employment. As economies grow, the share and contribution of MSEs willnaturally increase. In these economies, the

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expansion of these enterprises is significantly important as they are closely associated to the livelihoods of the poor and disadvantaged groups that include women and youth (Robu, 2013).The MSEs in Ethiopia contributes to about 3.4 per cent of the GDP, about 33 per cent of the overall industrial production and 52 per cent of the manufacturing output (Habtamu*et al.*, 2013). Government of Ethiopia has acknowledged the role of these enterprises in the economic growth and transformation. The Growth and Transformation Plan (GTP I), for instance, has envisaged that micro and small scale enterprises create employment opportunities for about three million people and thereby enhance household income, domestic saving, reduce unemployment and poverty, particularly benefiting the women and the youth (Mo FED, 2014).However, MSEs are faced with a number of problems. In the first place, there seems to be a bias against MSEs in Ethiopian as in many other developing countries in terms of the support provided to them. Product diversification sometimes does not bring the expected results such as sales volume, revenue and profits. The most often reason of need of knowledge and skills in the field of change management, insufficient training, technical know-how (Luxenber, 2004)

Researcher experiencesas well as Trade and Industry statistical abstract showed that MSEs at Wolaita Zone (The study location in Ethiopia) continue to be capital-starved and remain low in their job creation potential. Furthermore, the Zone has not yet exploited their potential very well to contribute towards economic development, job creation and poverty reduction. Their contribution to the local economy, capital accumulation and employment generation remains much low. This is due to lack of basic entrepreneurial and quality management systems, such as management of financial and customer focused activities, in order to enhance enterprises competitiveness. The managerial inefficient leads MSEs to incur unnecessary cost and wastage resulting in low returns on invested capital. As a result, less competitive MSEs are unable to compete effectively in the market impacting the entire MSEs sector performance in the country as well as in the study area (Fikirte and Endrias, 2013).

Product diversification among MSEs is known to contribute to risk mitigation and stable MSE sector for job creation. Besides, product diversification is a good business development tool for MSEs. It brings new opportunities through new product lines and services, as well as makes easier the consumption of its products by producing complementing goods or offering complementing services. Furthermore, diversifying small enterprises may be looking for synergies or the sharing of co-specialized innovative assets between different lines of business (Baptista, *et al*, 2010). Hence, the government initiated various support programmes with the aim to improve MSEs' competitiveness and performance through enhancing innovation and product development capabilities, competence and technology such as upgrading existing product quality, improving design and packaging, and training (Geberyesus, 2009). Product diversification is essential for MSEs to become competitive, build business volume and graduate to medium sized enterprise status, thus, creating new employment opportunities (Ernst, 2004and Geberyesus, 2009). Successful implementation of product diversification enhances MSEs to become competitive in a market, increases its market share and provides opportunities to penetrate existing and new markets (Luxenber, 2004).

The effectiveness of above interventions, however, depends on identifying key factors that foster or inhibit product diversification of MSEs. MSEs are heterogene-ous in objective, capability, competencies and compe-titiveness. They differ in terms of promoters and enterprises' socioeconomic background, access to scale economies and access to financial resources. Understanding different factors determining product diversification is crucial in order to formulate effective policies and strategies.

Systematic literature survey conducted by the researchers revealed that no study has been undertaken so far in the study area to investigate the afore-mentioned issue. However, there are a number of features which make the present study different from the existing empirical studies. First, few number of the studies probed into the issue of MSEs product diversification, employing econometric techniques. In the econometric analysis, the proposed study employed Heckman two-stage regression analysis to unravel the issue of choice and level of diversification which accounts for the problem of censoring. Second, the study used more objective measure of the product diversification in small business. Third, the study dealt with endogeniety problem by using two stages least square estimation techniques by separating the existing instrumental variables. This study was conducted to identify determinants of product diversification decision and level of diversification in Micro and Small Enterprises in Wolaita Zone, Ethiopia.

II. Research Methodology

a) Study Area

Wolaita Zone is one of 14 zones in *Southern Nations, Nationalities and Peoples' Region (SNNPR) of Ethiopia*. The capital of the Zone, *Sodo town*, is situated at 378 km to south of *Addis Ababa* city, the capital of Ethiopia. According to Central Statistical Authority (CSA, 2007) estimated population projection of the Zone is 1,796,578out of which 49.27 per cent are males and 50.73 per cent are females. The population density of the Zone is 445 persons per Km^2. The average urban household size was 4.8. The total geographical area of

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the Zone is 4,541Km^2.Micro and Small Enterprises (MSEs) played an important role in creating income and employment opportunities that have bearing on poverty reduction. The Zone has 2548 Micro and 192 Small Enterprises established during 1997-2005 that include all economic sectors. Similarly the sector comprised of different economic sub sectors i.e. manufacture 357(13.1 per cent), construction 814(29.7 per cent), Trade 748(27.3 per cent), service 612(22.3 per cent) and urban agriculture 209(7.6 per cent). These sectors created jobs for 16,191 people in the study area.

b) Sampling Technique

Study unit for the research was MSEs. Multistage sampling technique was employed to select representative units of MSEs. At the first stage, Wolaita Zone was purposively selected due to largest number of MSEs (WOZTID, 2015). Besides having unexploited potential for MSE development, Wolaita Zone was the jurisdiction for the research and development program of *Wolaita Sodo University*. At the second stage, three administrative towns (*Sodo, Boditi and Areka*) were selected purposively from the target Zone as they housed largest numbers of MSEs and members. At third stage stratified random sampling technique was used as the MSE population was heterogeneous. It was necessary to classify the population into two strata. These were Micro and Small Enterprises that were major components of sectors in the study area.

c) Sample Size Determination

To determine appropriate sample size simplified formula which was developed by Yamane (1967) was used.

$$n = \frac{N}{1+N(e^2)} \quad \text{..... (1)}$$

Where, n=required sample size; e =degree of error margin (at 0.05); and N= total population of MSEs. The sample size was computed from the population of 790 Micro and 112 Small enterprises. Accordingly, 265 and 87 from micro and small enterprises respectively were selected. The total sample size was 352 drawn from the three administrative towns in proportions to the number of MSEs. Thus, 228 units from Sodo, 69 units from Areka and 55 units from Boditi were included in the sample. Systematic sampling technique was employed to draw sampling units from each stratum.

d) Data Sources and Methods of Data Collection

Both qualitative and quantitative data were collected from primary and secondary sources. Quantitative data from primary sources were collected through interview schedule while qualitative data were collected through key informant interview, focus group discussions and personal observations. The relevant data were collected from 352 sample MSE managers. An interview schedule was prepared in English and translated into *Amharic* to ease communication during data collection. The interview-schedule was pre-tested before actual data collection and necessary corrections were effected in the final version. Five enumerators were recruited based on their proficiency in local language, educational background and prior exposure to data collection. Training was given to enumerators on the content of the interview schedule and procedures to follow while conducting interview. The survey team gathered data on socioeconomic, individual and firm related, institutional and linkage related factors. Secondary data were collected from *Wolaita* Zone trade and industry promotional department, Micro finance institution, Journals, and Central Statistical Authority (CSA) publications, published and unpublished documents of national, regional and zonal offices.

e) Method of Data Analysis

i. *Model Specification*

The general hypothesis of the modeling approach is to check whether the business firm is linked directly to the firms' decisions on diversification choices of product. In product development, users make their decisions on product diversification choices in the context of their own strategies or rules, which affect the decision of the firms from the expansion of existing/new business product to another as well as the preservation of existing product in its current condition. The general structure of the regression equations is expressed in a simple form by

$$\mathrm{Di} = \mathrm{b_i} + \mathrm{Xc_i} + \varepsilon_i \quad \text{..... (2)}$$

Where, $D_i$represents the Entropy index of richness, X represents a vector of business firms affecting factors, $\varepsilon_i$stands for unobserved factors,b and c are the parameters to be estimated. With a view to assess the degree of diversification in the business sector, the entropy index is constructed as:

$$\mathrm{D_i} = \sum_j^i \mathrm{P}\ (\ln \tfrac{1}{p}\ ) \quad \mathrm{D} \geq 0 \quad \text{..... (3)}$$

Where, the index is 0 when the business firm hasno product diversification (diversification is absent).The assumption in that given x_i as sales group of business firm i then i…. n, there is the total sales$\sum_j^i \mathrm{x} = \mathrm{X}$ and$P = \frac{x}{X}$ where, P is the quota of the sales.

Several estimation problems will be encountered in estimating inter specific diversification strategies. First, a sample selection problem occur because the diversification index for business firm i exist only when the business firms expand or adds related product for more revenue. Second, a large proportion of business firms that not expand or add related product (without diversification) so that richness indicate to censor at zero. To overcome the sample selection bias arising from estimations out of observed variable in the sample, Heckman (1979) proposed a two-step estimation method. Application of Heckman's two-step

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procedure used a Probit in the first stage (probability of diversification decision). In the second step, the level of product diversification or diversification equation (Entropy index) was analyzed. The Inverse of Mills Ratio (IMR) is as regressors in this function in order to correct selection bias. Based on these specifications, Heckman specified:

Step 1: First, a probit model for diversification decision or selection equation was estimated.

The dependent variable in this application assumes either a value of 1 or 0 depending on whether a firm has decided to diversify or not. A probit model was used in estimation given the binary nature of the dependent variable. The binary probit is suitable to deal with latent (or unobservable) dependent variable and usually is expressed as a linear function of a set of explanatory variables as follows:

Probability equation:

$$P_i^* = \beta_i X_i + \varepsilon_i = \beta X' + \varepsilon_i ; \quad \varepsilon_i \sim N(0, 1) \ldots \ldots \ldots \quad (4)$$

Threshold index equation: $Di = Di^* \begin{cases} \text{if } Pi = 1 \text{----------} \\ 0 \quad \text{if } Pi = 0 \end{cases}$ (5)

Where: P* is a latent index variable that denotes binary censoring, X_{1i} is a vector of variables that affect diversification decision, $\boldsymbol{\varepsilon_i}$ is an error term, Piis a binary variable (1 if diversification is observed; and zero otherwise), representing the diversification decision (propensity to diversify). To be specific, it takes 1 if an enterprise produces multiple products and the diversification richness index (MI index) is positive; and it is zero otherwise. In other ways

$$P[P^* \geq 0] = P[P^* = 1] = \phi(Z_I) \ldots \ldots \ldots \quad (6)$$

Where is a column vector of realizations on an explanatory variables including a constant for business firm i; and β is a column vector of i unknown parameters. The values of the latent dependent variable are measured on the real line and in this case reflect the underlying propensity of MSEs to have diversification decision. The error term is assumed normally distributed with a mean of zero and a constant varianceσ^2. A threshold (assumed zero in this case) is used to delineate whether the firm has diversification choice or not. The probability of the event occurring can be linked to the latent dependent variable as follows:

Where P* is the dichotomous realization of the latent dependent variable: with decision: Diversification (Value 1) and No diversification (Value 0). In this study ø (·) denotes the cumulative distribution function operator for the standard normal distribution, and for identification purposes it is conventional to normalize σ =1.

The log-likelihood function is defined as

$$L = \sum_{i=1}^{n} P \ln[\phi(x'_i \beta)] + (1 - P_i) \ln[1 - \phi(x' \beta)] \ldots \ldots \ldots \quad (7)$$

The parameters are estimated using conventional nonlinear optimization algorithms. The efficient score tests suggested by Chesher and Irish (1987) are undertaken to diversification choice of the reported specifications in terms of homoscedastic errors, and a normal distribution of the generalized residuals. The estimated probit coefficients can be interpreted by reference to their effect on the standardized probit index but it is generally more convenient to translate them into marginal and impact effects. The marginal effects are denoted for continuous variables as ø(z)β, where ø(·) denotes the probability distribution (or density) function for the standard normal

$$\phi(z + \partial) - \delta(z) \ldots \ldots \ldots \quad (8)$$

distribution, β is the estimated probit coefficient for the corresponding k^{th} continuous variable, and is the standardized probit index computed at the sample mean values of the characteristics. The impact effects are computed as

Where δ_j is the corresponding probit coefficient for the j^{th} dummy variable and the remainder is as defined above. The asymptotic sampling variances for the marginal and impact effects are computed using the delta method. Now the second stage decision, the intensity of diversification, can be represented as follows:

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Step2: Intensity of diversification (outcome equation):

$$\text{Entropy index equation:} \quad D_i^* = \beta_2 X_{2i} + \upsilon_j \upsilon_i \sim N(0, \sigma^2) \text{ ---------- (9)}$$

D_i^* indicates the unobserved latent value, the level of diversification and X_{2i} is a vector of variables that explain the levels of diversification, and υi are the error terms.

$$D_i = \text{Dif} \quad P_i = 1 \text{ ----------} \quad (10)$$

$$0 \quad \text{if} \quad P_i = 0$$

In this specification, separate sets of factors are assumed to influence the decisions to participate in business diversification versus the positive entropy index of richness (D_i). Hence, X_{1i} and X_{2i} are vectors of explanatory variables that affect equation (4) and equation (9), respectively. Both variables are also assumed to be uncorrelated with their respective error terms, μ_i and ν_i assumed to have a correlation rho (ρ) and their joint distribution is normal bivariate. The β_1 and β_2 are the corresponding vectors of parameters. P_i is the observed value representing the individual's firm participation decision (i.e., if 1, it means the respondent is reporting a positive amount of entropy index of richness ($P^*_i > 0$), else 0). Hence, the actual observed D_i equals the unobserved latent value D_i^* only when a positive entropy index of richness is reported; otherwise, it takes the value of 0.

In this specification, the error terms are assumed to be normally and independently distributed in equating (4) and (9), implying that there is no dependence between the diversification participation and level of diversification (i.e., the two decisions are made independently). Assuming that the error terms in (4) and (9) were independent with mean zero, that $\mu \sim N(0,1)$, and that $\nu_i \sim N(0, \sigma^2)$, and that $\text{corr}(\mu, \nu) = \rho$, the stochastic specification in (12) can be written as:

$$\begin{pmatrix} \mu_i \\ \nu_i \end{pmatrix} \sim N \left\{ \begin{pmatrix} 0 \\ 0 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & \sigma^2 \end{pmatrix} \right\} \text{ ..... (11)}$$

If only the households who participate in business diversification are included in the second step, the IMR will be computed as follows:

$$\lambda = \left(\frac{\phi(X_1, \alpha)}{\Phi(X_1, \alpha)} \right) \text{ ..... (12)}$$

Where λ denotes IMR, ϕ is the normal probability density function (PDF), Φ (.) is the standard normal cumulative density function (CDF), $X_1$is a vector of factors known to influence a business firm decision to participate. A significant coefficient of the λindicates that the selection model must be used to avo.id inconsistency. Then, the new λ is used in Equation (12) as an explanatory variable. If $\rho = 0$, then there is no evidence of the selection bias and the regression reverts to 2SLS. When $\rho \neq 0$, standard regression techniques applied to the first equation (4) correlated with X_1, yield biased results, which is corrected by including IMR in the second regression. It can be shown that the expected value of D_i^* when D is observed which is given by Equation (13).

The new equation for the second stage regression (level of business diversification degree) equation is then given by:

$$E(Di \backslash X_1, Pi = 1) = \beta X2 + \rho \lambda (\delta X1) + \upsilon j \quad (13)$$

Where, E is the expectation operator, D_i is the extent (continuous) of diversification (entropy index of richness), X_2 is a vector of independent variables that affect D_i and β is the vector of the corresponding coefficients to be estimated, ρis the correlation between unobserved determinants of probability to diversify *u* and unobserved determinants of level of diversification υ, δ is a vector of unknown parameters. Equation (13) gives the expected level of diversification D_i, given vectors of observable factors $X_2$and given that the household has already made the decision to diversify. This can be explained by vector of observable characteristics X_2 and the IMR evaluated at λ (δX_1). To the extent that λ (δX_1) is correlated with X_2, the regression equation (9) resulting estimates is biased unless $\rho = 0$.

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Table 2: Independent Variables description and their Expected sign (Product Diversification)

Variable Code	Description, Type of Data and Operational Measurement	Expected sign (+/ -)
AGE	Age of Promoters in years	-
INCAP	Amount of start-up capital in Birr	+
MARKAC	Market access dummy (1= if accessed and 0 otherwise)	+
PWEXP	Previous work experience in years	+
BUSPL	Business plan-dummy (1= if MSE promoters owned business plan and 0 otherwise)	+
MTRIAD	Duration of skill training provided in months	+
FOPP	Opportunities employed by firms created by economic agents, dummy(1= have employed opportunity(information or market) and 0 otherwise)	+
LOC	Location of the MSEs (1= if in commercial area and 0 otherwise)	+
OWNCON	Ownership concentrated market- dummy (1= if MSEs ownership concentrated, 0= otherwise)	-
FASIZE	The family size of the MSEs owners in number	-
STRHHA	Diversifying product strengthening household assets base Dummy-(= diversifying product that strengthens household asset and 0=otherwise	+
FWELTH	Enterprise Capital size dummy(1 = increased, 0 = decreased)	+
CAICT	ICT Investmentcost in Birr	+
RISKMT	Proper Risk management Dummy-(1= managing risks and 0, otherwise).	+

III. Results and Discussions

a) Descriptive Analysis

The study was conducted to identify determinants of product diversification among MSEs at*Wolaita* Zone in Ethiopia. Out of the 14 explanatory variables 10 variables were significant determined diversification decision. These variables were household size, age enterprises, start-up capital, access to market, promoters training, own concentration, business plan, information, communication technology, risk management, enterprises opportunities and strategic location that are discussed below in detail.

Promoters Age and Diversification: Comparing diversified and non-diversified MSEs, the average age of diversified and non-diversified MSEs promoters were 34 and 32 years respectively. The result showed that diversified and non- diversified MSEs were found to be young. This implies that younger MSEs promoters are expected to be more adventurous, accept technologies, less risk averse than the older ones and possess comparative advantage with respect diversification and product innovation. The t- test results revealed significant relationship between enterprises age and diversification choice of enterprises at less than five per cent significant level (t =4.91, P=0.027).

Enterprise Opportunities and Diversification: Product diversification can be a matter of business choice for improving living standards and accumulating wealth of the promoters (Ellis, 2000). As shown in Table 2, within diversified enterprises,23 per cent of the MSEs promoters employed business opportunities created by economic agents such as flow of market information; government projects and other business related information that facilitated product diversification while the rest 77 per cent did not employ business opportunities. Similarly, from non-diversified MSEs promoters, 14 per cent had employed business opportunities created by economic agents whereas the rest 86 per cent did not employed business opportunities. Chi-square results revealed significant relationship between MSEs opportunities and diversification choice of enterprises at less than five per cent significant level ($\chi 2 = 4.099$, P=0.043).

Risk Maagement and Diversification: MSEs promoter semploy past work experience of market failure (both supply and demand driven) and decide to diversify as risk mitigation. In general, from diversified MSEs promoters, 66 per cent foreseen/experienced market risk and suitably managed it while the rest 34 per cent did not face market failure. Similarly, from non-diversified MSEs promoters, 82 per cent foreseen/experienced market risk and suitably managed it whereas the rest 18 per cent did not face market failure. This also implies that product diversification by MSEs promotes by perceived or real market risk. Chi-square result revealed significant relationship between risk management and diversification choice of enterprises at less than one per cent significant level ($\chi 2 = 8.363$, P=0.001).

Market Concentration and Diversification: The market concentration is one of the major structural market characteristics. Market concentration was used as a measure of competitiveness in the market. Market concentration in MSEs referred to the direct involvement of the entrepreneur in the market effectively ensure market share. As shown in Table 2, within diversified MSEs promoters only 41 per cent followed market concentration approach. This implies that about41 per cent of MSE promoters followed the strategy of price or

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quality control rather than diversifications stay competitive. However, 59 per cent of MSEs did not follow market concentration approach. Similarly, from non-diversified MSEs promoter 30 per cent followed market concentration approach whereas 70 per cent did not follow this approach. This implies that MSEs prefers product diversification to market concentration as approach to mitigate risks (Fikirte and Enderias, 2013; Kale, 2005).Chi-square results revealed significant relationship between market concentration and diversification choice of enterprises at less than five per significant level ($\chi 2 = 4.95$, p= 026).

Start-Up Capital and Diversification: The average startup capital for diversified enterprises was 19,473Birr whereas for non- diversified enterprises was 21,448 Birr. MSE operators have been starting MSEs businesses by raising financial capital as low as below 25,000 Birr (though this is totally negligible amount these days). This implies that majority of the operators are 'Necessity' promoters (pushed to start enterprises out of sheer poverty/economic necessity) rather than 'Opportunity' promoters. In order to remit the problems of micro financing in study area hence, the shortage of financial resources, the government should exert extra efforts to encourage and effectively attract private MFIs to the market and offer sufficient micro finance for MSEs. The t-test results revealed significant relationship between start-up capital and diversification choice of enterprises at less than one per significant level (t = 23.98, p= 0.000).

Investment in ICT and Diversification: The technology particularly Information Technology (IT) increases the resource use in diversifying of any business. Comparing diversified and non-diversified MSEs, average invested capital in ICT gadgets/instruments were about Birr 4,349 and 6,603 respectively. This implies wider gap prevailing among enterprises in harnessing ICT to its full potential. Hence, MSEs could use computers for book keeping, documentation like files maintenances, and networking, communication, etc. The t-test revealed that average invested capital utilization on ICT significant relationship between diversified and not diversified enterprises at less than one per cent level (t-test =27.66, p= 0.000).

Strategic location and Diversification: Location affects diversification of the MSEs product by determining demand for goods and services (Gebreeyesus, 2009 and Belay, 2012). Enterprise location decides cost of raw materials and marketing of finished goods thereby affecting competitiveness (Belay, 2012).In the study, within diversified MSEs promoters, about 71 per centlocated proximity to commercial area makes the enterprises prosper whereas 29 per cent located outside of commercial area. Similarly, non- diversified enterprises found that about 62 per cent investigated were located at commercial sites and 38 per cent outside of commercial site. The chi-square test revealed significantrelationship between diversification choice and strategic location of enterprises at less than five per cent level ($\chi 2 = 3.35$, p= 0.042).

Business plan and Diversification: practice of business plan among MSEs promoters was found to affect diversification decision and level of diversification. Regular and updated records enable MSE promoters to track the cash inflow and outflow, thereby minimizing the operational risks and optimizing the profit. In the study, within diversified MSEs promoters, about 96 per cent had business plan whereas 4 per cent follow without business plans. Similarly, non- diversified enterprises found that about 88 per cent investigated had a business planwhereas22 per cent follow without business plan. However, the plans so prepared were sketchy, had improper business projections behind them and consequently were unacceptable to formal financial institution for getting the credit. Hence, Planning practice and record keeping ensures diversification and profitability of MSEs (MUCD, 2013).Chi-square result revealed significant relationship between business plan and diversification choice of enterprises at less than 5 per significant level ($\chi 2 = 6.57$, p= 0.037).

Work Experience and Diversification: Previous work experience would provide knowledge of organizational routines and necessary skills enabling the promoters to apply them to the current business (Delmar and Shane, 2006; Belay, 2012). As presented in Table 3, comparing diversified and non-diversified MSEs, the average work experience of diversified and non-diversified MSEs were 3.48 and 2.64 years respectively. The result showed that business experience gives a person the required technical skill necessary to start and run the current business efficiently. The t-test revealed significant relationship between diversification choice and previous work experienceat less than 5 per cent significant level (t =19.98, p= 0.000).

Family size and Diversification (FASIZE): Comparing diversified and non-diversified MSEs, the average sampled respondents were4.57 and 4.43 respectively. The results showed that average size of the sampled household was comparable with the national average (4.8). This justifies managing a large family requires a substantial financial commitment and in times of economic hardship this may make business owners with more households more risk averse and less likely to choose diversification. However, different studies identified that household size positively affected product diversification. This could imply that diversification of the households was to meet different needs of the family (Weiss and Briglauer, 2000; Benin *et al.*, 2004; Rehima*et al*, 2015).The t-test revealed significant relationship between diversification choice and family size at less than one per cent significant level (t =45.78, p= 0.000).

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Table 3: Diversification patterns of Micro and Small Enterprises (n=352)

Variable	Category	Micro(n=265)		Small(n= 85)		Both MSEs		χ2/ t-value
		Diversify	Not Diversify	Diversify	Not Diversify	Diversify(n=136)	Not Diversify(n=216)	
Age of the promoters	Average	34 (7.3)	32 (6.3)	33 (6.6)	32 (6.2)	34 (6.8)	32 (6.2)	4.27**
Work experience	Average	3.25 (2.6)	2.68 (2.4)	3.53 (3.0)	2.42 (2.3)	3.48 (3.1)	2.64 (2.4)	19.98***
Family size	Average	4.48 (1.2)	4.45 (1.2)	4.49 (1.6)	4.3 (1.6)	4.57 (1.6)	4.43 (1.6)	45.78***
ICT investment	Average	4517 (2147)	4925 (3532)	6090 (5396)	4784 (3453)	5050 (3691)	4815 (3080)	27.67***
Start-up capital	Average	18,749 (13,623)	19,453 (14322)	26,584 (21,355)	26,987 (21,360)	19,473 (16,053)	21,448 (16,299)	23.98***
Enterprises opportunities	Yes	25	28	6	3	31(23)	31(14)	4.099*
	No	80	132	25	53	105(77)	185(86)	
Risk Management	Yes	68	129	22	48	90(66)	177(82)	8.363***
	No	37	31	9	8	46(34)	39(18)	
Market concentration	Yes	42	48	14	16	56(41)	64(30)	4.95*
	No	63	112	17	40	80(59)	152(70)	
Strategic location	Yes	77	100	20	34	97(71)	134(62)	3.35*
	No	28	60	11	22	39(29)	82(38)	
Business plan	Yes	101	139	29	51	130(96)	190(88)	6.57**
	No	4	21	2	5	6(4)	26(12)	

n= sample size, ***, ** and * indicate that statistically significant difference at less than 1%, 5% and 10% significant level, respectively. The figures in Parenthesisare percentages and standard deviation. Source; Computed from Field Survey data, 2015/16

b) Determinants of Diversification Decision and Level of Product DiversificationamongMSEs

Soundness of the model was established by Wald test. The chi-square of the model regression in the Zone indicated overall goodness of fit (showing a strong explanatory power) of the model with statistical significance at a probability of one per cent. The Wald test of the business enterprises χ^2 (14) = 131.49), χ^2 (14) = 121.98), and χ^2 (14) = 26.35), for both MSEs together, Micro and Small enterprises respectively confirmed that the coefficients of the level of diversification equation was significantly different from zero. As a result the model fulfilled conditions of good fit.

Table 3 presents the probit model's estimates underlying the Heckman-Two-Step estimation procedure. It clearly shows the binary dependent variable: one (1) if the business enterprises diversified and zero (0) otherwise. Ten variables significantly explained the probability of product diversification. These are market access (MARKAC), promoters age (AGE), opportunities (FOPPD), ownership concentration (OWNCON), RSKMGT (risk management), enterprises wealth (FWELTH), investment costin ICT(CAICT), Managerial training (MTRIAD), Strategic location (LOC) and business plan (BUSPL).The second stages of Heckman-Two-Stage model result are also presented in Table 4. The level of product diversification represented by Entropy Index, which was significantly determined byFOPP, OWNCON, CAICT, RISKMGT, LOC,BUSPL, FWELTH and INCAP

Age of the promoters (AGE): Age of the household head negatively affected the productdiversification decision at less than five per cent significance level. Keeping all others variables constant, one-yearincrease in age of enterprises promoters caused decrease in probability of product diversification decision of both MSEscategory by 0.5 per cent. From this, one would expect older promoters to be less likely to engage in related product diversification. This showed that older promoters might be less receptive to technology/adventurous/risk averse. This result concurred with those of Weiss and Briglauer's (2000); Fikirte and Endrias, (2013; MashimbaandKihll(2014).

Enterprises opportunities (FOPPD): Contrary to the expectation, this variable negatively affected

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diversification decision at less than 10 and 5 per cent significant level for both MSE category together and small enterprises category respectively. It also affected level of product diversification for both MSEs category together at less than ten per cent significant level. Empirically, the marginal effect indicted that a unit change in perception of promoter that employed opportunities created by economic agents would decrease the probability of related product diversification decision for both MSEs together and small enterprises category by 12.9 per cent and 42 per cent respectively while keeping others variables constant.It also decreases the level of product diversification for both MSEs together by 0.317. This implies that enterprises donot reap opportunities created by economic agents anddiversify the product. This further notifies that enterprises are less likely to apply opportunities created by government projects or market information by economic agents. Thus opportunities unfolding before them would have made them wary of diversification. Moreover, opportunities fostered specialization to make them competitive in the market offering specialized products. The study results were inline with those of Fikirte and Edrias, 2013; Santarelliand Tran, 2013.

Economic Size (FWELTH): As expected, the MSEs economic size / wealth positively affected the enterprises diversification decision and level of diversification at less than ten per cent significant levelsfor both MSEs together. Ceterius paribus condition, marginal effect indicted that a unit change in wealth would increase the probability of product diversification decision for both MSEscategory together by13per cent. Keeping others variables constant, aunit increase in MSEs wealth would increase the level of diversification for both MSEs together by 0.327. Obviously, MSEs possessing larger asset pool had higher ware withall (capacity) to invest in new machineries', technology, etc. and hence, were incentivized to diversify. Incidence of higher wealth favored product diversification. This implies that product diversification enables MSEs to allot their assets to multiple products in a way to minimize operational and market risks. Other studies confirming similar relationship between wealth and product diversification included those of Santarelli, and Tran, (2013); Iacobucci and Rosa, (2005);Fetien*et al.*, (2009; Rehima*et al.*, 2015).

Own Concentration (OWNCON): As expected, this variable negatively affected diversification decision at less than five per cent for both MSEs category together and at less than ten per cent significant level for micro and small enterprises categories.Ceterius paribus condition, direct involvement of managers or managerial team in the effective control of their own product or enterprises (quality and more quantity with price incentives) would declined the probability of product diversification decision for both MSEs altogether, micro and small enterprises category by 14.7 11.8 and 26.9 per cent respectively. While keeping all others variables constant, a unit increase in ownership concentration would decrease the level of product diversification by both MSEs together, micro and small enterprises category by 0.406, 0.297 and 0.833 respectively. This implies MSEsPromoters mighthave focused on price or quality aspects to maximize market margin rather than focusing on product diversification. Pope and Prescott (1980) found that firms large with diverseproduct mix, tended to specialize. Higher ownership concentration with quality andprice would be the essential ingredient of specialization. MSEs used diversification decision to mitigate risks (Fikirte and Enderias, 2013, Kale, 2005).

Business Plan (BUSPL): Contrary to the expectation, practice of business plan among the enterprise promoters affected diversification decision and level of product diversification negatively and significantly at less than one per cent level in both MSEs altogether and micro enterprises category. Assuming all other factors remainingconstant, marginal effect indicted that a unit change in formal business planning done by MSEs promoterswould decrease the probability of diversification decision for both MSEs together and micro-enterprises category by about25.1 and 36.6 per cent. It would decrease the level of product diversification by 0.692 and 0.978for both MSEs together and micro enterprises category at ceterius paribus.According to Fortune (2003) and Eshetu and Zeleke, (2008), MSEs often collapsed due to inefficiency in financial management caused by lack of business plans. In the study area,a sizeable proportion of MSEs do not have the ability to produce plans for taking advantage of institutional credit. Irregular and unorganized plan/ record keeping practice lead to weak risk monitoring and cash flow tracking on income and expenditure. This study was consonant with those of Eshetu and Zeleke, 2008: Belay, 2012.

RISK Management (RSKMGT): As expected, this variable positively affected diversification decision and level of product diversification at less than one per cent significant level in both MSEs together and micro enterprises category. The result indicated that, all other variables being constant, having risk management would increase the probability of diversification decision for both MSEs together and micro-enterprises category by about22.5 and 23.8 per cent. It would increase the level of diversification for both MSEs together and micro enterprises category by 0.635 and 0.670 respectively for having management while other variables are kept constant. The result indicated that risk management favored the probability of diversification decision in related product. Higher product diversification greater would be the risk mitigation. The tendency among the

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MSE promoters to mitigate risk would encourage them to diversify; after all they would not like to put all their eggs in one basket. This study result was in line with those of Fikirte and Enderias, (2013); Kale, 2005; Santarelli, and Tran, (2013).

Access to market (MARKAC): Access to market (indirectly measured in terms of walking time taken to reach market) positively affected diversification decision at less than ten per cent significant level for micro-enterprises. The result indicated thata one minute walk increase to the nearest market increased diversification decision for micro enterprises category about by 5.1 per cent, assuming all other variables remaining constant. This implies that MSEs incurred higher transaction costs (transport, market information, difficulty in searching new market, *etc.*) when getting to sell or to buy their product in far off market and that cost consequently could have served as a deterrent in diversification decision. The primary motive of MSEs perhaps would be risk mitigation rather than asset accumulation. Diversification entails higher frequency of interaction with market and MSEs would refrain from diversification in poor market access scenario. A business firm far away from a market was positively related to product diversification which entailed higher transaction costs leading to weak market integration (Joshi *et al.*, 2004;Alpízar, 2007). In addition, according to Admasu (2012), marketing problems included inadequacy of market, difficulty of searching new market, absence of market intelligence and of interaction with organization/association that conduct marketing research. MSEs spatially away from market would have limited market information, negatively affecting diversification decision (Alpízar, 2007;Rehima*et al*., 2015).

Information, Communication and Technology (CAICT): ICT ownership positively and significantly affected diversification decision at less than ten per cent significant level for both MSEs together and less than five per cent significant level for small enterprises. It also positively and significantly affected level of product diversification for small enterprises at less than five per cent significant level. The marginal effect indicted that a Birr increase investment in ICT would increase the probability of diversification decision for both MSEs together and small enterprises category by $5*10^{-5}$. It would increase level of diversification for small enterprises category by 0.640while assuming all other independent variables being constant. This implies that investment in ICT enables MSEs to enhance diversification decision and level of diversification. Investment in ICT also enables MSEs to manage price variation through enhanced access to information in product and input markets. Therefore, Additional investment in ICT could, thus, be expected to have a greater influence on diversification decision and level of diversification. This study was consonant with the study of Admassie and Matambalya, 2002; Radam*et al,* 2008.

Enterprises location (LOC): MSEs located far away from market place (outside of commercial area) negatively determined diversification decision at less than ten per cent significant level inmicro enterprises category and less than five per cent significant level in micro enterprises category. The result indicated that one minute increase in walking time from commercial site (indicative of the market distance and location) would decrease diversification decision by 13.4 per cent for micro enterprises category and would decrease level of product diversification for micro enterprises category by 0.142.This implies that location affects diversification of the enterprises as demand for goods and services depended on location (Gebreeyesus, 2009 and Belay, 2012). Enterprise location decides cost of raw materials and marketing of finished goods thereby affecting competitiveness (Belay, 2012). Competing enterprises concentrated on the close geographical area would face stiff competition to serve a given segment of clients and eventually realize lower profit. Distantly spaced enterprises would grow faster, enjoying the patronage of the clients with less competition. Similarly, proximity to commercial area makes the enterprises prosper. It further implies that MSEs located nearer to the commercial place (better market access) enjoys support services apart from incurring less transaction costs, and enhancing economies of scale and product diversification. Contrary to commercial area, MSEs located far away from the market (commercial center) were less inclined for diversification decision and level of diversification (Joshi *et al.*, 2004;Alpízar, 2007).

Promoters training (MTRIAD): As expected, promoters training positively and significantly affected diversification decision at less than ten per cent significant level in both MSEs together. The result indicated that one month increase in promoters' training would increase product diversification decision for both MSEs together by4.5per cent, assuming all other variables remaining unaltered. This implies that training opportunity minimized the risk of failure involved in related product diversification. The provision of training to entrepreneurs who wanted to start new businesses or related product gave businesses a better chance of expansion or product diversification. Training further enhances individual's access to information and technology thereby contributing to a wider array of businesses. Several studies identified importance of training in product diversification (Santarelli,. and Tran. 2013 and Ibrahim *et al.* 2009).

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Table 4: Determinants of Diversification Decision (Heckman Two-Stage estimates Probit)

Variables	Both MSE altogether		Micro-Enterprises Category		Small-Enterprise Category	
	Coef	Marginal	Coef	Marginal	Coef	Marginal
MARKAC	0.141 (0.172)	0.053 (0.065)	0.275* (0.217)	0.051 (0.082)	-0.101 (0.334)	0.030 -(0.120)
AGE	-0.013** (0.006)	-0.005 (0.004)	0.0135 (0.014)	-0.005 (0.005)	0.0181 (0.027)	0.006 (0.010)
PWEXP	-.092 (.257)	-0.034 (0.097)	-0.010 (0.301)	-0.003 (0.114)	-0.474 (0.584)	-0 .171 (0.210)
INTCAP	-5.07e-06 ($4.89e^{-06}$)	-1.92e-06 (1.84e-06)	-1.51e-06 (6.60e-06)	-5.74e-07 (2.52 e-06)	-9.31e-06 (9.05e-06)	-3.36e-06 (3.27e-06)
LOC	-0.208 (0.162)	-0.078 (0.061)	-0.352* (0.188)	-0.134 (0.071)	0.258 (0.378)	-0.093 (0.137)
MTRIAD	0.119* (0.06)	0.045 (0.023)	0.169 (0.212)	0.064 (0.080)	0.096 (0.407)	0.034 (0.147)
OWNCON	-0.390** (0.160)	-0.147 (0.060)	-0.310* (0.187)	-0.118 (0.071)	-0.745* (0.376)	-0.269 (0.135)
FOPPD	-0.341* (0.184)	-0.129 (0.069)	-0.226 (0.203)	-0.086 (0.077)	-1.16** (0.553)	-0.420 (0.200)
RSKMGT	0.595*** (0.167)	0.225 (0.063)	0.626*** (0.191)	0.238 (0.072)	0.519 (0.4009)	0.187 (0.145)
STHHAB	-0.551 (0.398)	-0.208 (0.150)	-0.456 (0.488)	-0.174 (0.186)	-1..049 (0.872)	-0.379 (0.311)
FWELTH	0.345* (0.209)	0.130 (0.079)	0.304 (0.237)	0.115 (0.090)	0.517 (0.549)	0.187 (0.198)
CAICT	0.00003* (0.00002)	0.00001 (8.00e-06)	-0.00002 (0.00004)	-7.84e-06 (0.00001)	0.00005** (0.00002)	0.00002 (0.0001)
FASIZE	-0.037 (0.051)	-0.014 (0.019)	-0.041 (0.061)	-0.015 (0.023)	-0.030 (0.112)	-0.010 (0.040)
BUSPL	-0.677*** (0.268)	-0.251 (0.101)	-0.963*** (0.348)	-0.366 (0.132)	-0.280 (0.558)	-0.101 (0.201)
CONS	1.26 (0.991)		1.63 (1.15)		2.85 (2.74)	
n=352, LR χ^2(14)= 40.85 Prob>(χ^2)= 0.000, Log likelihood= -214.42			n=265, LR χ^2(14)= 32.98 Prob>(χ^2)= 0.000 Log likelihood= -161.4		n=87, LR χ^2(14)= 19.90 Prob>(χ^2) = 0.1333 Log likelihood= -46.65	

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Table 5: Determinants of level of diversification: 2SLS estimates

Variables	Both-Enterprises		Micro-Enterprises		Small-Enterprises	
	Coef.	St. error	Coef.	St. error	Coef	St. errors
CONS	-0.288	0.526	-0.056	0.636	-1.260	1.110
LN(AGE)	-0.419	0.313	0.530	0.367	0.186	0.705
MARKACC	-0.153	0.161	- 0.254	0.205	-0.108	0.307
LOC	-0.191	0.161	-0.142**	0.114	0.123	0.361
LN(MTRIDA)	0.153	0.181	0.176 .	0.209	0.289	0.404
OWNCON	-0.406***	0.154	-0.297*	0.178	-0.833**	0.354
FOPPD	-0.317*	0.183	- 0.196	0.200	-0.922	0.514
RSKMGT	0.635***	0.168	0.670***	0.193	0.558	0.392
FWELTH	0.327*	0.206	0.322	0 .233	0.451	0.496
LN(INTCAP)	-0.092**	0.232	0.142	0.114	0.467**	0.197
LN(CAICT)	0.196	0.130	0.073	0 .158	0.640**	0.289
BUSPL	-0.692***	0.266	-0.978***	0.341	0.283	0.521
Number of obs= 352 ,			Number of obs= 265 ,		Number of obs= 87 ,	
Censored obs = 216			Censored obs = 160		Censored obs = 56	
Uncensored obs=136			Uncensored obs=105		Uncensored obs=31	
Wald chi^2 = 131.49			Wald chi^2 = 121.98		Wald chi^2 = 26.35	
Prob>F=0.000			Prob>F=0.000		Prob>F=0.0233	
Rho= 0.679			Rho= 0.898		Rho= 1.00	
Sigma= 0.225			Sigma= 0.225		Sigma= 0.438	
Lambda= 0.153			Lambda= 0.2023		Lambda= 0.438	

*Source: Field Survey, 2015/16: ***, ** and * indicate that statistically significant at less than 1%, 5% and 10% significant level, respectively. Instrumental variables PWEXPD, STRHHAB and FASIZE*

IV. Conclusion and Recommendation

The study was conducted to identify determinants of diversification decision and level of diversificationin micro and small enterprises at *Wolaita* Zone in Ethiopia. The result showed that participation in diversification and level of diversification in micro and small enterprises was significantly determined by start-up capital, market access, managerial training, age of promoters, enterprises opportunities, own concentration, economic size, business plan, risk management and ICT. Out of the 10 significant explanatory variables entrepreneurs' prior experience in risk management, enterprise economic size, and investment in ICT determined diversification decision and level of diversification positively and significantly. Promoter's age, business location, enterprises opportunities, business plan and enterprises own concentration determined diversification choice and level of diversification significantly and negatively. Access to market was negatively and significantly related with diversification decision while managerial training was related positively and significantly with level of product diversification. Based on the findings of product diversification the following policy recommendations were made.

Development practitioners should create awareness among members and encourage the use of family planning in order to limit household size. This can be achieved through integrated health and education services.

Businesses promoters who are participating in related product diversification invested considerably on ICT for coordination of inputs, industry knowledge, production skills, special technology and distribution channel. Therefore, government body and business promoters should promote for ICT infrastructure.

Age matters in diversification. Hence, the government should strengthen training system to train the older enterprises and entrepreneurs as they were found to have less inclination for diversification which is desirable for risk mitigation and sector stability. .Prior experience in business and enterprises wealth contributed to higher product diversification through reinvestment of higher income generated out of the MSEs. Again better enterprise training would compensate for lack of experience among budding entrepreneurs.

Access to start-up capital has significant and negative effect on level of product diversification. Moreover, the functionality of MSEs promoter is also constrained by shortage of start-up capital. An effective and sustainable MSEs movement requires overcoming major start-up capital constraints. It is imperative that the government should provide support with respect to timely and adequate supply of affordable and timely start-up credit facilities for Micro and Small enterprises significantly to make them become competitive in the local, regional as well as national market. Banks should allocate some resources and develop innovative ways of lending to small businesses and enterprises by following

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the successful example of the Grameen Bank of Bangladesh.

Product diversification helps MSEs to mitigate production, income and price risks because of spreading their investments in different related products. Thus, policies need to foster product diversification. Hassle free loan and enterprise training are among those interventions that would go a long way in promoting diversified product by MSEs in the country.

References Références Referencias

1. Admassie, A .and Matambalya, F. 2002. Technical Efficiency of Small and Medium Enterprises: Evidence from a Survey of Enterprises in Tanzania, MUSE Project.
2. Alpízar, C.A., 2007. Risk coping strategies and rural household production efficiency: Quasi-experimental evidence from El Salvador. A PhD Dissertation Presented in the Graduate School of the Ohio State University. USA. 209p.
3. AdmasuAbera, 2012. Factors affecting the performance of micro and small enterprises in Arada and Lideta Sub-Cities, Addis Ababa.Msc Thesis Presented to the School of Graduate Studies of Addis Abeba University.
4. Beck, T., and Demirguc-Kunt, A. 2005.Small and Medium-Size Enterprises: Access to Finance as a Growth Constraint, *Journal of Banking & Finance,* vol. 30(11), 2931-2943.
5. Belay, G, 2012. Determinants of Microenterprise Success in the Urban Informal Sector of Addis Ababa: Multidimensional Analysis. Thesisto obtain the degree of Doctor from the Erasmus University Rotterd. Netherlands.
6. CSA (Central Statistical Agency) of Ethiopia, 2007.Area and production of crops.Statistical bulletin No. 417.
7. Chesher, A., and M. Irish. 1987. Residual analysis in the grouped and censored normal linear model. *Journal of Econometrics 34, no. 1-2: 33–61*.
8. Ellis, F., 2000.Rural livelihoods and diversity in developing countries. Oxford University Press, Oxford.
9. EshetuBekele and ZelekeWorku, 2008..Factors that affect the long-term survival of micro, small, and medium enterprises in Ethiopia.*South African Journal of Economics*, 10(2):76-81.
10. Fetien, A., Bjornstad, A. and Smale, M., 2009.Measuring on farm diversity and determinants of barley diversity in Tigray, northern Ethiopia.*MEJS,*1(2):44-66.
11. Fikirte, W. and Endrias G. 2013. Determinants of Growth and Diversification of Micro and Small Enterprises: the case of DirDawa town, Ethiopia.The master thesis.
12. Fortune, E. (2003). Is Ethiopia in a Poverty Trap? *Ethiopian Business Journal*, 4(158), 12-21.
13. Gebreeyesus, M 2009. Innovation and Growth of Micro-Enterprises: Empirical evidence from Ethiopia.
14. Ethiopian Development Research Institute (EDRI), First Draft –February, 2009.
    Habtamu,Gebremichael, Aregawi andAbera., Nigus, 2013. Growth and Determinants of Micro and Small Enterprises: Evidence from Northern Ethiopia. *Journal of Economics and Sustainable, Development,* Vol.4, No.9
15. Heckman, J.J., 1979. Sample selection bias as a specification error.*Journal* of Econometrical, 47(1): 153-162.
16. Iacobucci, D. and Rosa, 2005, Growth, Diversification, and Business Group formation in Entrepreneurial firms, Small Business Economics, 25(1), 65-82.
17. Ibrahim, H., Rahman, S.A., Envulus, E.E. and Oyewole, S.O., 2009.Income and crop diversification among farming households in a rural area of north central Nigeria.*J. of Tropical Agriculture, Food, Environment and Extension*, 8(2): 84-89.
18. International Labor Office, 2003. Jobs Gender and Small Enterprises in Africa Ethiopian Women Entrepreneurs: Going for Growth May 2003 ILO Subregional Office, Addis Ababa, Ethiopia and Women's Affairs Department, Ministry of Trade & Industry (MTI/WAD) in association with InFocus Programme on Boosting Employment through Small Enterprise Development International Labour Office. ILO: Geneva
19. Joshi, P.K., Gulati, A., Birthal, S. and Tewari, L., 2004. Agriculture diversification in South Asia: Patterns, determinants, and policy implications. *Economic and Political Weekly*, 39(4): 2457-2467.
20. Kale, S. 2005. Organizational Strategy and Development: New arenas for action. *Journal of Management,* 18, 207-228
21. Liedholm and Mead, D. C. 2008. The dynamics of micro and small enterprises in developing countries. *Journal of Finance*, 26 (1): 61 -74.
22. Luxenber, Stan2004.."Diversification Strategy Raises Doubts.*National Real Estate Investor,* Germany.
23. Mashimba, S, and Kihll, R. 2014. Performance of Micro and Small Scale Enterprises in Tanzania.Growth Hazard of Fruits and Vegetables Processing Vendors.Journal of Applied Economics and Business Research. JAEBR, 4(2): 120-133.
24. Ministry of Finance and Economic Development, 2014.Ethiopia's Growth and Transformation Plan (Vol.I). Addis Ababa, Ethiopia, 2014.MoFED: Addis Ababa, Ethiopia.
25. Ministry of Urban and Construction Development, 2013.Survey on Micro and Small Enterprises (MSEs)

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in Selected Major Cities of Ethiopia.MUCD: Addis Ababa Ethiopia
26. Radam, A. ABU, M. and Abdullah, A, 2008. Technical Efficiency of Small and Medium Enterprise in Malaysia: A Stochastic Frontier Production Mode: Institute of Agricultural and Food Policy Studies, University Putra Malaysia, 43400 UPM, Serdang, Selango, 2008
27. RehimaMussema, Belay Kassa, DawitAlemu and Rashid Shahidur, 2015.Determinants of Crop Diversification in Ethiopia: Evidence from Oromia Region. *Ethiopia Journal of Agricultural science* 25(2).65-76(2015)
28. Robu M., 2013: The dynamic and importance of SMEs in economy.
29. Santarelli, E. and Tran, H, 2014. Diversification Strategies and Firm Performance: A ample selection Approach. Quaderni- working paper. DSE No 896.ISSN 2282-6483.
30. Weiss, C.R. and Briglauer, W., 2000.Determinants and dynamics of farm diversification.Department of Food Economics and Consumption Studies, University of Kiel.Working Paper EWP 0002. 20p.
31. Wolaita Zone Trade and Industry Development, Data Collection, organization and Dissemination Work Process, 2015. Annual Abstract, WZOFED: WolaitaSodo Ethiopia.

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Monetary Policy and Inflation Dynamics in Ethiopia: An Empirical Analysis

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Abstract- While inflationary sources have been linked with various issues, its attachment to money supply had especial consideration in inflation theories. The Classical version of Quantity Theory holds for inflation as being 'always and everywhere a monetary phenomenon'. On the other side, Keynes's version departed by claiming neutrality of money in an economy where idle capacity exists. Motivated basically by these theoretical departures on the link between the two variables, and the limited availability of literatures particularly in the spirit of the subject it is concerned with, the present study aimed to empirically examine the share of money supply in explaining the dynamics of inflation in Ethiopia, using Error Correction Model by employing the time series data set for the period ranging from 1974/75 to 2014/15. The Johnson's Maximum likelihood approach for cointegration has indicated the existence of long run relationships amongst variables entered the inflation model.

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Monetary Policy and Inflation Dynamics in Ethiopia: An Empirical Analysis

Minyahil Alemu [α], Wondaferahu Mulugeta (Phd) [σ], Yilkal Wassie [ρ]

Abstract- While inflationary sources have been linked with various issues, its attachment to money supply had especial consideration in inflation theories. The Classical version of Quantity Theory holds for inflation as being 'always and everywhere a monetary phenomenon'. On the other side, Keynes's version departed by claiming neutrality of money in an economy where idle capacity exists. Motivated basically by these theoretical departures on the link between the two variables, and the limited availability of literatures particularly in the spirit of the subject it is concerned with, the present study aimed to empirically examine the share of money supply in explaining the dynamics of inflation in Ethiopia, using Error Correction Model by employing the time series data set for the period ranging from 1974/75 to 2014/15. The Johnson's Maximum likelihood approach for cointegration has indicated the existence of long run relationships amongst variables entered the inflation model. Moreover, the Augmented Dickey Fuller (ADF) and Phillips Perron (PP) Unit Root tests confirmed that the variables concerned are all integrated of order one, (I(1)). ECM regression suggest that money supply, real Gross Domestic Product, trade openness, real exchange rate, budget deficit and the nominal deposit interest rate variables have together been important in explaining the long run dynamics of inflation. Except real Gross Domestic Product and nominal deposit interest rates, the effects of the remaining ones persist also in the short run. Moreover, money supply was estimated to impose the dominant effect towards validating the classical version of QTM in the context of Ethiopian economy. Besides, monetary policy is found to be more important in the dynamics of inflation compared to fiscal policy. Furthermore, VAR Granger Causality test suggests the causation running from budget deficit to money supply; and, from money supply to inflation, but no causality was suggested in reverse. This also reveals partly the applicability of the Sargent and Wallace (1981) aspect of the so called 'fiscal dominance' in Ethiopia. Finally, the study suggests for the enhancement of effectively designed and implemented network of both monetary and fiscal policies considering the power of money supply on inflation. Moreover, investments in food and agricultural sectors could considerably support the process of ensuring price stability.

Keywords: cointegration, ethiopia, inflation, money supply, stationarity, vector auto regressive, vector error correction model

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I. Introduction

Though economies may vary in structure and performance, they all possess a common vision of realizing economic development to the end; which could only be assisted by stability in macroeconomic environment. Martin cited by [26] and [30] has more to say in favor of this fact. The Today's strong economy of China has been said to result from stable growth in *RGDP* for more than three decades, particularly from 1978 to 2009 [40].

Inflation, therefore, is one of these macro-economic variables who still remained a policy issue in most economies. Inflation beyond an optimum is ruthless in general. Its mal effect is in multiples, particularity, on those in the lower income ranges via its role on income distribution and purchasing power of the currency with the poor; see [28] and [45]. Inflation is relatively rich in theories with sufficient hypothesis on its causes, though, remained an issue of debate among economic policy makers. The traditional Quantity Theory of Money *(QTM)* appears first when we talk of the causes of inflation. Via Fisher's quantity equation *(MV = PY),* the traditional *QTM* claimed for the existence of equi-proportional relationship between inflation and money growth. Where, *M, V, P*, and *Y* are the stock of money, velocity of money, the aggregate price level and real income, respectively. In the model, inflation is always and everywhere a monetary phenomenon [26] and [27]. Aggregate demand is the proposed channel through which monetary impulse is viewed to directly transmit its full impact on general price *(P)*. In economies where resources are not fully employed, money could have real effect, Keynes insisted. In other words, where resources are idle, the additional money reduces interest rate, but not price, and induce investment and hence, output increases. The initial rise in price can be offset by the latter falling prices because of larger outputs and, hence, money could finally impose neutral effect on price level [13].

Basically motivated with this theoretical controversies complemented with the limited availability of literatures in the country, especially, in the present sprit it is concerned with, and the controversial empirical evidences in various economies on the forms of relationships between inflation and money supply, the present study aimed to investigate which theory explains

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the case in Ethiopia, with a particular focus on the classical *QTM.*

II. Problem Statement

It is not impressive to regard inflation as being a public enemy since its effect is distributed to every section of the society, but more harshly the poor. Inflation retards the growth process and public welfare there by shrinking the domestic marginal propensity to save [43]. Citrus paribus, in countries like Ethiopia where the wage remains rigid for long, the devastating effect of inflation could be in multiples. So that, it is a big concern in the country to identify its sources and then tackle it, but doing so is not such simple task to apply a policy action.

Even though, inflation is relatively rich with theories, none of the theory fully explains it in various economies. According to the classical *QTM*, money supply is the primary factor to persistently cause inflation always and everywhere. In the model, money creates no real effect both in the short and the long run. But for Keynes, money could impose economically real impact where idle capacity exists [3] and [14]. This theoretical controversy accounted for the leading motivation to the present study. Hence, it is aimed to test which of the two big theories explain the case in Ethiopia. Furthermore, despite the sufficient availability of the cause-effect analysis of inflation in Ethiopia, the trend of inflation in the country has been exhibiting the highly volatile and unstable pattern even to date. It suggests the need for further careful examination on how inflation behaves in a relation to other macroeconomic variables. More importantly, previous cause-effect analyses of inflation in Ethiopia share one or more of the major statistical limitations: variables employed as well as the number of observations were of limited size, and some others have been concerned only with the short run issues. For instance, studies by [10], [12], [17], [29] and [41] are among mentioning. The present study addressed all this statistical gaps with the previous studies. Uncommon with the previous works, the relative inflationary role of monetary and fiscal policies in the country has been critically examined in the current study.

III. Objectives of the Study

The current study is primarily intended to empirically examine the power of money supply in explaining the dynamics of inflation in Ethiopia both in the short and long run. Specifically, the study has been directed to identify the potential sources of inflation in Ethiopia and evaluating the relative share of each determinant in the process, to assess the trends of inflation and broad money growth (M2) for the study period covered, to examine the possible causality among the dominant variables in the model and to determine the relative importance of monetary and fiscal policies in the dynamics of Ethiopian inflation at large.

IV. Theoretical Literature Review

a) *The Classical Quantity Theory of Money*

The theory bases its analysis on the Fishers (1911) quantity equation given by *(MV = PY)*: where, M (money supply); V (Velocity of money); P (general price) and Y (real GDP). Assuming V and Y to be constants in the model, the theory claims that *(%M = %P)*, implying the existence of equiproportional relationships between monetary growth and the rate of inflation. Therefore, inflation is always and everywhere a monetary phenomenon and in that no other factor could have a role as money plays in the determination of inflation process see [11], [18], [30], [31] and [36].

b) *The Reformulated QTM (Keynes's Version)*

In contrast to the case with classical economists, money creates real impact where idle capacities are present for Keynes. He claimed in such an economy that, any additional money balance reduces the rate of interest, increases investment and, hence, output. As a result the initial rise in price could be completely offset by the latter reduced price, hence, no way for it to directly transmit to the general price level [21]. Keynes identified three basic reasons why an economic agents demand money balance; the transaction demand (in line with the traditional economists), the precautionary demand (for emergency cases) and the speculative demand (money even as store of value); with the latter being the key tool in his attack against the *QTM* [21]. He contained these three motives together in his money demand function given by ($\frac{M^d}{P}$ == f (-i, +Y)), and related money demand positively to income and negatively to the level of interest rates: thereby recognizing the role of interest rate in affecting the demand for money. Price being determined by the demand and supply for money, Keynes formulated his own quantity equation given by P $= \frac{M}{D}$, or, $\frac{M}{P}$ = D. Where; M is the nominal stock of exogenously determined money supply; D, the demand for money and P is the general price level [20]. With the nominal interest rate included in his money demand function, Keynes stressed that, changes in the quantity of money affect price level only after impacting the level of interest rate, and hence investment output and employment [14]. So that, the transmission mechanism between money and the price level is indirect. The immediate impact of change in the quantity of money rests on the interest rate but not on price. It implies that when interest rate decreases (following positive shock in the quantity of money), the level of investment responds by increasing. Hence, the levels of output, income and employment increase also as well. The additional level

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of employment, in fact, imposes additional pressure on aggregate demand, and that the rising wage and other costs together induce the price level to rise. Here, the transmission of monetary impact on price is not only indirect, but the effect is not complete, since part of the money balance is held by the speculators, see [21] and [31].

Both versions of the quantity are, however, similar for an economy operating at its full capacity. For Keynes money could impose even a higher than full inflationary effect in the long run being aggravated by inflationary expectations. The Keynes's version reveals that the elasticity of price with respect to any monetary shock be equal to zero ($e_p = 0$) in an economy with idle resources to utilize. According to him, in such an economy, monetary injections would enable utilize idle resources and employment which increases output in a proportion to changing aggregate demand, hence there wouldbe no impact on prices in the short run [18]. The elasticity becomes one, given the level of output and employment fixed at full capacity and is *'True inflation'* for Keynes. Any monetary growth while the economy is operating at full capacity induces proportional change on price.

Secondly, the constant assumption of velocity was no more guaranteed in Keynes's version of *QTM*. In his Tract, he claimed that velocity of money is rather pro-cyclical (subjected to shocks)by considering the impact of interest rate on demand for money. Capturing velocity by $\left(V = \frac{PY}{f(i,Y)}\right)$, Keynes argued that velocity is a positive function of interest rate. It works like this; when interest rate increases, money demand decreases and, as a result velocity of money increases. The implication is that, increased interest rate induces cash holders to save more to gain extra benefit from rising rates. So that, they put more of their balance at bank and remain with few and since the amount of balance available in the economy is now less, it frequently changes hands to serve the remaining unsatisfied motives for money. With unstable velocity, no way for money to directly transmit to price and vice versa; i.e. any change in price or income would also be absorbed by the same process as a result no increasing response from money supply [39].

c) Demand-Pull Theory of Inflation

As the name implies this type of inflation is the result of excess demand in the economy. From the Keynesians traditional national income identity (Y = C + I + G), aggregate demand is a function of aggregate consumption (C), investment (I) and government expenditure (G). The demand pull inflation occurs when this sum exceeds the total level of supplies in the economy. Any factor causing aggregate demand to increase above its potential level would result in inflation. According to [34], Keynesians' had a simple and direct tool to deal with this type of inflation. Their advice is to absorb money back from the public sufficient enough in reducing the extra effective demand imposing adverse shock on the price level.

d) The Cost-Push Fallacy

These types of inflation emerge from any negative shocks in the supply side of the economy. Following [21], the supply side of the general economy explains output, inflation and the economy's adjustment to equilibrium at the potential level of output. The argument here is that, any factors contributing negatively to the production side of the economy are all inflationary. For example, increasing raw material costs, rising labor costs and indirect taxes could direct reflect in the form of increased prices or induce price to increase thereby reducing outputs. It is frequently stated in theoretical literatures like, [6] and [14], for this type of inflation to take place in the following manner: to cope up with the rising living costs in a condition of rising aggregate prices, employees may bargain and form a union demanding additional wage income; rising wages in turn can help drive inflation. This type of price surge also is regarded to spread in other sectors of the economy. It implies that, if a given production sector involves the input use of goods and services produced in another sector for which the production costs are increasing; then the prices of the goods produced in the first sector also increases.

e) The Structuralist's Explanation

This theory briefs the causes of inflation particularly in less developed economies by identifying structural rigidities commonly underlying these economies. For instance, [35] has identified three structural factors commonly explaining inflation in under developed economies. These are inelastic supply of agricultural products, insufficient national resource (government budget constraint) and foreign exchange bottlenecks. The implication with the first case is that, the unbalanced growth trends in agricultural sector and urbanization could result in higher rate of inflation in most *LDCs*. That means agricultural productivity is insufficient to meet its growing demand as urbanization is going ahead. Besides, due to weak domestic capacity complemented with loss of trust by external lenders, most LDCs resort to monetization of their deficits which is inflationary in practice in line with the traditional *QTM*. The structuralis' maintain that factors forcing monetization of deficits in LDCs are accounted for this type of inflation but not money supply as it is induced by those structural rigidities. Moreover, [8] and [16] also highly stress the case in line with [35]. Foreign exchange limitations and huge price differentials in the international trade are also among the main headaches of underdeveloped economies. Finally, structuralists' have a message to *LDCs* at least to minimize the effect of inflation resulting from structural rigidities. That is to develop any optimum measure as well as capable

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institutions enough to avoid structural rigidness and imbalances in various sectors of the developing economies and bring these changes in the economy.

f) Some Empirical Evidences

[19] has examined the dynamic impact of money supply on inflation for the ECOWAS member states; and found the positive and statistically significant impact of money supply on inflation for Cote D' Ivore, Senegal and Togo and insignificant relationship for Burkina Faso, Gambia, Ghana and Niger.

[38] applied a VAR model to investigate the impact of GDP, domestic deposit rate, foreign interest rate, nominal exchange rate and money supply on inflation in Iran, using the times series data from 1973-2008. The study confirmed the positive and significant impact of money supply, domestic deposit rate and foreign interest rate on inflation; whereas GDP and nominal exchange rates were suggested to have negative influence on inflation in Iran.

[35], on their part, found that shocks in money supply and inflation are closely related and are moving in the same direction in the economy of South Africa in the long run. The association, however, is not suggested to be proportional in contrast to the case with the monetarists. It implies that there is still free space for other factors in their inflation model for South Africa; the negative and significant impact of nominal interest rate on inflation was estimated, and that real GDP was found to positively contribute to the long run dynamics of inflation. The implication with this finding could be that the hypothesis of proportional link between money supply and price level is not welcomed in the economy of South Africa.

[23] applied the OLS estimates to determine the factors explaining price in Tanzanian economy and found that output and money supply govern inflation in the short run, and the parallel exchange rate works together with the first two in the long run. According to his estimates, the long run elasticity of money was found to be 0.77, implying that 77% of the variation in general price level was explained by the variations in money supply. This result was consistent to the monetarist's argument of monetary power in determining inflation. However, money alone is not still the only issue to deal with the concept of inflation: the rest 23% of inflation in the long run would be explained by output, exchange rate and other elements subject to shocks.

[12] analyzed the short run dynamics of inflation in Ethiopia, using a parsimonious ECM fitted with monthly observations ranging from (1995M01-2006M12) using the time series data of money supply, nominal exchange rate and agricultural out puts (proxied by a cereal–weighted agricultural production index). The results of their study confirmed that, inflation in Ethiopia is strongly of past inflation determined, with money supply being the second deriver of inflation in the short term. They revealed further that, inflationary expectations explain more than half of it, even after three years of a shock; while in the medium-run, the nominal exchange rate and the output factors were found to have the positive and a greater than money supply impact on inflationary dynamics. The study argued hence that, with prevailing structural factors causing rigidities in price formation, tightening of monetary policy alone to contain inflation would become ineffective, and claimed rather to make policy reforms bringing flexible price formation, together with the credible and transparent central bank in curbing inflationary expectations and enhancing the effectiveness of monetary policy in Ethiopia. Here, we found that, money supply variable had only a limited role in explaining inflation for the period exceeding the short run; but rather, the exchange rate (the external influence) and the output shocks together with inflationary expectations were found to be important both in short and the medium-term periods.

[24] has estimated an *ECM* to determine the short and long run importance of various factors on food and non-food inflations in Ethiopia, using monthly time series data set ranging from 1999 to 2008. The results confirmed the importance of external factors (the exchange rate and international foods and goods prices) in explaining the domestic food and nonfood prices in the long run; while agricultural supply shocks and inflation inertia being important in the short run. Moreover, the exchange rate depreciation and international prices were found to have the biggest share in Ethiopia's inflation in the long run; excess money growth with insignificant role on inflation. They had three possible arguments for the insignificant role of money in the long run; first, the lower number of observations (with only ten years monthly data); second, the involuntary excess reserve holding by banks could affect banks behavior thereby causing unstable demand for money; and finally that instability in demand for money following non monetization of large part of Ethiopian economy, mostly, inrural section of the country.

[46] investigated the causal link amongst the time series of money supply, budget deficits and inflation in Ethiopia, applying the Granger causality test to detect the short run causality, and the bounds test approach to the long run issues, for the period ranging from 1964 to 2003. The results of the study confirmed the existence of long run cointegrating relationships among the series and only uni-directional [for ward Granger Causality running from $M \rightarrow P$]. Furthermore, budget deficits were found to have no impact on the growth of money supply; and that both money supply and budget deficits impose positive and statistically significant impact on inflation, with the largest pressure sourcing from money supply while confirming the dominancy of money in the dynamics of inflation. He recommended finally that, since both the fiscal and

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monetary variables were important in determining inflation, the simultaneous exercising of proper fiscal and monetary policies would be effective to achieve the national objective of maintaining low inflation in Ethiopia.

V. Methodology

a) Data Source and Type

The study has employed the time-series secondary type data set for the period ranging from 1974/75 to 2014/15. The data are sourced primarily from the National Bank of Ethiopia, and other organizations like, Ministry of Finance and Economic Development, Central Statistics Agency, Ethiopian Economic Association and the Central Statistics agency were also referred. The World Bank data box, Internation Monetary Fund and African Bank of Development were also important providers of the required data set. To be able to determine the relative impact of both the domestic and external factors, the study employed both the home side and external variables in the inflation model adopted. The home side variables include; broad money supply, domestic nominal interest rate, government fiscal deficit and real exchange rate; while, the external once are, the country's openness to trade ratio and real exchange rate.

b) Empirical Model

The Consumer Price Index *(CPI)* is the proxy to inflation variable, which is the dependent variable in the model adopted. As far as the largest share of spending goes to the consumption of final goods and services in Ethiopia [42], *CPI* best represents inflation of the country. Broad money *(M2)* represents the definition of money supply for the National Bank of Ethiopia (NBE), hence, is the principal independent variable in the inflation model adopted. Moreover, the government's budget deficit (BD), Real Exchange Rate (RER), openness to trade (OT), Real GDP (RGDP) and the domestic nominal interest rate variables are controlled.

The guideline to the present study is the Classical Quantity Theory of Money; provoking the existence of equi-proportional relationship between money supply and inflation explained by the identity;

$$MV = PY \ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where, *M, V, P*, and *Y* are, respectively, the nominal money stock, velocity of money, general price and the real Gross Domestic Product. Since the intention is to determine the impact of M on P in the model, equation (1) can be expressed in terms of price as follows;

$$P=\frac{MV}{Y}\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

The natural log of equation (2) becomes;

$$\ln P = \ln M + \ln V - \ln Y\ldots\ldots\ldots \quad (3)$$

The variables included in the model are considered so that they could reflect the structural effects, demand-side effects, the cost or supply side effects as well as external effects on home side price level. Accordingly, the deterministic relationship between the dependent and all the independent variables employed can be expressed as;

$$CPI_t = f(M2_t, NDIR_t, FD_t, RER_t, RGDP_t, OT_t) \ldots\ldots\ldots \quad (4)$$

Where CPI (proxy to inflation) is Consumer price index, M2 is the broad money supply, NDIR is the nominal Deposit rate of interest, RER is real Exchange Rate, RGDP is Real Gross Domestic Product and OT is Openness to Trade variable, which measures the degree of country's exposure to international trade. Because not everything is controlled, the model has made to consider the effect of other shocks not specified individually with it, hence, calls for the adoption of an econometric model where stochastic terms are well recognized. Therefore, based on [1], [3], [4] and [5]; an econometric model estimated has been set as follows:

$$\ln CPI_t = \beta_0 + \beta_1 \ln M2_t + \beta_2 \ln FD_t + \beta_3 \ln RER_t + \beta_4 \ln RGDP_t + \beta_5 \ln OT_t + \beta_6 \ln NDIR_t + \varepsilon_t \ldots\ldots\ldots \quad (5)$$

Where, ε_t is the white noise error term, and the parameters $\beta_1 \ldots. \beta_6$ are the long run elasticities of the corresponding variables. β_0 is the intercept.

c) Econometric Model Estimation Procedures

1. The Unit Root Tests

The goal of econometric model is prediction which is impossible with spurious regression. That means any time series analysis require stationarity of the variables under consideration. For a time-series to be stationary, as of [9], it should exhibit time invariant mean, variance and auto covariance (possibly at various lags). We adopted the Augmented Dickey Fuller (ADF) and Phillips Perron (PP) approaches to examine the unit root properties of all the series employed. ADF procedure is conducted by extending all the equations by adding all the lagged terms of the dependent variables, and requires estimation of the following regression;

$$\Delta Y_t = \beta_0 + \gamma 1t + \delta \Delta Yt - 1 + \sum_{j=1}^{s} \pi_j \Delta Y_{t-j} + \varepsilon_t \ldots\ldots\ldots \quad (6)$$

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Where, $\delta = \emptyset - 1$ and $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$, and the like. β_0 is the intercept, $\gamma 1$ is the trend coefficient, t is the time/trend variable and where; s, are the lag terms. For this test, the hypothesis would be; Where, H_0: $\delta = 0$; there is unit root (implying the time series is non-stationary). On the other hand, the test regression for the Phillips Perron (1988) approach regresses;

$$\Delta y_t = \beta L_t + \delta y_{t-i} + \varepsilon_i \qquad (7)$$

Under the null of $\delta = 0$ (i.e. unit root exists)

2. The Cointegration Analysis

Procedures with this test detects whether the long run relationship exists among the variables under consideration. Generally, any two variables are said to be cointegrated, whenever they exhibit the long run equilibrium relationships [9], [22] and [19]. The test procedure has adopted the Johnson's Maximum likelihood approach for cointegration. Johnson derived the maximum likelihood estimation using sequential tests to determine the number of cointegrating vectors. His procedure steps from estimation of VAR of orderp of the form;

$$\Delta y_t = \mu + \pi y_{t-1} + \sum_i^p = 1 \emptyset_i \Delta y_{t-i} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \qquad (8)$$

$$Where, \pi = \sum_i^p = A_i - I \text{ and } \emptyset_i = - \sum_j^p I + 1^{Aj}$$

If the coefficient matrix (π)has a reduced rank (r<n), then, there exists an (n x m) matrices 'α' and 'β' each with rank (r) such that $\pi = \alpha\beta'$ and $\beta'\gamma_t$ is stationary. Hence, r and α indicate the number of cointegrating vectors and the speed of adjustment parameters in *ECM* respectively. Each column of β indicates the number of cointegrating equations in the model. Hence, the VAR model representation of variables entered the inflation model is as indicated below:

$$\begin{pmatrix} \Delta lnCPI_t \\ \Delta lnM2_t \\ \Delta lnFD_t \\ \Delta lnRER_t \\ \Delta lnRGDP_t \\ \Delta lnOT_t \\ \Delta lnDIR_t \end{pmatrix} = \Gamma_i \begin{vmatrix} \Delta lnCPI_{t-i} \\ \Delta lnM2_{t-i} \\ \Delta lnFD_{t-i} \\ \Delta lnRER_{t-i} \\ \Delta lnRGDP_{t-i} \\ \Delta lnOT_{t-i} \\ \Delta lnDIR_{t-i} \end{vmatrix} + \alpha\beta' \begin{pmatrix} lnCPI_{t-i} \\ lnM2_{t-i} \\ lnFD_{t-i} \\ lnRER_{t-i} \\ lnRGDP_{t-i} \\ lnOT_{t-i} \\ lnDIR_{t-i} \end{pmatrix}$$

The Johnson's approach for cointegration basically uses two test statistics: While the maximum eigenvalue examines the null of *'r'* cointegrating vectors against its alternative of *'r+1'*, the trace test examines the null of *'r'* cointegrating vectors against the alternative of *'k'* cointegrating relations. Where *'k'* represents the number of variables in the model adopted; and (r = 0, 1, 2, 3… k-1); i.e. in a model containing 'k' endogenous variables, possibly the cointegrating rank might assume the value ranging from zero to 'k-1', see [22] and [32]. The max-eigen value and trace test statistics, respectively, are given by the following formulae:

$$\lambda_{max}\,(r/r+1) = -T * log\,(1-\hat{\lambda})$$

$$\lambda_{trace}\,(r/k) = -T * \sum_{i=r+1}^{n} log(1-\hat{\lambda}):$$

where, λ are the maximum eigenvalues and *T* is the sample size in the model.

3. Vector Error Correction Model (VECM)

Once applied the cointegration test, VECM has been estimated to capture both the short and long run dynamics of inflation in a relation to other explanatory variables in the model; and, that is the well-recognized beauty of VEC model over others. After ensuring the existence of cointegration, the ECM has been estimated to also deal with the short run issues. Based on [9], assuming two variables y and x (to be the dependent and independent series respectively), ECM in this study requires estimating the following regression;

$$\Delta y_t = d_1 + \alpha_1 \varepsilon_{t-1} + \sum_{i=0}^{n} \beta_i \Delta yt\text{-}1 + \sum_{i=0}^{n} \delta_i \Delta x_{t-i} + \sum_{i=0}^{n} \emptyset_i \Delta Z_{t-i}$$

$$\Delta x_t = d_2 + \alpha_2 \varepsilon_{t-i} + \sum_{i=0}^{n} \delta_i \Delta y_{t-i} + \sum_{i=0}^{n} \beta_i \Delta x_{t-i} + \sum_{i=0}^{n} \mu_i z_{t-i}$$

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The coefficients of the lagged terms, in accordance to their placement in the equations above, reveal the short run impact of regressors on the dependent ones. On the other hand, the significant and negative coefficient of the error correction term (the parameters) measures an economy's convergence to its natural state. Along with the short run estimates, the cointegrating equations (the long run coefficients) are also computed simultaneously from Johnson's cointegration normalization in ECM regressions. Besides, a properly determined cointegrating rank makes the predicted cointegrated equation exhibit a property of joint stationarity in the long-run.

4. The Granger Causality Diagnosis

It is also critical to identify the direction of influence among variables since it helps to easily control variables causing adverse shocks at macro level. Keynes, the Real Bills Doctrine and the monetary economists viewed the direction of causality among money supply and inflation variables differently. Towards validating any of the three cases in the context of Ethiopian economy, the Granger Causality approach has been applied to detect the direction of causality among the three dominant variables in the model. The test needs all the variables be stationary; which of course has been solved in the section for Unit Root Tests above. Moreover, as usual, the error terms in the testing procedure need serially uncorrelated. Following [44], the Granger causality test examines the following two focus paired regressions sequentially from the inflation model;

$$\Delta lnm2_t = \sum_{i=1}^{n} \alpha_i \, \Delta lncpi_{t-i} + \sum_{j=1}^{n} \beta_j \Delta lnm2_{t-j} + \varepsilon_{1t}$$

$$\Delta lncpi_t = \sum_{i=1}^{n} \delta_i \, \Delta lncpi_{t-i} + \sum_{j=1}^{n} \lambda_j \Delta lnm2_{t-j} + \varepsilon_{2t}$$

Where, the lower case letters represent the growth rates of corresponding variables, and Δ are the difference operators. From the first equation, currently money supply is determined by its ith lagged value and the previous level of inflation. Hence, the current value of money supply is regressed on all of its lagged terms and all other variables in question (but with no lagged terms of CPI). Next, the same regression could be applied including the lagged terms of CPI. From the first regression, due to the restricted lagged terms of the inflation variable, we get the Restricted Residual sum of Squares (RSSR), and from the second regression, we do have unrestricted Residual Sum of Squares (RSS_{UR}), see [9]. Finally, using the two residual square terms, the general F-test to be examined can be presented as follows;

$$F = \frac{(RSS_R - RSS_{UR})/h}{RSS_{UR}/(n-k)}$$

Where, 'h' represents the number of M2 lagged terms, & 'k' is the number of parameters estimated in the unrestricted regression, which follows F-distribution with 'n-k' degree of freedom. The test requires estimation of the VAR model discussed earlier in the section for cointegration. The null hypothesis is: H0: $\sum \alpha_i = 0 \rightarrow$ the lagged M2 values do not belong in the regression. If the calculated *F* value exceeds the critical value at chosen level of significance, we reject the null hypothesis; so that the lagged M2 values belong in the regression: which is to mean M2 causes CPI. Exactly the same procedure is followed to test whether the influence runs in reverse.

VI. Estimation Results and Discussion

a) Unit Root Properties of Individual Variables

Initially all the variables were subjected to the stationarity test and both the ADF and PP procedures accepted the null of unit root at level in each case. However, both procedures rejected the null hypothesis with all the variables differenced once. Therefore, test statistics has confirmed the stationarity of all the variables at their first differences.

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Table 5.1: ADF and PP Unit Root Tests with all variables differenced once

Augmented Dickey Fuller Unit Root (ADF) Test			Philips-Perron (PP) Unit Root Test		
Variables	Constant	Constant & Trend	Constant	Constant &Trend	Infer/e
D.lnCPI	-5.560*[0.0000]	-5.516*[0.0000]	-5.582*[0.0000]	-5.530*[0.0000]	*I(1)*
D.lnM2	-3.833*[0.0026]	-4.709*[0.0007]	-3.928*[0.0018]	-4.709*[0.0007]	*I(1)*
D.lnRGDP	-3.490**[0.0083]	-4.608**[0.0010]	-3.537**[0.0071]	-4.720**[0.0006]	*I(1)*
D.lnBD	-9.279*[0.0000]	-9.189*[0.0000]	-5.855*[0.0000]	-10.074*[0.0000]	*I(1)*
D.lnOT	-5.782*[0.0000]	-6.277*[0.0000]	-10.164*[0.0000]	-6.286*[0.0000]	*I(1)*
D.lnRER	-5.117*[0.0000]	-5.066*[0.0002]	-5.041*[0.0000]	-4.981*[0.0002]	*I(1)*
D.lnDIR	-6.573*[0.0000]	-6.433*[0.0000]	-6.590*[0.0000]	-6.444*[0.0000]	*I(1)*

*Note: * and ** implies rejection of the null hypotheses @1% and @5% critical values respectively in both cases; I(1)- shows order of integration;[ ]are the P-values; and other notations are as defined earlier.*

Source: STATA Model output

Except for the RGDP variable, the unit root test statistics for all other variables are significant @1%. Besides, both the ADF and PP unit root tests have confirmed stationarity in *lnRGDP* @5%. [1] Inclusion of the trend term did not improve efficiency of the unit root estimates. Hence, consideration of either the constant term alone, or inclusion of trend term together with the constant doesn't have differences in the estimation of the general inflation model of this study. So that, only the constant term is considered while regressing ECM model in latter
sections of this paper.

b) Lag Length Determination

It is well understood that, the Johnson's approach for cointegration is highly sensitive to the number of lags included in the VAR model. Perhaps, there is no an easy and sharp rule on what optimum lags size to use; but, given the respective practical limitations of all the criteria, researchers would enjoy some relief to arbitrarily decide on the appropriate lags, conceptually geared to be reasonable. A popular method is where the AIC is minimized, which is at the optimum lag order of three in the present case. Moreover, except SBIC all other criteria have suggested the lag length of three. That is based on the second option of majority; lag size of three is sugges ted also. Hence, in subsequent analysis for cointegration, VECM and VAR model estimations, the lag length of three is used.

Table 5.2: Lag Size Determination

Lag Order	LL	LR	P-Value	FPE	AIC	HQIC	SBIC
0	208.098	-	-	6.0e-14	-10.5841	-10.4768	-10.2824
1	470.968	525.74	0.000	8.1e-19	-21.8404	-20.9818	-19.4271*
2	536.755	131.57	0.000	4.4e-19	-22.7239	-21.114	-18.199
3	614.727	155.94*	0.000	2.2e-19*	-24.2488*	-21.8876*	-17.6123

** reflects the appropriate lag length suggested by each of the criteria; and where, LL: the Log Likelihood; FPE: Final Prediction Error; AIC: Akaike Information Criteria; LR: Sequential Modified Likelihood Ratio Test (LR); HQIC: Hannan-Quinn Information Criteria; and SBIC: Schewarz Information Criteria*

Source: STATA Model output

[1] Consideration of the trend term together with the constants didn't improve the critical values for stationarity. So that, ECM estimation with the trend and constant, does not improve the efficiency of estimates with only constants. Hence, in regressing ECM, only the constant terms are considered.

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c) The Cointegration Test Results

As far as the series considered, here, are all integrated of order one (the same order), we make use of the Johnson's Maximum Likelihood procedure for cointegration issues. Accordingly, the trace *(λtrace)* and maximum eigenvalue test *(λmax)* statistics have rejected the null of no-cointegration amongst the series of interest: while confirming the existence of long run relationships among them. The summary statistics of both tests have been reflected in the table below;

Table 5.3: Results of the Johnson's Unrestricted Cointegration Test

Maximum Rank	λ_{max}	Critical @ 5%	λ_{trace}	Critical @ 5%
0	49.2117	48.45	144.3689	136.61
1	35.7802*	42.48	95.1572*	104.94
2	26.7732	36.41	59.3770	77.74
3	14.7638	30.33	32.6038	54.64
4	11.7084	23.78	17.8399	34.55
5	5.0027	16.87	6.1315	18.17
6	1.1288	3.74	1.1288	3.74

*Where *, represents the maximum cointegrating rank determined by both test statistics*

Source: STATA Model Output

The *λtrace* rejected the null of (r = 0) while favoring its alternative hypothesis of (r ≥ 0). At this stage the existence of at least one cointegrating rank within the adopted model of inflation is detected based on the trace test. At (r = 0), the *λtrace* (144.3689) is greater than the 5% critical value, which is 136.61. Hence, we can reject the null hypothesis of no cointegration. Likewise, the max-eigen value, *λmax,* has also confirmed the existence of one cointegrating vector in the inflation model adopted.

d) VEC Model Estimation Results

i. *The Long Run Estimates [**β**Coefficients]*

Long run elasticities (the β's) were exactly identified and the Johnson normalization restrictions were imposed too. The table below presents these long run elasticities of all the explanatory variables in the inflation model adopted. The estimates revealed that, all of the variables considered have been important and highly significant in determining the long run dynamics of inflation. Moreover, internal factors were more important than the external factors.

Table 5.4: Estimation Results for β Coefficients

Variables	Coefficients	Standard Errors	t-statistic	P- value
ln*RER*	0.30	0.0422	7.04	0.000
ln*RGDP*	-1.34	0.1581	-8.46	0.000
ln*DIR*	-0.06	0.0267	-2.20	0.028
ln*M2*	1.45	0.1712	8.46	0.000
ln*OT*	0.91	0.084	10.74	0.000
ln*BD*	1.38	0.105	13.13	0.000
CON	-7.88	-	-	-
$R^2 = 0.98$	$\bar{R}^2 = 0.98$	F(6, 34) = 534.61[0.0000]	RSS = 0.061071746	DW(7, 41) = 1.83

Diagnostic Test:

- *Heteroskedasticity Test: Chi^2(1) = 2.42[0.1198]*
- *RESET Test: (3, 31)= 2.28[0.0990]*
- *ARCH= 0.745[0.3879]*
- *Model Normality Condition;*
  Jarque-Bera test: Chi^2(14) = 4.493[0.99170]
  Skewness test: Chi^2(7) = 1.571[0.97976]
  Kurtosis test: Chi^2(7) = 2.922[0.89211]
- *Residual Autocorrelation Test at lags;*
  (1). Chi^2 (49) = 53.5123[0.30522]
  (2). Chi^2 (49) = 62.6017[0.09174]
  (3). Chi^2 (49) = 58.0539[0.17617]

Source: STATA Model output

Where: ln = Logarithmic forms of: M2; Broad Money Supply: RGDP; Real Gross Domestic Product: OT; Openness to Trade: BD; Budget Deficit: RER; Real Exchange Rate: DIR; Nominal Rate of Deposit: and CON is the Constant term

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Therefore, variables entered the inflation model are related in the long-run via the equation given by:

$$lnCPI = -7.88 + 0.30lnRER - 1.34lnRGDP + 1.45lnM2 + 0.91lnOT - 0.06lnDIR + 1.38lnBD$$
$$(7.04) \quad (-8.46) \quad (8.46) \quad (10.74) \quad (-2.20) \quad (13.13)$$

Where ( ) are the t-values.

As has been clearly displayed in the table above, all of the considered variables were found to impose a considerable long run impact on inflation. The long run elasticity of money supply was estimated to be 1.45, exhibiting a more than unit elastic effect (ep >1). It can be understood as, other things being constant; a percentage change in money supply leads the long run growth of inflation to change by about 1.45%. Concerning the estimated strong inflationary impact of money supply, this finding is consistent with the classical version of *QTM.* Besides, it also supports the works of [10], [35], [38] and [46]. Again, the suggested greater than unit long run elasticity of money supply is strongly in line with the Keynes's version of *QTM.* There, monetary impact being aggravated by expectations could result even in a more than unitary inflationary effect in the long run; and, the elasticity assumes zero value in the short run [36]. Hence that, there is no guarantee for the estimated higher elasticity of money supply here is not because of the same case as with the reformulated version of *QTM.* Yet, the classical's version best explains the short-run matter of the present analysis.

Though is among the monetary policy instruments of National Bank of Ethiopia, deposit rates serve less in controlling the long-run process of inflation, however, positive. The implication follows that, the interest rate channel of monetary policy is found to be less effective in dealing with the long run process of inflation. Any one or more of the justifications below might explain this scenario in Ethiopia:

First: owing to the customary lower bank rates, economic agents may resort to other asset holding decisions. Increased demand for non-financial assets, therefore, induces spending and as a result money goes to the economy not to the banks.

Second: another possible justification may be that, associated with higher surge in money growth and past inflationary experiences, the public's future inflationary expectation may increase.[2] This further reduces the expected real rate of bank and discourages voluntary saving and induces consumption. Once again, other wealth holding methods become preferable, leading to increased spending, aggregate demand and price.

Third: poor habitual tendency to save in Ethiopia may be leading the volume of saving to be interest inelastic. Irrespective of changes in bank deposit rate, agents may engage in other wealth holding decision, or either consumes all what they have. It might further be accredited to the inadequate personal disposable income in Ethiopia and, even inadequate information to the public on periodic levels of these rates by the public together with the potential benefits of keeping wealth at bank.

On other hand, as with prior theoretical expectation, the output sector has been suggested to have negative and significant impact on inflation in the long run. The estimated elasticity suggest that the output variable is nearly equally important with the money supply in explaining the long run dynamism of inflation in Ethiopia. It is straight to argue the negative impact of output on Ethiopian inflation based on economic interpretations. As far as Ethiopian economy is predominantly agrarian; improvements in agricultural productivity and output will have considerably reducing effect on food inflation; which, in turn, has been explaining more than half of the general *CPI* inflation in Ethiopia [42].

Unlike to the claims of 'New Growth Theory', trade openness has been found to vary positively with inflation in the long run. Its long run elasticity was estimated at 0.91; implying that, a percentage improvement in country's exposure to international trade would result in growth of domestic inflation by about 0.91%. It may be justified to one or more of the following cases: *First,* it couldn't be much impressing to estimate such a positive correlation in countries, like ours, where bulks of manufactured and industrial items are imported. Frequent and heavy imports might also increase the probability of welcoming external inflation. *Secondly,* prolonged internal political unrest, frequent conflicts and civil wars, drought and famine complemented with unstable macro economy might have potentially been imposing adverse effect against the inflow of *FDI* in Ethiopia; which is the principal benefit resulting from larger international exposure. Besides, bad history of famine and drought, the discouraging and aggressive economic policies in the past regimes, internal conflicts and that of frequent Ethio-Eritrean Wars and internal civil wars, among others, might have been shadowing the international image of Ethiopia. All these factors might have been working against the suspected benefits of more exposure to international trades. Possibly, another personal justification for the case would be that, the government may resort to increase the domestic tax rate as well as tax base, to compensate for the lost tariff and other trade liberalization related revenues.

[2] Real interest rate is nominal interest rate minus inflation rate. If expected rate of inflation is high, the real rate of return decreases, and as a result agents prefer more consumption to saving hereby further imposing inflationary pressures.

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The long run inflationary effect of real exchange rate is expected. Its long run elasticity is 0.30, with strongly significant and expected sign (positive). Real depreciation makes exports cheap and, imports become expensive; so that, higher foreign prices would be reflected in domestic economy in the form of higher inflation. It is consistent with the international trade hypothesis, like [33].

Due to its monetary dimension, the long-run impact of budget deficit on inflation is positive as expected and significant too. Its long run elasticity is estimated to be 1.35, implying that a 1% rise in financing deficits would result in rise of long run inflation rate by 1.35%; while exhibiting also a more than unit effect. From macroeconomic theories (including the traditional *QTM*), any positive effect of budget deficit on inflation reflects seignior ages. Therefore, though made in fiscal aspects the effect of budget deficit could be viewed indirectly as being the effect of money supply. This analysis is highly consistent with the study of [5] and [46]. Therefore, monetization of fiscal deficits has been among the important long run drivers of inflation, and has also been an important source of money growth in Ethiopia.

ii. *VECM Short-Run Estimates*

The long and short run estimates of VECM are related by the error correction term ECt-i. Negative and significant coefficient of the error term reveals the economy's convergence back to its natural state; which is satisfied in the present paper. In the short run, most of the variables were found to be important. Money supply remained still dominant as with the case in the long run, thereby exhibiting a more than full effect. The detail is reflected in the following table:

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Table 5.5: VECM Short-Run Estimates

Dependent variable: Dln*CPI* [Proxy to Inflation Variable]			
[D_ln*cpi* _ce1], Speed of Adjustment	-0.40 (-3.44) [0.001]	Speed of adjustment is the α-parameter in ECM	
Independent Variables	Short run elasticities at various lags		
	y_{t-1}	y_{t-2}	y_{t-3}
Dln*CPI*	-0.09 (-0.47) [0.641]	-0.35 (-1.83) [0.068]	-0.10 (-0.58) [0.565]
Dln*M2*	1.07 (2.32) [0.020]	1.01 (2.68) [0.007]	0.34 (1.17) [0.241]
Dln*RGDP*	-0.06 (-0.25) [0.800]	0.06 (0.24) [0.807]	0.81 (2.98) [0.003]
Dln*OT*	0.44 (3.26) [0.001]	-0.24 (-2.31) [0.021]	-0.35 (-2.54) [0.011]
Dln*BD*	0.64 (3.94) [0.000]	0.52 (4.07) [0.000]	0.02 (0.27) [0.786]
Dln*RER*	0.64 (4.28) [0.000]	0.21 (1.30) [0.194]	0.14 (1.17) [0.244]
Dln*DIR*	-0.13 (-1.72) [0.085]	0.04 (0.43) [0.666]	0.15 (1.89) [0.058]
CONS	0.05 (2.15) [0.031]		
$R^2 = 0.98$ $\bar{R}^2 = 0.98$ $F(6, 34) = 534.61[0.0000]$ $RSS = 0.061071746$ $DW(7, 41) = 1.83$			

Diagnostic Test:

- *Heteroskedasticity Test: Chi^2(1) = 2.42[0.1198]*
- *RESET Test: (3, 31)= 2.28[0.0990]*
- *ARCH= 0.745[0.3879]*
- *Model Normality Detection;*
  Jarque-Bera test: Chi^2(14) = 4.493[0.99170]
  Skewness test: Chi^2(7) = 1.571[0.97976]
  Kurtosis test: Chi^2(7) = 2.922[0.8921]
- *Residual Autocorrelation Test at lags:*
  (1). Chi^2 (49) = 53.5123[0.30522]
  (2). Chi^2 (49) = 62.6017[0.09174]
  (3). Chi^2 (49) = 58.0539[0.17617]

Prob>(

Source: STATA Model output

Note: Numbers without brackets are the short run elasticities of corresponding Series; ( ) are t-values and; [ ] are the P-Values; and D, represents the Difference Term: y_{t-i}*, represents the lag length.*

The most important thing in ECM is the sign and significance status the error term. It measures the speed by which the short term deviations in the inflation model can converge back to, or diverge from its long run equilibrium. In our case, it is negative and highly significant implying that any short term distortions in the inflation model could be corrected; and the short term deviations could converge towards the long run equilibrium at the annual speed rate of 40%. Hence, it takes a model about $2\frac{1}{2}$ years to reach the long run equilibrium point.

The short run elasticity of money supply is 1.07 and 1.01, in the first and second lags respectively; but, it is insignificant at the third lag. Besides, the short run elasticities are strong, being more than unity in the first lag, and equal to unity at the second lag. Therefore, money supply remained dominant even in the short run. It is highly consistent with the hypothesis of the

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traditional *QTM*. The short run estimates reveal that, the real output and domestic deposit interest variables are not important in explaining the short dynamism of inflation. The inflationary effect of deficit financing by the government has persisted in the short-run also. It further evidenced the dominancy of money in the dynamics of inflation in Ethiopia. Moreover, the openness to trade variable is also found to be important in the short run.

iii. *Monetary Versus Fiscal Policy: Which is More Important?*

To determine the relative importance of the two big macroeconomic policies in the dynamics of inflation in Ethiopia, the percentages of long-run elasticities have been used for comparison. Accordingly, Consideration of all the major variables of monetary policy (money supply, real exchange rate and deposit interest rate) with the adopted inflation model enables to fully capture the role of monetary policy regarding the process of inflation. On the other hand, the sole candidate to fiscal policy in our model is the budget deficit variable. In comparing these two policies, and to avoid bias and moreover based on the main subject of this study, monetary policy was represented only by money supply variable and that, fiscal policy was examined with consideration of budget variable. Accordingly, the computed long run elasticity of broad money supply is 1.45 and, of that of budget deficit variable is equal to 1.38. For a 1% additional money supply, inflation responds by 1.45% increment; while, a 1% rise in deficit financing results in a growth of inflation by 1.38% in the long run. The coefficients are almost equal revealing the strength in both policies in explaining the long run dynamics of inflation in Ethiopia. The reason may be that, the measures in both policies have resulted in the expansion of money supply within the general economy. Though policies differ, measures in both cases are meant to increase the quantity of money under circulation. But, the inflationary effect of money supply under monetary policy only slightly exceeds its effect through fiscal policy. That means the long run inflationary impact of monetary policy is a little bit greater than the effect of fiscal policy only by 0.07%. For comparison matters however, monetary policy is more important in the long run process of inflation in Ethiopia. This finding is consistent with the works of [2], [25] and [37]. The finding also rejected the government's claim that, inflation in Ethiopia is of neither monetary nor fiscal factors, but rather of a growth factor. Even though, the pressure from production side has been estimated to be strong in the long run, its short run importance is not considerable. The effect of money supply also remained dominant in the short-run. Generally, money supply has found to be the strongest of all, both in short and the long run dynamics of inflation with a more than full effect. The classical *QTM* has, thus, a truth in claiming money as the powerful item in a relation to the dynamics of inflation.

[3] *Table 5.6:* The Relative Importance of Monetary and Fiscal Policies (with all variables changing simultaneously)

Variables	Comparative Ratios	Percentages	Sign
ln*M2*	0.267	26.7	+
ln*DIR*	0.011	1.1	_
ln*RER*	0.055	5.5	+
ln*RGDP*	0.246	24.6	_
ln*OT*	0.167	16.7	+
ln*BD*	0.254	25.4	+
Total	1.00	100.0	

Source: Self Computation based on Model Output

e) Granger Causality Test Results

Knowing the responsiveness of a variable to shocks from other source is help full to easily control the effect of a variable on the other. The bench mark to decide on as to whether accept or reject the null hypothesis was based on the 5% critical value. The causality test result is displayed below. No causal influence has been detected between inflation and budget deficit variables in either direction; but, forward uni-directional causality was suggested from money

[3] *Coefficients in the table are computed by taking the relative ratios of individual elasticities to their sum total. Then, the values were used for comparison matters.*

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supply to inflation. I t means money supply Granger causes inflation but no influence runs in reverse. This is in line with the traditional *QTM*. It is also consistent with the works of [1], [7] and [46]. Moreover, the revealed uni-directional causality from budget deficit to money supply is in line with the doctrine of the classical Quantity Theory of Money. This finding strongly supports the macroeconomic treatment of monetization of deficits to cause money growth and hence inflation in LDCs. Generally, the Granger Causality test suggests causal influence running from budget deficit to money supply and from money supply to inflation (BD Ms CPI). It further evidenced the claim in Ethiopia that, monetization of fiscal deficit has been the main reason for the rapid growth of money supply and, hence inflation; see again [7] and [46].

Table 5.7: G ranger Causality Wald Test Results

Null Hypothesis:	***F-Statistic***	***P-value***	***Decision***
Inflation does not Granger cause Money Supply	3.2183	0.0833	*Accept*
Money Supply does not Granger Cause Inflation	4.3417	0.0461	*Reject*
Inflation does not Granger cause Budget Deficit	1.8481	0.1845	*Accept*
Budget Deficit does not Granger Cause Inflation	0.5860	0.4502	*Accept*
Money Supply does not Granger cause Budget Deficit	0.4135	0.5253	*Accept*
Budget Deficit does not Granger Cause Money Supply	24.288	0.0000	*Reject*

Source: STATA VAR Model output

VII. Conclusion

Inspired basically by the competing hypothesis of the classical and Keynes's version of *QTM*, the study has mainly intended to empirically investigate the share of money supply in explaining the dynamics of inflation in Ethiopia by employing the time series data set ranging from 1974/75 to 2014/15. To achieve this objective, ECM has been estimated after confirming all the pre and post statistical qualities in individual variables as well as, their joint behavior in the model. Towards validating the claims in traditional *QTM*, money supply has found to account for the dominant role in the process of inflation in Ethiopia with a more than unit effect. Especially its dominant role is highly considerable in the short run. The long run case puts it only a little over other domestic factors of fiscal deficit and real output. Besides, the Keynes's version of *QTM* might partly explain a more than unit effect inflationary effect of money supply. Moreover, the uni-directional causality from budget deficit to money supply; and from money supply to inflation has been confirmed by VAR Granger causality tests. The implication is that, budget deficit has been an important source of monetary growth and; hence, inflation in Ethiopia. This result is also consistent with hypothesis of traditional macroeconomists in *QTM*; and, with most empirical studies claiming for government budget deficit to cause money supply especially in developing economies as they rely more on monetization of these deficits. Besides; budget deficit, real output, trade openness and real exchange rate variables were estimated to be an important sources of inflation in the long run. Domestic deposit interest rate is also suggested to have only a minor role in the long run dynamics of inflation. Besides, the study has estimated the positive correlation between openness and inflation in contrast to the hypothesis of New Growth Theory. The short run impacts of real *GDP* and domestic deposit interest rate variables have been found to be insignificant. Money supply still remained the dominant one with a more than unit effect, in line with the classical version of *QTM*, but in contrast to Keynes.

VIII. Recommendations

Taking note of the points below would support the process of maintaining stable price; and hence, wellbeing of general macroeconomic environment in Ethiopia;

- Both the monetary and fiscal policy makers should consider the higher sensitivity of inflation to changes in monetary growth. Controlling money supply growth thereby situational tightening of monetary policy can be an important solution. Besides, it is better for the government to rely more on other methods (rather than seigniorages) to finance its deficits. Enhancing domestic capacity and utilizing resources at home could have considerably stabilizing effect in the long run.
- Based on Keynes's version of *QTM,* the estimated higher than unit elasticity of money supply may have been explained by higher inflationary expectations. Hence, the effect of expectations can be tackled by ensuring credibility in targeting and announcement of key economic and general policy variables.
- Price shocks associated with the real production sector necessitate for larger investments in agriculture (as more of output is sourced from agricultural sector) and other food sectors. Therefore, enhanced domestic and foreign

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investment undertakings in these sectors could support the process of price stabilization and growth in general; parallel to the government's effort of expanding manufacturing industries in Ethiopia.

- To divert the positive inflationary effect of openness, the inflow of *FDI* should be encouraged and be provided
- with various promotional incentives in order to boost domestic production. Promoting *FDI* in manufacturing industries will reduce the sill of imported inflation in the long run.
- Furthermore, efforts to improve saving habits, moderate upward revision of deposit rates together with the credible policy for expectation issues will improve the effectiveness of monetary policy in controlling inflation via its interest rate channel. Measures related to interest rate should also consider its impact on private investment undertakings.
- Finally, the inflation model of this study suggests that, inflation in Ethiopia has been more of internal factor. As a result, especial consideration should be given to home side factors.

References

1. Abate and Rao (2015), "A Cointegration Analysis of Money Supply and Price in Ethiopia", *Research Article in Economics*, Vol. 16, Issue 5, PP. 72-79.
2. African Bank of Development (2011), "Inflation Dynamics in Some Selected East African Countries", *Working Paper Series*, Tunis, Tunisia
3. Akinbobola (2012), "The Dynamics of Money Supply, Exchange Rate and Inflation in Nigeria", *Journal of Applied Science*, Vol. 2, no. 4, ISSN/Scienpress Ltd, pp. 129-137.
4. Alemayehu and Kibrom (2001), "The Galloping Inflation in Ethiopia: A Cautionary Tale for Aspiring Developmental States in Africa", *IAES Working Paper Series No.A01/2011*.
5. Ayubu (2013), "Monetary Policy and Inflation Dynamics in Tanzania", *Msc Thesis Paper in Economics Department,* University of Dares Salaam.
6. Batten (1981), "Inflation: The Cost-Push Myth", *Economic Quarterly Review*, Federal Reserve Bank of ST. Louis, *pp. 20-26.*
7. Benbouziane and Benamar (2004), "The relationship
8. between Money and Prices in the Maghreb Countries: A cointegration Analysis", *Research Paper for 11th Annual Conference*, University of Tlemcen, B.P. 226, Tlemcen, Algeria.
9. Donath and Dima (2000), "The Structural Inflation in Romania", *Research Paper*, West University Timisoara, Faculty of Economics, Mexico Gujarati (2004), "Basic Econometrics", 4th edition, New York: The McGraw-Hill
10. Habtamu (2013), "An Investigation in to the Causes and Dynamics of Price Inflation in Ethiopia" *MA Thesis*, Institute of Social Studies, Hague, the Netherlands
11. Hetzel (2007), "The Contributions of Milton Friedman to Economics", *Economic Quarterly*, Vol. 93, No. 1, pp. 1-30.
12. Hideki, Rukmani and Josef (2008), "Inflationary Expectation in Ethiopia: Some Preliminary Results" *Working Paper*, Vol. 8, No. 2.
13. Hoover (2012), "Applied Intermediate Macroeconomics", ISBN/978, Cambridge University Press, USA
14. Humphrey (1974), "The Quantity Theory of Money: Its Historical Origin and Role in Policy Debates", *Economic Review*, Federal Reserve Bank of Richmond, pp. 7-14.
15. Humphrey (1976), "Historical Origins of the Cost-Push Fallacy", *Economic Quarterly, Federal Reserve Bank of Richmond*, Vol. 83, No.3, pp. 53-74.
16. Jaime (1989), "On Inertia, Social Conflict, and the Structuralists Analysis of Inflation", *Working Paper in Economics*, World Institute for Development Economics, Mexico
17. Jema and Fekadu (2012), "Determinants of Recent Souring Food Inflation in Ethiopia", *Research Journals*, Vol.1, No.8, ISSN/2277, pp. 225-233.
18. Johnson, Ley and Cate (2000), "Keynes' Theory of Money and His Attack on the Classical Model", *International Economic Conference Paper*, Bemidji State University, USA
19. Kenneth and Anthony (2015), "Dynamic Impact of Money Supply on Inflation: Evidence from ECOWAS Member States", *ISOR Journal of Economics and Finance*, vol. 6, pp. 10-17, Nnamdi Azikiwe University, Awka, Nigeria.
20. Keynes (1936), "The General Theory of Employment, Interest and Money", ISN: http://etext.library.adelaide.edu.au/k/keynes/john_maynard/k44g/k44g.html/.
21. Krusell P. (2004), "Macroeconomics I", *Post Graduate Lecture Notes in Economics Department.*
22. Lahari (2011), "Test for Cointegration", *The General outline for PFTAC Central Bank Training*, Suva
23. Laryea and Rashid (2012), "Determinants of Inflation in Tanzania", *Working Paper*, ISSN 0804-3639: http//www.cmi.no/
24. Loening, Durevall and Ayalew (2009), 'Inflation Dynamics and Food Prices in an Agricultural Economy: The Case of Ethiopia', *Working Papers in Economics 347*.
25. Lozano (2008), "Budget Deficit, Money Growth and Inflation: Evidence from the Colombian Case", *Research Paper*, the Central Bank of Colombia.
26. Mankiw (2008), "Principles of Macroeconomics", Fifth edition, TSI Graphics Inc, USA

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27. Mankiw (2010), "Macroeconomics", 7th edition, 41 Madison Avenue, USA
28. Mbutor (2014), "Inflation in Nigeria: What is the Function of Money?", *Research Paper*, Central Bank of Nigeria, Vol. 6(1), Nigeria.
29. Meseret (2014), "The Effect of Trade Openness on Inflation in Ethiopia", *MA Research Paper in Economics Department of* Addis Ababa University, Ethiopia
30. Milton (1971), "A Theoretical Frame Work for Monetary Analysis" *National Bureau of Economic Research*, ISBN: 0-87014-223-X, pp. 15-29.
31. Nelson (2007), "Economic Synopses", *Short Essays and Reports on the Economic Issues of the Day*, Federal Reserve Bank of St. Louis.
32. Nurmadihah, Jusoff and Asari (2011), "A VECM Approach in Explaining the Relationship between Interest Rate and Inflation towards Exchange Rate Volatility in Malaysia", *Research Article of World Applied Science Journal 12 ISSN 1818-4952*, pp. 49-56, IDOSI Publications.
33. Obstfeld and Rogoff (1996), "Foundations of International Macroeconomics", ISBN/0-262 MIT Press.
34. Olson (2010), "Essentials of Advanced Macroeconomic Theory", Cambridge, Massachusetts
35. Oludele, Akinloye and Akinboade, (2002); "The Dynamics of Inflation in South Africa: Implications for Policy", *Research Article in Economics*, University of South Africa.
36. Ray and Anderson (2011), "Krugman's Economics for AP*", ISBN.10/4292, 41 Madison Avenue, New York, NY 10010, USA
37. Rebecca (2014), "Fiscal Deficit, Money Growth and Inflation Dynamics in Ghana", *MA Thesis in Economics,* Kwame Nkrumah University, Ghana
38. Safdari, Mehrizi and Elahi (2011), "Investigating the Impact of Liquidity on Inflation in Iran", *African Journal of Business Management*, ISSN 1993-8233, Vol. 6(20), pp. 51-55, Islamic Azad University, Taft, Iran.
39. Snowdon and Vane (2005), "Modern Macroeconomics: Its Origins, Development and Current State", Edward Elgar Publishing Inc. USA
40. Song (2010), "China's Rapid Growth and Development: An Historical and International Context", *Conference Paper* at *Peking University*, pp.6-7, Beijing, China.
41. Temesgen (2013), "Determinants and Impacts of Dynamic Inflation in Ethiopia", *MA Thesis in Economics,* Norwegian University of Life Sciences, Norway
42. UNDP (2014), "Country Economic Brief", *UNDP analysis of Ethiopian Macroeconomic Performance*: www.et.undp.org.
43. Wood and Elgar (1998), "Money, Prices and the Real Economy", *Institute of Economic Affairs*, Edward Elgar Publishing Limited, UK.
44. Wooldridge (2013), "Introductory Economics: A modern Approach", Cenage Learning, 5th edition, Michigan State University, United States.
45. Yamaguchi (2013), "Money and Macroeconomic Dynamics", first edition, ISBN 978-4, Osaka Office Publications, Japan
46. Yemane (2008), "Budget Deficits, Money and Inflation: The Case of Ethiopia", *Research Article in Economics*, Vol.42, No.1, pp. 183-199.

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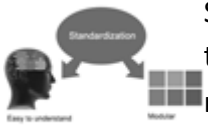


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- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

Acknowledgements: Please make these as concise as possible.

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Content

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Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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