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Aims and Scope

Journal of International Economics is devoted to the publication of professional and academic research in all the areas of international economics. It is published in the months of January and July. The journal broadly covers areas such as cross country growth models, population and migration patterns, international trade, trade policy and relations, trade organizations and bodies, foreign investment flows, balance of payments and exchange rate mechanism, multinational corporations and cross border manufacturing, etc.

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INSTITUTE OF PUBLIC ENTERPRISE

Journal of International Economics

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From the Editor's Desk...

The World Economic Forum meet at Davos was significant for many reasons this year. For India it was a moment of triumph. Our Prime Minister became the first head of the state in more than two decades to address the gathering. He vehemently criticized rising tide of protectionism and stoutly defended globalization. "Instead of globalization, the power of protectionism is putting head up" he said. In fact, many delegates criticized Donald Trump's 'America First Agenda'. The occasion also recognized India's growth as an economic and geopolitical power.

Another significant development was India jumping by thirty ranks in the 'Ease of Doing Business Report' published by World Bank every year. India's progressive reform measures, one of which was the Insolvency and Bankruptcy Code, rose India's stock and therefore India got a 100th rank from last year's 130. As this issue was going into print, Economic Times Global business Summit caught everyone's attention. The presence of eminent people such as, Steve Wozniak, Reed Hastings, Bill Thomas, speaks volumes regarding India's standing at the international level. It is noteworthy to mention that Dominic Barton, global managing partner Mckinsey, said that Prime Minister Narendra Modi's target of turning India into a $5 trillion economy by 2025, is achievable.

However, there are matters of concern. The rising power of China is giving some uneasy moments to India. That apart, Narendra Modi Government was criticized for raising the customs duty for some sectors in the recently announced budget. The stated reason for this move was to give impetus to 'Make in Inida', which is the pet theme of the Government. The critics however opine, that this move contradicts his support for globalization and his statements criticizing protectionism. They called it Government's 'U turn'. As things unfold it has to be seen how this measure pans out.

This journal has been making consistent efforts to publish those articles which are germane to the field of International Economics. The present issue has six articles highlighting the issues such as, exchange rate variability, FDI in Africa by India and China, Macro Economic determinants of FDI inflows.

Regular readers of our journal are aware of the fact that, since last issue we started publishing book reviews. This issue has a review of the book titled 'How will Capitalism End', which is written by Wolfgang Streek. The book, as the title suggests, talks about how the capitalist system would end.

Dr G Rajesh

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Exchange Rate Variability and Foreign Trade: Evidence from Two Asian Giants

Kiran Lamba[1] and Mamta[2]

Presently India and China are the fastest growing, most populated and competitive nations in the world. Both have a history of close and command economies. China has opened is command economy in 1978 and experience a miraculous growth rate since then. India adopted structural adjustment programme in wake of Balance of Payment crisis of 1991. Presently both countries are integrated with world economy at a greater extent. Exports and Imports play a very important role in the development of an economy. Further exchange rate is a key financial variable that affects decisions made by foreign exchange investors, exporters, importers, bankers, businesses, financial institutions, policymakers and tourists in the developed as well as developing world. Exchange rate fluctuations affect the value of international investment portfolios, competitiveness of exports and imports, value of international reserves, currency value of debt payments, and the cost to tourists in terms of the value of their currency. Movements in exchange rates thus have important implications for the economy's business cycle, trade and capital flows and are therefore crucial for understanding financial developments and changes in economic policy. The inter-relationship between a nation's imports and exports, and its exchange rate, is a complicated one because of the feedback loop between them. The exchange rate has an effect on the trade surplus (or deficit), which in turn affects the exchange rate, and so on. In this background the main objective of this paper is to analyze the relationship between exchange rate variations and exports & imports of India and China.

Keywords: *Exchange Rate, Elasticity, Devaluation, Depreciation*

Introduction

India and China are the most populous, emerging and competitive nations in the world. India is the seventh-largest economy in the world by nominal GDP and the third largest by purchasing power parity (PPP). The country is classified as a newly

1 **Kiran Lamba** is Assistant Professor, Department of Economics, B.P.S.M.Vishwavidyalaya, Khanpur Kalan (Sonepat), Haryana and can be reached at: kiran.lamba6@gmail.com.

2 **Mamta** is PG Student, Department of Economics, B.P.S.M. Vishwavidyalaya, Khanpur Kalan (Sonepat), Haryana.

industrialized country, one of the G-20 major economies, a member of BRICS and a developing economy with an average growth rate of approximately 7 percent over the last two decades. India has been among the original members of the IMF and WTO when it started functioning in 1946. However India has adopted major reforms in 1991 in the wake of balance of payments crisis. China's socialist market economy is the world's second largest by nominal GDP, and the world's largest economy by GDP on purchasing power parity (PPP) basis. China is a global hub for manufacturing, and is the largest manufacturing economy in the world as well as the largest exporter of goods in the world. China is the largest trading nation in the world and plays a vital role in international trade, and has increasingly engaged in trade organizations and treaties in recent years. In China reforms has been started in 1978.

The exchange rate is a key financial variable that affects decisions made by foreign exchange investors, exporters, importers, bankers, businesses, financial institutions, policymakers and tourists in the developed as well as developing world. Exchange rate fluctuations affect the value of international investment portfolios, competitiveness of exports and imports, value of international reserves, currency value of debt payments, and the cost to tourists in terms of the value of their currency. Movements in exchange rates thus have important implications for the economy's business cycle, trade and capital flows and are therefore crucial for understanding financial developments and changes in economic policy. The inter-relationship between a nation's imports and exports, and its exchange rate, is a complicated one because of the feedback loop between them. The exchange rate has an effect on the trade surplus (or deficit), which in turn affects the exchange rate, and so on. In general, however, a weaker domestic currency stimulates exports and makes imports more expensive. Conversely, a strong domestic currency hampers exports and makes imports cheaper. Countries occasionally try to resolve their economic problems by resorting to methods that artificially depress their currencies in an effort to gain an advantage in international trade. One such technique is "competitive devaluation," which refers to the strategic and large-scale depreciation of a domestic currency to boost export volumes. Another method is to suppress the domestic currency and keep it at an abnormally low level. This is the route preferred by China, which held its Yuan steady for a full decade from 1994 to 2004, and subsequently allowed it to appreciate only gradually against the U.S. dollar, despite having the world's biggest trade surpluses and foreign exchange reserves for years. The Renminbi is held in a floating exchange-rate system managed primarily against the US dollar in China. Recently, China's exports are decelerating and it is changing exchange rate and EXIM policies frequently to stop this deceleration. India's exports and imports are increasing at a faster rate and exchange rate policy can play an important role in promoting trade.

In this background the main objective of this paper is to analyze the relationship between exchange rate variations and exports & imports of India and China. The paper covers the time period 1998-2014. The appropriate data is retrieved from the various issues of the *Handbook of Statistics* brought out by UNCTAD and WTO. Firstly, stationarity of time series data is analyzed with the help of Augmented Dickey-Fuller

test, elasticity of exports and imports with respect to exchange rate is analyzed, and Granger Causality test is applied to test two way causation between exchange rate and Exports and Imports of both nations.

Exchange Rate Policy Reforms in India and China

In pre-reform era, China's exchange rate at an overvalued level subsidized the import of high priority capital goods which could not be produced domestically. This overvaluation of domestic currency led to excess demand for foreign exchange relative to supply resulting in a rigid foreign exchange control system. Under the restricted system, the exporters had to surrender 100 percent of foreign exchange earnings to the government and there were limitations on rights of individuals to hold foreign currency and strict control over outflow of capital. Then in early 1980s, exporters were allowed to retain a share of their foreign exchange earnings. So they were able to finance imports without any government permission to purchase foreign exchange. In 1994, government devalued currency from nominal exchange rates of RMB 1.5 to RMB 8.7 per dollar to fix official exchange rate at the rate prevailing in the parallel foreign exchange market and thus the dual exchange rate regime ended in China. RMB exchange rate regime was further reformed on 21 July 2005, putting in place a managed floating exchange rate system based on market supply and demand with reference to a basket of currencies. In deciding the modalities, content and timing of the exchange rate reforms, the Chinese government took full account of their impact on macro economy and financial stability, economic growth and employment as well as the impact on its neighboring countries. The long term objective of the reform of China's foreign exchange management system is full convertibility of RMB under both current and the capital account (The RMB became convertible under current account in 1996). China has been steadily moving towards capital account convertibility. On June 2010, China began a reform of Renminbi exchange rate mechanism with a view to gaining more flexibility in Renminbi exchange rates. Emphasis was laid on the law of supply and demand and adjustments based on a basket of currencies within a specified floating range on foreign exchange market. According to a government report submitted to the National People's Congress in March 2012, China intends to improve the exchange rate determination mechanism for Renminbi and maintain the stability of Renminbi exchange rates around its equilibrium level, push forward the convertibility of Renminbi under the capital account gradually and enlarge the scope of Renminbi usage in cross border trade settlement and investment.

In post Bretton Woods period, the Indian rupee was effectively pegged to a basket of currencies of India's major trading partners from September 1975 and this system was continued through the 1980s. But the balance of payments crisis of 1991 made it imperative to adjust exchange rate. The rupee was devalued by 22.8 percent, in the first week of July 1991, relative to basket of five currencies viz the US dollar, the Deutschmark, the British pound, the French franc and the Japanese yen. The purpose was to bridge the gap between the real and the nominal exchange rates that had emerged on account of rising inflation and thereby to make exports competitive.

Taking into account the withdrawal of most export subsidies at the same time, the devaluation of real effective exchange rate for exporters was around 16.3 percent (Srinivasan 2004). Now foreign exchange rate policy in India is guided by the broad principles of careful monitoring and management of exchange rates with flexibility and a preannounced target or a band while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly manner. In India exchange rate system has undergone a paradigm shift from a system of fixed exchange rate until March 1992 to a market determined regime in March 1993. Since the switch over to a market determined exchange rate regime in March 1993, the behaviour of exchange rate has remained largely orderly, interspersed by occasional episodes of pressures.

The transition to market determined exchange rate system took place in two stages. Firstly liberalized exchange rate management system (LERMS) instituted in March 1992 was a dual exchange rate arrangement under which 40 percent of current receipts were required to be surrendered to the Reserve Bank at the official exchange rate while the rest 60 percent could be converted at the market rate. The unified market determined exchange rate regime replaced the dual regime on March 1, 1993 and since then "the exchange rate policy is guided by the need to reduce excess volatility, prevent the emergence of destabilizing speculative activities, help maintain adequate level of reserves, and develop an orderly foreign exchange market (Jalan 1999). In order to reduce excess volatility in the foreign exchange market, RBI has undertaken market clearing sale and purchase operations in the foreign exchange market to moderate the impact on exchange rate arising from lumpy demand and supply (Uma Kapila 2009).

Growth and Trends of Exchange Rate, Exports and Imports in India and China

The broad trends in the value of exchange rate of India and China for the period 1998-2013 are presented in Table-1.

Table-1: Trends of Exchange Rates of India and China during 1998-2013 (In percent)

Year	Exchange Rate of China	Exchange Rate of India
1998-99	-8.67	-1.09
2000-01	13.07	0.28
2002-03	-3.74	0.03
2004-05	3.99	0.47
2006-07	8.74	4.25
2008-09	15.83	-0.12
2010-11	22.18	-1.4
2012-13	20.99	-3.08
2013-14	9.94	0.16

Authors Own Calculations

Table-1 shows more depreciation in Chinese exchange rate as compared to India with a larger upward trend. So, it is clear that China whether deliberately or naturally keeps its currency undervalued to increase exports. In 1998-99 both countries have the downward trends like -8.67 in China and -1.09 in India. In both countries exchange rates value appreciated during this year. If the slope coefficient is positive, there is an upward trend whereas if it is negative, there is a downward trend. In period 2002-03, China's exchange rate will also be appreciated but India's exchange rate value will be depreciated because India has upward trends and China has downward trends. In recent years China depreciated its currency substantially to stop the rapid deceleration of its exports whereas Indian currency shows stable trends despite depreciation in recent times.

The Exchange Rate and Elasticity of Exports and Imports of Both Nation

The export and import pattern of elasticity is a central concept in international trade theory. The elasticity of demand of exports imports with respect to their prices will determine the effectiveness of exchange rate variations on change in exports and imports of a nation. However, the measurement of elasticity of exports and imports is analyzed using the following method.

Model

$Y= aX^{bi} e^{u}$

Take Common Natural Logarithm on both sides:

Log Y= log a+bi log X + u

Here:

Y=Exports & Imports

X= Real Effective Exchange rate

bi=Elasticity of export & import

u_i =Random term

Table-2: Elasticity of Total Exports & Imports of China 1999-2013

Year	Elasticity of Export in China	Elasticity of Import in China	Marshall-Learner Condition
1999-02	-0.45	-0.58	$E_d>1$
2002-05	-0.37	-1.09	$E_d>1$
2005-08	-0.20	0.03	$E_d<1$
2008-11	1.48	1.46	$E_d>1$
2011-13	3.33	3.12	$E_d>1$

Author's Own Calculation using data from Handbook of Statistics, UNCTAD

Table-2 shows that the elasticity of total exports and imports in China during 1999-2013. According to the Marshall-Learner condition, if the sum of elasticity of exports and imports are greater than one then exchange rate depreciation improve the balance of payment and vice-versa. So, China has the greater than one elasticity in most of the time periods means exchange rate change have significant implications for balance of payment and trade.

Table-3: Elasticity of Total Exports & Imports of India 1999-2013

Year	Elasticity of Export in India	Elasticity of Import in India	Marshall-Learner Condition
1999-02	0.58	0.21	$E_d<1$
2002-05	0.50	-0.40	$E_d<1$
2005-08	0.45	-2.58	$E_d>1$
2008-11	0.97	0.06	$E_d>1$
2011-13	0.58	0.04	$E_d<1$

Author's Own Calculation using data from Handbook of Statistics, UNCTAD

Table-3 show that the elasticity of total exports and imports in India during 1999-2013. According to the Marshall-Learner condition, India has the sum of exports and imports elasticity coefficient is greater than one in 1999-05 and 2011-13. But except these years India has less than one elasticity. So there is not clear pattern of elasticities of exports and imports in India.

Relationship Between Exchange Rate and Exports and Imports of Both Nations

Granger Causality test is applied on stationary series to analyze the two way causation between exchange rate and exports and imports of both nations.

The test involves estimating the following pair of regressions:

$$Ex_t = \sum \alpha i\, Exp_{t-i} + \sum bi\, Ex_{t-i} + u_i \quad \ldots\ldots (1)$$

$$Exp_t = \sum \Lambda i\, Exp_{t-i} + \sum \delta i\, Ex_{t-i} + v_i \quad \ldots\ldots (2)$$

$$Ex_t = \sum vi\, Imp_{t-i} + \sum \gamma i\, Ex_{t-i} + u_i \quad \ldots\ldots (3)$$

$$Imp_t = \sum ai\, Imp_{t-i} + \sum \beta i\, Ex_{t-i} + v_i \quad \ldots\ldots (4)$$

Where

Ex = Exchange Rate

Exp = Exports

Imp = Imports

t = Time Period

Hypothesis

Ho: Export/Import do not cause Exchange rate and Exchange rate does not cause Export/Import

Hi: Export/Import do cause Exchange rate and Exchange rate does cause Export/Import

Table-4: Causality Between Exports and Exchange Rate for India

Direction of Causality	Lag	Observations	F- value	P- value	Decision
Export → Exchange Rate	2	14	1.76242	0.226	Accept Ho
Exchange Rate→ Export	2	14	6.87584*	0.0154	Reject Ho

** indicate results are significant at 5% level of significance*

Table-4 shows the results of Granger causality between exports and exchange rate, and the F-statistics prove that export does not affect exchange rate but lagged values of exchanges rate does have an impact of exports of India.

Table-5: Causality Between Imports and Exchange Rate for India

Direction of Causality	Lag	Observations	F- value	P- value	Decision
Import → Exchange Rate	2	14	800.704*	0.0120	Reject Ho
Exchange Rate→ Import	2	14	4.72147*	0.0396	Reject Ho

** indicate results are significant at 5% level of significance*

Table-5 shows that in India both the lagged values of exchange rate and imports impact each other and there is mutual causation between the two.

Table-6: Causality Between Exports and Exchange Rate for China

Direction of Causality	Lag	Observations	F- value	P- value	Decision
Export → Exchange Rate	2	15	0.39207	0.6856	Accept Ho
Exchange Rate→ Export	2	15	0.30832	0.7414	Accept Ho

Table-6 shows that analysis finds no causality between exchange rate and exports of China.

Table-7: Causality Between Imports and Exchange Rate for China

Direction of Causality	Lag	Observations	F- value	P- value	Decision
Import → Exchange Rate	2	15	0.44004	0.6559	Accept Ho
Exchange Rate→ Import	2	15	0.47189	0.637	Accept Ho

Table-7 confirmed through Granger Causality test that there is no causality between imports and exchange rate of China. So in Indian case there is unidirectional causality from exchange rate to exports at second lag and there is bidirectional causality between imports and exchange rate. Hence variation of imports and exchange rate impact each other. Whereas in China there is no causality at all between exchange rate and exports & Imports.

Conclusion

Exchange rate in China is more flexible as compared to the India's exchange rate. The exchange rate policy is not stable for long term in China as compared to India. China's exchange rate is more volatile because higher volatility increase the potential gains from international trade, which makes production more profitable. In China elasticity of exports and imports are more elastic as compared to India. India has only greater than one elasticity (more elastic) in period 2005-08. In Indian case there is unidirectional causality from exchange rate of exports at second lag and there is bidirectional causality between imports and exchange rate. Hence variation of imports and exchange rate impact each other. Whereas in China there is no causality at all between exchange rate and exports & Imports. So it implied that exchange rate policies in China have implications for short run but not for long run. But in India long run relationship between exchange rate and exports, imports is stronger as compared to long run. India and China presently having managed floating exchange rates so there is need for both countries to go for more systematic exchange rate reforms.

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FDI in Africa by India and China: Partners or Rivals?

Ratna Vadra*

In the present global scenario, many emerging countries are showing an increasing interest in the growth and development of African region. This is because of the existing potential and opportunities and a rising trend in GDP of African regions from Africa to Asia tripled in the last five years, making Asia Africa's third largest trading partner (27 percent) after the European Union (32 percent) and the United States (29 percent).Indian and Chinese foreign direct investment in Africa also grew, with China's amounting to $US1.18 billion by mid-2006. China and India each have rapidly modernizing industries and burgeoning middle classes with rising incomes and purchasing power. These societies are demanding not only natural resource-extractive commodities, agricultural goods such as cotton, and other traditional African exports, but also diversified, non-traditional exports such as processed commodities, light manufactured products, household consumer goods, food, and tourism. Because of its labour-intensive capacity, Africa has the potential to export these non-traditional goods and services competitively to the average Chinese and Indian consumer and firm Keeping these rising trends, the two most vital emerging economic powers namely- China (3rd biggest economy) and India (11th largest economy) have come forward to enhance their economic partnership/economic relations with African region in the form of trade, investment and official development assistance. In recent years, China and India have become the most important economic partners of Africa and their footprints are growing by leaps and bounds, transforming Africa's international relations in a dramatic way. Although the overall impact of China and India's engagement in Africa has been positive in the short-term, partly as a result of higher returns from commodity exports fuelled by excessive demands from both countries, little research exists. The paper attempts to carve out the role of the two "Asian Economic Giants" within the continent with respect to trade and Foreign Direct Investment) in the process of development of African region. The paper talks about FDI oligopolistic rivalry between India and China in Africa.

Keywords: *India, China, Africa, FDI Oligopolistic Rivalry*

* **Ratna Vadra** is Assistant professor, Economics and International Business, IMT, Ghaziabad and can be reached at: rvadra@imt.edu

Introduction

Foreign Direct Investment (FDI) and trade to the African continent, particularly Sub-Saharan Africa, has risen substantially over the past one to two decades. Interestingly enough, 90% of FDI to Africa still originates from the developed North. However, the economic landscape of the African continent is undergoing rapid changes. There has been a marked shift from traditional Northern investors – American and European businesses – to increasing trends towards South-South trade and investment. Much of the discussion surrounding aid and development projects throughout various sectors of continental Africa has been centred around Chinese, Indian, and to some extent, Brazilian efforts to capitalise on investment opportunities. Two big economies, India and China, are often called rivals when it comes to investing in new markets. Two countries often spend their money in completely different ways, with China favouring the state-led approach and India preferring to leave it to private companies. Economic activity between Africa and Asia is booming like never before. Business between the two continents is not new: India's trade with Africa's eastern and southern regions dates back to at least the days of the Silk Road, and China has been involved on the continent since it started investing there, mostly in infrastructure, during the postcolonial era. But today, partly as a result of accelerating commerce between developing countries throughout the world, the scale and pace of trade and investment flows between Africa and India and China are exceptional. Africa's exports to China increased at an annual rate of 48 percent between 2000 and 2005, two and half times as fast as the rate of the region's exports to the United States and four times as fast as the rate of its exports to the European Union (EU) over the same period. Broadman, Harry G, 2008).The US and Europe continue to account for almost 80% of FDI in Africa, but Asia's contribution expanded significantly between 1995 and 2008.

It has been seen that companies from big developing countries such as China and India are becoming interested in investing in Africa. From the point of view of African countries, this new trend can be viewed either as a welcome trend where developing countries are helping each other and are forging new forms of South-South Cooperation or to extract raw material from Africa only to use them to produce manufactured goods in developed countries. The changing profile of FDI inflows into Africa is an indication of how China and India have been able to take advantage of their trade partnership with Africa to increase their investments on the continent.

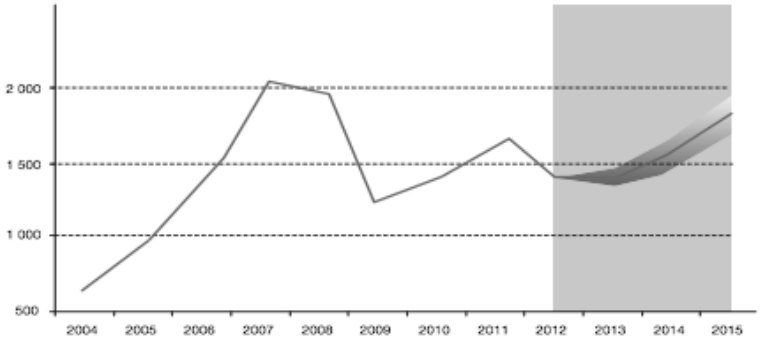
Economic activity was robust in much of Sub-Saharan Africa in 2013, supported by strong investment demand and robust private consumption. The region's growth prospects remain favourable despite emerging challenges, such as weaker commodity prices and tighter global financial conditions. During the period from 1995 to 2013, the region performed strongly, with an average annual GDP growth rate of 4.5%. Growth was broad based, but the drivers of growth varied across countries. Different growth patterns will determine the resilience of growth prospects to changing global conditions.

Foreign direct investment (FDI) continued to flow to the region, not only in the oil, gas and mining sectors but also in non-extractive industries. Net FDI inflows were an estimated $43 billion in 2013, up from $37 billion in 2012. In many countries, governments launched ambitious investment programs to alleviate infrastructure bottlenecks and increase export capacity, and a number of them issued Eurobonds to finance these expenditures. Gross fixed investments grew an estimated 7.3 percent in 2013, reaching 23.5 percent GDP. Inflation decelerated in many countries, owing to lower food prices and prudent monetary policy; and the low inflation, coupled with an estimated 6.2 percent increase in remittances, supported private consumption. Nevertheless, poverty and unemployment remains high in many countries in the region. Across the region, governments have stepped up investment spending. Public investment in most countries in the region—for example, Ethiopia, Ghana, Namibia, Niger, Nigeria, South Africa, Tanzania, Uganda, and Zambia—continues to be geared toward the provision of basic infrastructure, such as power generation, roads and port facilities, which remain critical to improving competitiveness in the region. Within this impressive economic expansion, there are variations in economic performance across country groups. Within the "resource-rich" country group, the gap in growth between oil and non oil countries has narrowed. At the same time, several countries within the "non-resource rich" county group have achieved sustained high growth rates for over a decade, such as Ethiopia, Mozambique and Rwanda. South Africa is one of a few countries where growth is lagging behind the levels achieved before the global crisis began. Poverty in Sub-Saharan Africa has also declined. An estimated 58 percent of people in the region were living on less than US$1. 25-day around the turn of the millennium. By 2010, the poverty head count ratio declined by almost 10 percentage points to an estimated 48.5 percent. The overwhelming bulk of Africa's exports to Asia is natural resources "But what's new is there is far more than oil that is being invested in—and this is an important opportunity for Africa's growth and reduction of poverty because Africa's trade for many years has been concentrated in primary commodities and natural resources."FDI inflows to Africa rose by 4 per cent to $57 billion. Southern African countries, especially South Africa, experienced high inflows. Persistent political and social tensions continued to subdue flows to North Africa, whereas Sudan and Morocco registered solid growth of FDI. Nigeria's lower levels of FDI reflected the retreat of foreign transnational corporations (TNCs) from the oil industry. (WIR, 2014) Ten African countries attracted 70% of the new FDI projects in Africa between 2003 and 2010 (South Africa, Egypt, Morocco, Algeria, Tunisia, Nigeria, Angola, Kenya, Libya,Ghana).

As per the report of United Nations Conference on Trade and Development (UNCTAD, 2013) the current pattern of Foreign Direct Investment (FDI) is being shaped up by the countries Brazil, Russia, India, China and South Africa collectively known as BRICS. The focus of the world investment has been swiftly shifting from the developed to the developing nations, all form of economies irrespective of their economic profile are trying their best to get hold of the FDI inflows. As per the report, which was released in the fifth BRICS Summit at Durban, South Africa it has been observed that since 2010

developing economies have absorbed more than half of the FDI inflows, moreover in the year 2012 FDI inflows to the developing economies exceeded by US$ 130 billion dollar (UNCTAD, 2013)

Figure 1. Global FDI flows, 2004–2012, and projections, 2013–2015
(Billions of dollars)



Source: UNCTAD, *World Investment Report 2013*.

1. Africa

Table A. Distribution of FDI flows among economies, by range,[a] 2013

Range	Inflows	Outflows
Above $3.0 billion	South Africa, Mozambique, Nigeria, Egypt, Morocco, Ghana and Sudan	South Africa
$2.0 to $2.9 billion	Democratic Republic of the Congo and the Congo	Angola
$1.0 to $1.9 billion	Equatorial Guinea, United Republic of Tanzania, Zambia, Algeria, Mauritania, Uganda, Tunisia and Liberia	Nigeria
$0.5 to $0.9 billion	Ethiopia, Gabon, Madagascar, Libya, Namibia, Niger, Sierra Leone, Cameroon, Chad and Kenya	Sudan and Liberia
$0.1 to $0.4 billion	Mali, Zimbabwe, Burkina Faso, Côte d'Ivoire, Benin, Senegal, Djibouti, Mauritius, Botswana, Seychelles, Malawi, Rwanda and Somalia	Democratic Republic of the Congo, Morocco, Egypt, Zambia, Libya, Cameroon and Mauritius
Below $0.1 billion	Togo, Swaziland, Lesotho, Eritrea, São Tomé and Principe, Gambia, Guinea, Cabo Verde, Guinea-Bissau, Comoros, Burundi, Central African Republic and Angola	Gabon, Burkina Faso, Malawi, Benin, Togo, Côte d'Ivoire, Senegal, Zimbabwe, Tunisia, Lesotho, Rwanda, Mali, Ghana, Seychelles, Kenya, Mauritania, Cabo Verde, Guinea, Swaziland, Guinea-Bissau, São Tomé and Principe, Botswana, Mozambique, Uganda, Niger, Namibia and Algeria

[a] Economies are listed according to the magnitude of their FDI flows.

Africa has resources and investment opportunities to offer and therefore in academic discourse, it is called the 'new frontier'. In addition to Africa's traditional trading allies from the West, Importance of African energy to the world particularly emerging high demand centre such as India and China, in light of the problems with existing sources in the Middle East and Latin America.

Africa's natural resources continue to be a draw, but businesses from China, India, Brazil, Turkey etc. are now diversifying into sectors such as telecom, food processing, pharmaceuticals, and tourism. One of the largest M&A deals worldwide in 2010 was the $9 billion purchase of the telecom operations of Kuwait's Zain in 15 African countries by the Indian mobile operator Bharti Airtel.

India and China, the two main Asian drivers have emerged as the major trading partners and investors since the 1990s. The two emerging economies are now an integral part of the international market and formidable financial powers with sustained growth rates of about 7–8%. The demand for Africa's natural resources and their imports to these two Asian drivers, in addition to other factors, has spurred the prices of primary commodities on the continent. This has in turn buoyed the economy of several African countries that are enmeshed in the global economy through their exports of natural resources.

Objectives and Methodology

1. To study trade and investment of India and China in Africa .
2. To study FDI oligopolistic rivalry between India and China in Africa.
3. Can India's economic expansion affect Chinese interests in Africa?

Purpose / Originality / Value

Businesses from other emerging markets have been relatively quick to recognize Africa's potential, even as many Western investors remain skeptical about it. Chinese and Indian businesses, in particular, are rapidly expanding in Africa while presenting its people and policy makers with new development opportunities.

The growing engagement of emerging powers such as China and India in Africa has major implications for development on the continent. By and large, India's engagement in Africa has been welcomed by African governments. The fact that India can present its engagement as an expression of south-south solidarity has probably contributed to its legitimacy. African countries have benefitted from export to India both in terms of increased quantities of exports and in terms of higher prices caused by growth in demand India is now more widely seen as important in Africa, even if it remains upstaged by China .India is neither a new actor in Africa, nor is it merely 'emerging' .Fierce competition for resources in Africa led aggressively by China. India is Africa's fourth-largest trading partner behind the EU, China and the US, and a significant investor across the continent. Bilateral trade hit USD 57bn in 2011, and is targeted to reach USD 90bn by 2015. At present, India accounts for 5.8% of Africa's trade.

While still small compared with Africa's traditional partners (Europe's trade with Africa exceeded USD 300bn in 2011) the pace of growth in Africa-India trade and investment over the past decade is rivalled only by China-Africa trade.

Literature Review

Research on foreign direct investment (FDI) has long recognized two important motives for choosing a particular country as the site for a new facility. First, firms wish to gain improved access to that country's market. A local plant can lower transport costs or circumvent barriers to trade. Second, firms want to deploy the relatively abundant factors located in the country. That is, they seek a low-cost production platform. In his 1973 book, Frederic Knickerbocker proposed a third motivation in location choice: firms might invest in a country to match arrival's move. In particular, Knickerbocker argued that firms in industries characterized by oligopoly would tend to follow each other's location decisions. Defining oligopolistic reaction is decision of one firm to invest overseas raises competing firms' incentives to invest in the same country.

The paper seeks to re-discover' the oligopolistic competition perspective, drawing on the early insights of the Hymer Kindleberger-Caves and FTKnickerbocker. FDI phenomena such as follow-the-leader, client follower, and first-mover. While the paper attempts no formal testing, evidence indicative of oligopolistic competition motivated FDI is presented, e.g. when India makes investment in Africa, China also follows. The OR theory states that the decision of one firm to invest overseas raises competing firms' incentives to invest in the same country (Knickerbockers, 1973). Knickerbockers introduced "oligopolistic reaction" to explain why firms follow rivals into foreign markets. He argues that the more concentrated the industries, the more likely they would be to exhibit oligopolistic reactions. He proposed another motivation in location choice: firms might invest in a country to match a rival's move, and he argued that firms in industries characterized by oligopoly would tend to follow each other's location decisions, because the follower is uncertain of the production economies that the leading firm might gain by manufacturing locally. This supports Knickerbockers' (1973) argument that firms obtain greater profits from clustering than dispersing when there exist positive spillovers (agglomeration economies between firms locating in geographic proximity). Therefore, Knickerbockers' oligopolistic reaction hypothesis can be formalized in terms of FDI decisions being strategic complements (Caves, 1993). He points to the role of risk aversion: firms want to minimize their risk by matching the FDI of rivals. Oligopoly, uncertainty, and risk aversion are the principal elements of Knickerbockers' theory, and combined they generate follow-the-leader investment behaviour.

We will try to find out whether the structure proposed in Knickerbocker, FDI decisions are same in case of India and China in Africa Knickerbocker (1973) introduced "oligopolistic reaction" to explain why firms follow rivals into foreign markets. In the present global scenario, many emerging countries are showing an increasing interest in the growth and development of African region. This is because of the existing potential and opportunities and a rising trend in GDP of African region i.e. at the rate

of 5.1 per cent which is well above the global growth rate of GDP that stood at 2.9 per cent. These trends have been resulted into an appreciable growth in African global exports which witnessed a rise of 12.9 per cent as compared to increase in global exports rate of 8.9 per cent. Keeping these rising trends, the two most vital emerging economic powers namely- China (3rd biggest economy) and India (11th largest economy) have come forward to enhance their economic partnership/economic relations with African region in the form of trade, investment and official development assistance. (Badar Alam Iqbal and Bhawana Rawat (2013). Geda, Alemayehu; Meskel, Atnafu G (2008) in this paper address two major questions. First, the question of whether China and India are displacing the African manufacturing export from the third market. Second, whether there is an evidence of shifting comparative advantage from China and India to Africa. They we found evidence of shifting comparative advantage from China and India to Africa as the flying-geese theory predicts, South Africa being the leading goose followed by Kenya. Santos-Paulino, Amelia U (2011) in their paper analyses the patterns of export productivity and trade specialization profiles in Brazil, China, India and South Africa, and in other economic groupings and regions. The findings reveal that there are important differences in the export productivity and specialisation patterns across countries and regions. Montalbano, Pierluigi; Nenci, Silvia(2012) in there article looks at the characteristics and evolution over the last ten years of the commodities trade specialization of China, India, Brazil, and South Africa (CIBS).

India and China Investment in Africa

India Investment in Africa

In a bid to expand its economic, political and strategic footprint in Africa, India is investing heavily in the resource-rich continent. According to the latest joint report by the Confederation of Indian Industry (CII) and the World Trade organization (WTO), India's current investments in Africa amount to more than $50 billion. Africa's vast resources attracted FDI from India. Besides oil and gas, the world's second largest continent has huge deposits of gold, silver, copper, iron, uranium and diamonds. According to the CII-WTO report, overall trade between India and Africa grew at 32.4 percent between 2005 and 2011. Even more importantly, Indian private investment in Africa has surged, with major investments having taken place in the telecommunications, IT, energy and automobiles sectors. Tata had also invested heavily in Tanzania's air transport and hospitality industries. The Tata Group, unveiled earlier this year a $1.7 billion greenfield investment aimed at boosting automobile and hospitality businesses in the continent. Vedanta Resources, India's largest mining and non-ferrous metals company recently reported that it had invested $4 billion US dollars over the past nine years in Africa's mining sector. In 2010, India's largest cellular service provider, Bharti Airtel, made a foray into the African telecommunications market by acquiring Zain Telecom's operations in 15 countries. The company recently unveiled plans to take over Warid Telecom Uganda, thus strengthening its footprint in the continent. Africa is becoming the new El Dorado with India's private conglomerates jostling for space in the hope of

reaping big profits. A wide array of private and the public sectors operate on the Africa continent. Some of the major private sector players are the Angelique International (agriculture), Apollo Group of Hospitals (healthcare), Kirloskar Brothers Limited (agriculture equipment's), ESSAR Group (infrastructure / telecommunications), Fortis Escorts Hospitals (healthcare), Infrastructure Alliance (OIA) (infrastructure), WAPCOS (water resources, power and infrastructure), Larsen and Toubro Limited (engineering), Mahindra and Mahindra Limited (agricultural equipment), NIIT (information technology), Shapoorji Pallonji and Company Limited (construction),

The GOI enterprises that have a presence in Africa are Telecommunications Consultants India Ltd., Indian Telecom Industries Limited, Rail India Technical and Economic Services, Konkan

Railways, IRCON International Limited, Oil and Natural Gas Corporation (ONGC) Videsh Limited, Bharat Heavy Electricals Limited, etc. India has demonstrated its commitment to playing a substantive role in the development of the West Africa region through its trade and investment, cooperation in the area of oil and gas, education, healthcare, pharmaceuticals, mining, textiles as well as infrastructure."Indian trade with West Africa rose sharply from 25 billion USD in 2012-13 to estimates of 40 billion by 2015. The COMESA as a Partner Region of the IESS is aggressively scouting for Indian investment in Africa, particularly in southern and eastern Africa.

African Investments in India

Mauritius is the largest investor in India with total FDI inflows of US$ 64.17 billion. Mauritius accounts for 40% approximately of total FDI inflows India. Some estimates suggest that over 50% of US companies route their investments to India through Mauritius, taking advantage of an exemption in capital gains clause 21. Morocco and South Africa are the next largest investors in India with investments worth US$ 137 million and US$ 112 million,

Table-1: African Investments in India, Total FDI Stock from 2000 to 2012

Country	FDI Stock (in US$ million)
Mauritius	64,169.0
Morocco	136.8
South Africa	111.7
Kenya	20.0
Seychelles	17.9
Liberia	14.6
Nigeria	9.9
Tunisia	4.3
Ghana	3.1
Tanzania	1.4
Egypt	1.1
Other Africa	3.5
Total Africa	**64,493.3**

Source: DIPP, Ministry of Commerce and Industries, Government of India

Table-2: Indian Investment Flows to Select African Countries, 2002-2008, (US$ Billion)

	1996 to 2002	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Total Stock
Mauritius	618	133	176	149	333	1163	1506	2087	6165
Sudan	-	750	162	52	63	118	8	38	1191
Egypt	9	0	-	3	0	0	790	19	821
Nigeria	7	4	2	8	4	12	27	237	301
Liberia	0	-	-	-	155	-	18	16	189
Kenya	13	1	2	0	0	0	133	0	149
Libya	30	-	-	-	25	75	0	13	143
South Africa	22	0	1	3	10	23	46	12	118

Source: Ministry of Finance, Government of India

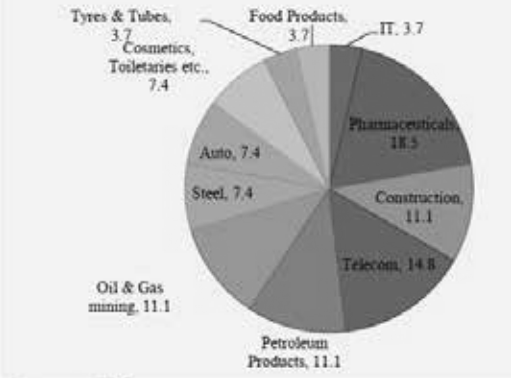
Source: Ministry of Finance, Government of India

Table-3: Select Indian Investments to Africa in Recent Years

Indian Company	Target Company	Host Country	Sector	Value (US$ million)	Deal Type	Year
Cairn India	PetroSA	South Africa	Energy	60% in Oil and Gas Block	Acquisition	2012
Tata Chemicals	Greenfield	Gabon	Chemicals/ Fertiliser	290	Acquisition	2011
Wipro Technologies	Subsidiaries	South Africa, Ethiopia	IT-enables services	NA	-	2011
Bharti Airtel	Zain Africa BV	Africa-wide	Telecom	10,700	Acquisition	2010
Essar Africa Holdings	Zimbabwe Iron and Steel Company	Zimbabwe	Metals & Ores	750	Acquisition	2010
Bharat Heavy Electrical Ltd.	Greenfield	Multi-country	Energy	2,000	Acquisition	2010
Essar Group	Econet Wireless Holdings	Kenya	Telecom	450	Acquisition	2009
Vedanta	Konkola Copper Mines	Zambia	Metals & Ores	700	Acquisition	2004-ongoing

Source: Staff calculations based on Grant Thornton, *Dealtracker 2011*, and various other sources.

Figure-1: India Investment in Africa: Subsectors



Source: Ibid

China Investment in Africa

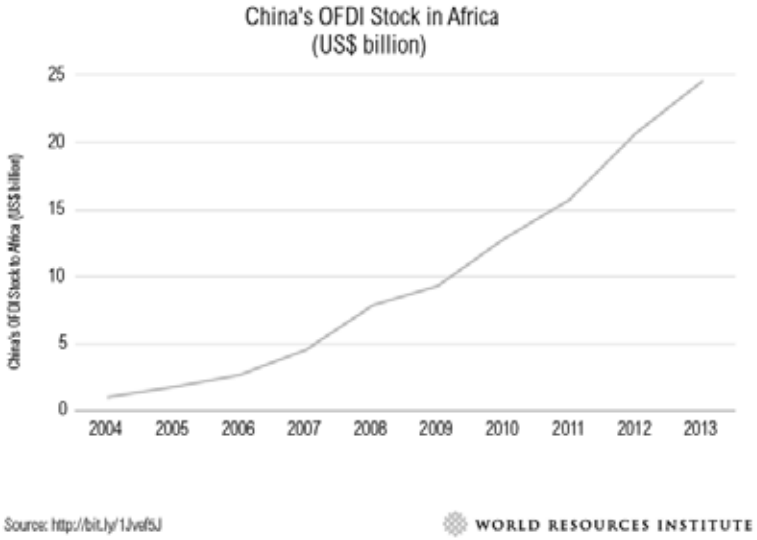
China's presence in Africa illustrates a departure from what occurred in the post-colonial era where "aid, trade and FDI vectors were increasingly separated" (Kaplinsky and Morris, 2009:561). Strategic integration of Chinese inputs in Africa is particularly notable in "large scale infrastructural and mining projects" (Kaplinsky and Morris, 2009: 561). The so called Angola-mode is an interesting framework that China, specifically its SOEs, has utilised as a\business strategy on the continent. Chinese firms involved in extractive industries like hydrocarbons "are acquiring upstream assets in order to secure resources and commodities (Alden, 2006: 86). Upstream assets refer to those parts of the industry which are "responsible for the exploration and recovery of oil and natural gas reserves" (BusinessDictionary.Com, 2011). Sinopec's large investments in oil rich states such as Angola and Sudan are examples of this. Sinopec in 2010 announced it would acquire more upstream assets to "boost capacity and reduce reliance on its volatile refining business (Lau, 2010). Downstream activities are those that include sales and delivery (BusinessDictionary.com, 2011).Joint-ventures have become a corporate strategy for Chinese firms when investing abroad. Such joint ventures and partnerships that Chinese firms are engaging in are of Western and on-Western origin and provide technological and managerial gains as well as creating possible connections to the political establishment in states China may has only limited ties to(Alden and Davies, 2006).

Much attention has been paid to the increased role that China plays on the African continent.

But India's path could threaten growing Chinese interests in the region. Aim to lead Indian companies in raising bilateral trade to $100 billion by 2015. China is itself lobbying for its companies in Africa. But India's want to lead the race," Despite entering Africa much later than India, Chinese firms have moved aggressively ahead of Indian companies in tapping natural resources like oil, gas and minerals in the fast growing continent .China is investing much more than India in Uganda.

China's OFDI Stock in Africa

China's OFDI in Africa is accelerating rapidly, increasing from $1 billion in 2004 to $24.5 billion in 2013. A large amount of the investments went to extractive industries, such as mining and oil extraction. By the end of 2013, 4 percent of China's OFDI stock, or $26.2 billion, was in Africa. By 2013, the top eight recipients accounted for 61 percent of China's OFDI stock in Africa, with South Africa alone receiving 22 percent of China's OFDI in Africa.



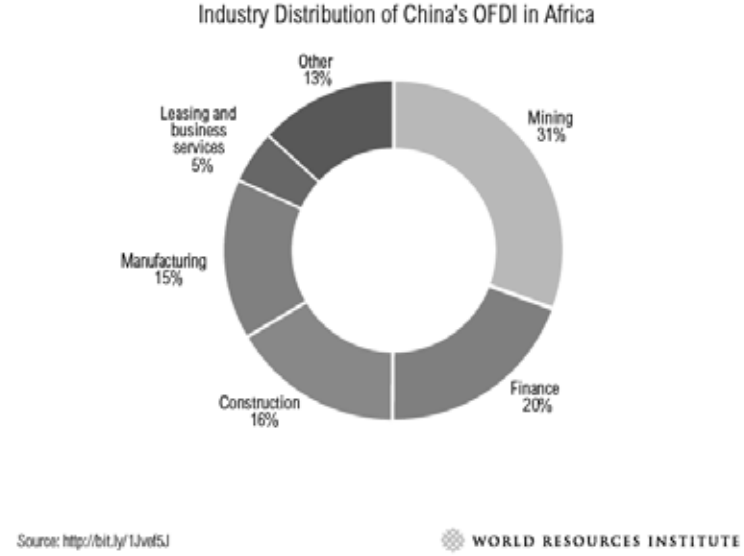


Table-4: China Outward FDI in Africa, 2004-2010 (US Millions)

2004	2005	2006	2007	2008	2009	2010
317.43	391.68	519.86	1574.31	5490.31	1438.87	2111.99

Source: Statistical Bulletin of China outward foreign direct investment, 2010

Are India-China: Rivals or Partners?

As the world moves into the second decade of the 21st century, a new power rivalry is taking shape between India and China, Asia's two behemoths in terms of territory, population and richness of civilization. In the context of globalisation and the current global financial crisis, new players are emerging in cooperation in Africa.

Africa increasingly as a battleground between India and China for trade supremacy. In an effort to tackle the aggressive Chinese expansion in Africa, India pledged in March $5.7 billion in credits and grants for developmental projects and over a 100 capacity building institutions in Africa. Africa increasingly as a battleground between India and China for trade supremacy. China and India have been at the centre of growing criticism for going on reckless shopping sprees in Africa in order to feed their growing economies back home. Both countries are accused of not shirking away from doing business with countries that have been shunned internationally such as Sudan and Zimbabwe. India is currently the fourth-largest trading partner of Africa, following the European Union, China and the United States. India is more popular than China in Africa.

Investments in Africa, the Chinese are a step ahead of the Indians. According to the WTO, African imports from India grew at an annualised rate of 23.1 percent between 2005 and 2011, comparable to 25.6 percent from China. Despite the fact that India-Africa overall trade grew at 32.4 percent during the same period, which is higher than China-Africa trade growth at 27 percent, the total value of India-Africa trade (at $63 billion in 2011) is only 38 percent of the value of China-Africa trade (at $166 billion).

Moreover, there are differences in terms of how the two countries go about raising their profiles in Africa. Unlike China, India does not tire of proclaiming its historical ties to Africa. India's national hero and father of independence, Mahatma Gandhi, even lived for a few years in South Africa at the end of the 19th century. Like many African countries – especially in Eastern Africa – India suffered under British colonialism. India makes up one of the largest contingents of the UN peace missions in Africa and is also hoping for Africa's support in its efforts to gain a permanent seat on the Security Council. Beyond oil and gas pipelines, China invests in infrastructure projects like streets, bridges and harbors, as well as in the construction of hospitals and power plants. "India brings its entrepreneurship and its best ideas in order to generate jobs."

China, with 166 billion dollars (129 billion euros) in trade volume with Africa in 2011, has already overtaken the US as Africa's largest trading partner. The image of India and China is more positive in Africa. India is more popular than China in Africa. At present, trade levels between India and Africa have reached 60 billion dollars. The goal of Indian is to reach 90 billion dollars by 2015. When talking solely about investments in Africa, the Chinese are a step ahead of the Indians.

Conclusion

India seems to market a different appeal when doing business in Africa than its neighbour and competitor. India often emphasizes a shared colonial legacy and a longer history in the region when it seeks to use a soft power approach that differs from that of China. Both the private sector and governmental officials in India have stressed what they feel are the differences between the two countries, and appeal to some of the critics of Chinese policies in Africa. Yet, while Indian influence and investment in Africa has been steadily increasing, it still pales in scope to that of China. Indeed, India has sought to stake out its own claim and brand on the continent, but the uptick in attention says more about India and its direction than about any particular emerging power competition. Asian FDI to Africa is likely to continue to grow in view of the complementary nature of economic development between Asian and African countries. Till recently, overall economic conditions in Africa have been less favourable for FDI, as the region experienced slow growth of GDP per capita and even stagnation or contraction in many SSA countries in the past two decades. However, many African countries have restored and maintained macroeconomic stability and improved the general climate and regulatory framework for FDI inflows.

India still has much work to do to enhance presence in Africa and to offset some of the problems that other emerging powers such as China have met. At the moment, India's investments do not reflect a security or militarized presence. As the world focuses on Africa's fast growing economies, the continent is poised for massive development in all sectors as numerous investors lobby for a share in the continent's prospects. But China and India will not be alone in this race. They will joined by other countries such as Japan, Brazil and Turkey.

India and China are not rivals in Africa. They are active in different areas, have different strengths and in that sense complement each other. Rivalries will always crop up, since India and China are both aspiring powers and economies. But in the future, China and India will not be alone. Brazil, Russia and Turkey are the newest entrants in the competition for influence in Africa. Another main result of this study is that natural resources and large markets promote FDI. Even countries such as China and India have captured African countries due to vast natural resources and market size. Presence of Chinese MNEs and Indian MNEs in the African countries and found that the presence of latter is far less than that of the former. India's total OFDI to African countries amount to US$ 73 million during 1961- 89 but their share in India's total OFDI was very high in those years. However, during recent years, these flows have increased phenomenally mainly in sectors, viz., Chemicals oil and gas industries contributing around half of the total flows during 2000-07. Indian state owned oil companies are building an increased presence in natural resource based industries and becoming an established trend in African countries

Why not oligopolistic rivalry prevail in African region? Africa is a battleground due to its resource richness and improved growth prospects. Its high time for Africa!!

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Labour Market Regulations and FDI Inflows in Developing Countries – An Empirical Analysis

Vipin Negi[1] and **Amit Kumar Bardhan**[2]

What makes developing countries attractive for foreign direct investment (FDI)? Labour regulations are believed to be one of the major factors determining the level of FDI inflows to the developing countries. In order to allure the foreign investors, countries try to weaken labour rights, so that investors can reduce their labour costs. In this paper we study the relationship between labour regulations and the amount of FDI inflows to the developing countries. Based on analysis of data from fifteen emerging markets, it is posited that changes in selective labour regulations influences inflows of FDI. It is concluded that policy makers in these developing countries need to strike a balance between securing the interest of the workers on the one hand and making efforts to attract higher amount of FDI on the other.

Keywords: *Foreign Direct Investments, Labour Regulations, Labour Markets, Labour Cost, Emerging Markets*

Introduction

With globalization of the world economy, different countries have adopted diverse policy measures to attract foreign direct investments. Inward FDI has played a significant role in the strengthening of private sectors and the emergence of market-economy behavior in many of them. Industrial restructuring, including through privatization, was stepped up when the inflows of FDI accelerated. Domestic policies have been changed in favour of making efforts to attract large amount of foreign capital into the host economies. It has been argued that the ability of a state to attract FDI depends on willingness to change the economic policies of the individual state according to the requirements of foreign capital (Rao and Murthy, 2006).

Many policies which are socially desirable, but considered as hindrance by the foreign companies in earning higher profits, have been reframed. For example,

1 **Vipin Negi,** Department of Commerce, Keshav Mahavidyalya (University of Delhi), Pitampura, Delhi and can be reached at: vipinnegidu@gmail.com.

2 **Amit Kumar Bardhan,** Faculty of Management Studies, University of Delhi, Delhi and can be reached at: amit-bardhan@fms.edu

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policies on taxation, environment regulation and labour standards and regulations are reformulated. Emerging markets are competing stiffly with each other to relax the norms, which may not be beneficial for major sections of the society. On the other hand, weak standards and inadequate enforcement of standards are viewed by some observers as means for generating artificially low wages and augmenting the natural comparative advantage that low-wage countries have in labor-intensive goods. This concern is expressed with particular force about labor practices in export processing zones (EPZ) and special economic zones (SEZ). These areas are frequently exempted from the labour legislation that covers domestic firms, or have weak or nonexistent enforcement.

It is believed that in an increasingly intense competition for attracting FDI inflows, many developing countries are involved in the race-to-the bottom of labour standards (Singh and Zammit, 2004). A view that seems to have gained popularity amongst policy makers is that greater labour market flexibility or less labour market regulations helps to make a country a more attractive location for FDI. More of the regulations in labour market work as a disincentive to the foreign investors. Hence a corollary of this is that a strict regime of employment protection legislation, which is often held to inhibit labour market flexibility, will tend to diminish a country's attractiveness as a location for FDI. In this sense, labour market institutions and regulations are commonly regarded as playing a crucial role in determining the location of FDI, particularly if they influence the flexibility with which firms can adjust output scale and employment levels to evolving economic countries (Lazear, 1990).

Sometimes multinational companies act strategically and they may be willing to forgo flexibility and produce in countries where the labour market is quite regulated in order to obtain strategic advantages. But this needs to be verified under the current economic environment. Bhagwati (1997) has noted that globalization of production has given rise to the phenomenon of "knife-edge" comparative advantage, whereby small changes in costs can lead to shifting comparative advantage and concomitant gyrations in the attractiveness of a country as a production base. One of the major costs of production is the labour cost, and regulations affect this cost.

Much of the ire of those advocating the incorporation of labor standards into the international production system focuses on the perceived opportunities provided for enterprises in developing countries to become more competitive by violating those standards. This competitive advantage is widely viewed to be short-term in nature, because violations of the implicit human rights are typically seen as imposing long-run efficiency costs. Exploited workers may be expected to invest sub-optimally in human capital, to be poorly motivated on the job, and to perform below their maximum potential levels of effort. The present study analyzes the relationship between the flow of foreign capital to developing countries and regulations of labour market. The paper hypothesize that there is an inverse relationship between the quantum of labour regulations and the amount of inflows of direct investment to the developing countries.

The paper is structured as follows. In the next section a brief review of relevant literature is presented. Section 3 present the methodology adopted and the source of data and its explanation and section 4 develop the model and analyse it empirically. The final section concludes the paper with some policy implications.

FDI Promotion and Labour Regulation

The theoretical literature suggests that government regulations particularly labour market regulations ought to have an important impact on FDI inflows (Javorcik and Spatareanu, 2005) The lack of flexibility in hiring and laying off workers is also one of the main concerns raised by investors operating in or considering entering transition economies and developing countries (Moran 1998).One of the channels through which labour market regulation influences the rate of physical capital formation in an economy is its impact on the level of FDI. Multinational companies those are seeking to invest in the creation of new production faculties are attracted to locate in countries with relatively low firing costs, as this limits their cost of exiting the market in the event of a subsequent negative shock to demand. Empirical work by Dewit *et al*. (2003) supports the argument that an inflexible labour market provides a domestic anchorage effect that restricts the outflow of capital from the domestic market. As regards empirical work, there have been few studies that examine directly the relationship between labour market regulation and inflows of FDI to the developing countries, particularly emerging markets. More labour market regulation leads to a fall in firms' market value and reduction in investment in general.

The reasons for which investors are attracted to foreign locations are wide ranging and also subject to considerable changes in firms' assessment over time. There are diverging motives for investing abroad by the foreign investors. The overriding objective is to gain or keep a competitive edge and this is to be achieved through strategies of maintaining market access and penetrating new and promising markets. The transfer of knowhow, economies of scale, preemption of potential competitors, the availability of a well-trained labour force, new networks of suppliers for global sourcing, and various cost advantages are cited as factors affecting location. Amongst these factors the question has arisen "whether international production with its increased scope for locational choice might result in a downward adjustment of social and labour standards as local policy environments, including labour market policies and practices, compete for a share of international production" (Parisotto, 1995). One if not the most important factor in the global competitiveness strategy of enterprises is to gain the most out of existing differences between location of investment. These differences may consist of a broad range of direct incentives offered to investors, the avoidance of potentially unfavourable exchange rate fluctuations, less stringent environmental regulations, and fall in wage and non-wage labour cost related to employment, e.g. labour market and social policy institutions and regulations (Woods, 2000). There is a good deal of empirical evidence that industries relocate in response to production cost differentials (Duffy-Deno, 1992; Bartik, 1985; Plaut and Pluta, 1983), regulatory costs do not seem to be significant enough to play a major role in most location choices (Duerkson, 1983;

Bartik, 1988; Levinson, 1996; McConnell and Schwab, 1990). However, there is an alternative view of the impact of strict labour regulations on the cost of production of a firm. According this view, the implication of stringent labor protection under uncertain environment is twofold (Haaland *et al*., 2003 and Haaland and Wooton, 2007). One is that it will raise adjustment cost because MNCs cannot align their labor demand according to fluctuated market without incurring substantial cost. Two is that it will raise exit costs because of high severance payment (an important form of labor protection) in the event of investment failure. This may raise the transaction costs for the firm. This extra transaction costs that employers have to bear is the second source of negative impact of stringent labor regulations on FDI. Another study investigates the effect of differential labour standards and concludes that there is a tendency toward the attraction of FDI by lower labour standards in developed countries. Capital mobility at the industry level intensifies the race to bottom. (Duanmu, 2014).

Several studies have analysed the impact of labour market regulations and the size of employee dismissal costs on the performance in manufacturing (Holmes 1998; Besley and Burgess, 2004) and on research and development (Koeniger, 2005). According to their conclusion the direct effects of labour market regulation have produced mixed result, which justifies the move towards testing for indirect effects on other aspect such as FDI inflows, the rate and structure of unemployment etc. A study by Ahasan and Pages (2008) suggest that sizable output and employment effects are associated with amendments to employment protection legislations which come mainly through its interaction with costly labour dispute resolution. This is an important sight because it shows that expediting the reform of the labour dispute resolution system, could also help to ameliorate the negative costs of employment protection. Lipsey in his study shows that foreign owned establishments tend to locate in lower wage US states. According to him this is possible due to right to work laws and the low rates of unionization in these states (Lispey, 1994). In another study by Cooke it has been proved that the FDI decisions of US firms are negatively related to the presence of high levels of union penetration, centralized collective bargaining structures, unfavourable industrial relation environments and governmental restrictions on layoffs (Cooke, 1997).

With the beginning of globalisation of capital, the various developing countries have opened up their economies to attract foreign capital, to boost up the process of production and investment. With the accelerated globalisation developing countries are an indispensable part of the global economy. The behavior of FDI inflows to developing countries is receiving increasing attention, with particular interest in the case of China (e.g. Buckly *et al*. 2007; De Beule and Duanmu 2012; Duanmu 2012; Kolstad and Wiig, 2012; Li and Liang, 2012; Wang, Hong, Kafouros, and Boateng, 2012). The opening up of the economies for trade and investment has resulted into granting various concession and discounts to the international capital. One of the major aspects of this opening up is the relaxation and flexibility in the labour laws, which give a protection to the fundamental rights of the working class which have been gained by this class after a long struggle of several decades. However, the relaxing of various norms and rules protecting labour is not equal in all the countries, but one aspect which

is equally true for all these countries is they all have tried make changes in their labour in favour of the global capital. A view that seems to have gained popularity amongst policymakers is that greater labour market flexibility helps to make a country a more attractive location for FDI. A corollary of this is that a strict regime of employment protection legislation, which is often held to inhibit labour market flexibility, will tend to diminish a country's attractiveness as a location for FDI. Countries with relatively strict employment protection legislation will therefore tend to be less attractive locations for FDI, other things equal, than countries with relatively weak employment protection regimes. This is in part a response to their inability to match the financial incentives offered to inward investors by industrialised countries: a factor which is driving the "race to the bottom" in terms of labour standards and regulations.

Various studies on the integration of European Union argue that the competition for investment between the low-wage countries from Central Eastern Europe (CEE) and the Western European high-wage countries leads to a 'race to the bottom' regarding labour standards (Meardi *et al*., 2013, Vaughan-Whitehead, 2003). Labour costs in the EU-15 are, on average, 7 times higher than in CEE (e.g. Konings 2003). The media frequently report cases of companies threatening to relocate production and demanding lower labour costs, flexible employment contracts or additional investment subsidies. Buckley *et al*. (2001) argue that a single labour cost variable may fail to capture the labour market influences. However, the investment decisions of foreign companies are not simply determined labour costs and the flexibility to dismiss employees, but also by the educational level of the work force, the capabilities of potential suppliers, infrastructure and the knowledge base at the destination of investment. Some authors suggest that this empirical result is related to the industries and to the home countries of the companies that were examined (Krzywdzinski, 2011; Marginson and Meardi, 2006). As a European country based study Krzywdizinski says that FDI is influenced by labour standards (in particular protection against dismissals) and industrial relations factors and can be asocial dumping mechanism. Further he derives in his study 'there are, however, differences according to the industries of the investors'. (Krzywdizinski, 2013).

Bohle and Greskovits (2004) as well as Marginson and Meardi (2006) argued that the factor composition of an industry (high-skill and capital-intensive industries versus low-skill and labour-intensive industries) affects companies' preferences regarding industrial relations and labour standards. Another study by Busse and Luis (2008) concludes that excessive regulations restrict growth through FDI only in the most regulated economies. Hence the countries need a sound business environment in the form of good governance regulations to be able to benefit from FDI. It says that countries with restrictive regulations cannot exploit FDI inflows efficiency. It founds that FDI does not stimulate growth in economies with excessive business and labour regulations, after controlling for some other relevant determinants of observed changes in GDP growth rates. Bellak and Leibrecht (2011) claimed that the deterrent effect of rigid labour markets depend on the skill intensity of an industry.

Methodology and Data

Since the purpose of our paper is to test for the impact of labour market regulations on FDI, it is crucial to have plausible measures of labour market regulations. The metrics used in this study are from the Index of *Labour Market Regulation* which is a component of the *Economic Freedom of the World Index* developed by the Fraser Institute. The economic freedom is a reflection of political and economic institutions and legal structure in a country. Political and economic institutions and their policies and legal structure in a country form the general framework which firms and individuals operate in. *Economic freedom of the world index* is one of the most comprehensive indices incorporating an exhaustive list of parameters. It measures how closely the institutions and policies of a country are supportive of economic freedom, i.e. they correspond "with a limited government ideal, where the government protects property rights and arranges for the provision of a limited set of 'public goods' such as national defence and access to money of sound value, but little beyond these core functions"[1].

The index measures degree of economic freedom prevalent in five major areas: (i) size of government (ii) legal system and security of property rights (iii) sound money (iv) freedom to trade internationally and (v) regulations. Within these five major areas there are twenty four components. Many of those components are made up of several sub-components. In total, the index comprises forty-two distinct variables. Each component and sub-component is placed on a scale from 0 to 10 that reflects the distribution of the underlying data. Under the fifth component i.e. regulation, there are three sub-components namely credit market, labour market and business regulations and within the second type of regulations six different indicators of labour regulations have been incorporated. (i) Hiring regulations and minimum wages (ii) Hiring and firing regulations (iii) Centralised collective bargaining (iv) Hours regulations (v) Mandated cost of workers dismissed (vi) Conscription. This sub-index and it's components are the source of our data for 'Labour Regulations'.

The flexibility of regulation of employment relates to the areas of hiring, working hours and redundancy. Higher the value in index shows more is the freedom from regulation. Countries with higher difficulty in hiring workers are given lower ratings while those where hiring is relatively easier are given higher ratings. This data also measure several other aspects of job quality such as the availability of maternity leave, paid sick leave and the equal treatment of men and women at the workplace. Job quality employment has been measured on the basis of (i) whether the flaw mandates equal remuneration for work of equal value, (ii) whether the law mandates nondiscrimination based on gender in hiring, (iii) whether the law mandates paid or unpaid maternity leave (iv) the availability of five fully paid days of sick leave a year, (v) whether a worker is eligible for unemployment protection scheme after one year of service and (vi) the minimum duration of the contribution period (in months) required for employment protection. The labour market regulation indicators set tracks changes in labour rules over a period of

1 Economic Freedom Basics, https://www.fraserinstitute.org/economic-freedom/economic-freedom-basics

time. It includes a change in the maximum duration of fixed-term contracts, regulation of weekly holiday work, redundancy rules, notice requirements and severance payments for redundant workers, introduction of unemployment insurance and laws that mandate gender nondiscrimination in hiring and equal remuneration for work of equal value in the line with International Labour Organisation's (ILO) standards. In general, the indices on labour market regulations of Fraser Institute gives higher score to a country if "the market forces to determine wages and establish the conditions of hiring and firing, and refrain from the use of conscription".

Data on variables other than labour market regulations were obtained from the *World Bank*[2] database. These variables are FDI, GDP growth, current account balance, exports and gross fixed capital formation. Data is annual for fifteen developing countries since 1990 to 2014. The list of countries and their abbreviations used in the article are given in Table-2. This group includes the developing countries which are attracting the largest amount of global FDI inflows and for whom maximum possible data is available were included. Although the selected countries exhibit considerable variation with respect to their forms of governance, they all exhibit weak labour protection compared to the developed countries. They are also affected by combined forces such as abundance labour supply, increasing competition brought in by globalisation and the goal of comparative advantage in relatively labour intensive industries (Frankel & Kuruvilla, 2002). Most of the selected countries are from Asia and Latin America which attract the highest amount of FDI among the developing world. These developing countries have garnered major share of FDI to the developing world during this period. A few countries that were dropped from the list are those where data is insufficient.

In this study, panel data multiple regression technique has been applied for this analysis. The estimation strategy implemented controlled for both country and time fixed effects. In order to test the hypothesis of a negative relationship between the strictness of labour regulations and inflows of FDI more thoroughly, we need to control for the presence of other potential influences on FDI. Hence, additional explanatory variables have been included in this model. Variable that can have significant effect on attractiveness of a country as a location for FDI are: host country's GDP growth rate, current account deficit, exports and gross capital formation. Descriptive statistics on the variables are presented in Table-3. The level of GDP is included as a measure of the market size of the host country and is expected to a have a positive effect on inflows of FDI. The current account deficit gives the ideas of the health of the external sector of an economy vis-à-vis the world economy. Exports show the demand for host country's products in the global market and gross capital formation indicates the level of investment at the current level and possibility of its future growth for expansion and where the economy stands in terms of its strength in economic terms.

Results

2 http://databank.worldbank.org/data/home.aspx

The data exhibits temporal and spatial variation. The estimation strategy implemented in this analysis controls for both country and time fixed effects. In order to test the hypothesis of a negative relationship between the strictness of employment protection provisions and inflows of FDI more thoroughly, we need to control for the presence of other potential influences on FDI. Hence, additional explanatory variables have been included in this model; a list of variable that have a significant effect on attractiveness of a country as a location for FDI. These are: host country's GDP growth rate, current account deficit, exports and gross capital formation – the data for which have been obtained from the World Bank database. The level of GDP is included as a measure of the market size of the host country and is expected to have a positive effect on inflows of FDI. The current account deficit gives the ideas of the health of the external sector of the concerned economy. Exports represent the demand for host country's products in the global market and gross capital formation indicates the level of investment at the current level and possibility of its future growth for expansion in economic terms.

In Table-1, statistical estimation results from four model specifications are presented. Model 1, 2 and 3 respectively include *Labor market regulations*, *Hiring and firing regulations*, *Centralized and collective bargains*. Model 4 includes both *Hiring and firing regulations*, and *Centralized and collective bargains*. Results from statistical estimation offer good support to our theoretical arguments. In Model 1, labour market regulations is found statistically significant at 1% level. Control variables other than exports are statistically significant. *Current account balance* get a negative regression coefficient as expected. In models 2, 3 and 4 respectively *hiring and firing regulations* and *centralized and collective bargains* are found statistically significant both individually and jointly. In model 4, *centralized and collective bargains* has a higher positive coefficient as compared to *hiring and firing regulations*. *Gross fixed capital formation* becomes insignificant along with exports in these models. This statistical insignificance can be due to possible collinearity between variables.

The regression results of Model 1 show that the labour market regulations are statistically significant to affect the inflows of FDI in these countries. In Model 2 and 3, hiring and firing regulations and collective bargaining through trade unions take these, two components of labour regulations, reflects the significance of these variables to determine the role of FDI in developing countries. Hiring and firing regulations involves two types of costs one, mandated cost of hiring and another, the mandated cost of workers dismissal. The mandated cost of hiring is based on the World Bank's Ease of Doing Business data on the cost of all social security and payroll taxes and the cost of other mandated benefits including those for retirement, sickness, health care, maternity leave, family allowance, and paid vacations and holidays associated with hiring an employee. Second, mandated cost of worker dismissal which is based on the same database of the cost of advance notice requirements, severance payments and penalties due when dismissing a redundant worker. Lesser the cost on labour and more flexible the market to hire and fire the labour according to the requirement has

the meaning to make FDI inflows attractive.

Table-1: Results of Regression Analysis

	Model I	Model II	Model III	Model IV
Labor market regulations	0.3892 (4.58***)			
Hiring and firing regulations		0.1953 (4.04***)		0.1411 (2.78***)
Centralized and collective bargains			0.3377 (4.57***)	0.258 (3.31***)
GDP growth	0.03912 (2.70***)	0.03206 (2.18**)	0.0415 (2.86***)	0.353 (2.44**)
Current account balance	-0.047 (-3.25***)	-0.057 (-3.98***)	-0.618 (-4.35***)	-0.0592 (-4.22***)
Log (gross fixed capital formation)	0.1375 (1.98**)	0.0897 (1.31)	0.0946 (1.39)	0.1058 (1.58)
Log (exports)	0.1045 (0.39)	-0.00898 (-0.03)	-0.043 (-0.16)	-0.0961 (-0.036)
Constant	14.961 (6.82***)	17.494 (8.49***)	16.11 (7.65***)	15.808 (7.62***)
Overall R-squared	0.1792	0.3245	0.2984	0.3341

* p-value < 0.1, ** p-value < 0.05, ***p-value < 0.01

The Model 4 indicates that centralized and collective bargaining component of labour regulations is statistically more significant as a determinant of FDI in the model. It indicates that collective bargaining through the trade unions and strong centralized bargaining make a negative impact on the multinational companies as they consider it add to the risk of fluctuations in employing the labour as par their the requirement. The plausible explanation for the strong relationship of flexibility in collective bargaining of labour and FDI inflows is the lack of flexibility in labour markets due to the presence of system of collective bargaining, as it provides an opportunity to the capital owners for making the return on investment higher. Multinational enterprises prefer host countries where labour rights are weak. This result of our study varies to the result of other studies which conclude that these enterprises prefer host countries where labour rights and regulations are protected more (Busse et.al, 2011). The result may also be interpreted that collective bargaining of workers is a stronger factor to discourage FDI than the labour costs per worker. However, there are studies which show that in the developed country like USA also the degree of unionization and the collective bargaining centralization have a negative effect on the amount of FDI inflows (Cooke, 2003). Our study supports this conclusion analyzing the impact of collective bargaining and other labour regulations on FDI inflows for developing countries. This indicates the challenging situation for labour in the bargaining with capital.

Diagnostics

Statistical tests were conducted to verify the models and some of the results. The

results reported below are based on Torres-Reyna (2007). To verify whether the choice of fixed effects models was appropriate over corresponding random effects models, Hausman test was carried out in each case. This test has a null hypothesis that the unique errors are not correlated with the regressors. *p*-values (chi-square) for all the three models were .0003, .0001, 0.0016 and 0.005 respectively, suggesting use of fixed effects models.

To check whether inclusion of time fixed effects were needed in our models, tests were conducted with the null hypotheses, HO: all time fixed effects = 0. It was found that time effects were jointly significant, suggesting that they should be included in the model. To check cross-sectional dependence/contemporaneous correlation in the fixed effects estimation of regression model Pesaran's CD test was conducted. The null hypothesis of the test assumes that the residuals are cross-sectionally uncorrelated. But the test results pointed towards cross-sectional dependence. In such cases it is recommended that fixed effects regression models should be estimated with Driscoll and Kraay standard errors (Hoechle, 2007). There were no change in significance of regressors when new estimation procedure was adopted, neither the sign of the coefficients changed. Though there were minor changes in the coefficient values. Similar results were obtained, with Huber/White or sandwich estimators (heteroskedasticity-robust standard errors).

Serial correlation in linear models leads to bias in the standard errors and less efficient estimates. To detect the presence of serial correlation Wooldridge test for serial correlation in panel data was conducted. Null hypotheses of no serial correlation could not be rejected (p-values of F-statistic 0.5493, 0.7806, 0.6510 and 0.8023 respectively). Therefore it can be concluded that sets of variables in the three models do not have first-order autocorrelation.

To check for stationarity in data a number of unit-root tests are suggested. But due to the constraints imposed by our un-balanced panels, Im-Pesaran–Shin and Fisher-type tests were conducted. For both the tests the null hypotheses (All panels contain unit roots) were rejected. It can be concluded that panels are trend stationary. The results in Table-1 for panel data regression analysis show a positive effect of higher value of index for labour regulations with the amount of inwards FDI. This indicates that if a country has less regulation on labour or inversely less restrictions than the probability is high to attract large FDI to these countries.

The results are statistically significant for all the variable of the model - the growth of GDP, current account deficit (CAD), gross capital formation and exports of the concerned country on the dependent variable of inward FDI. The negative coefficient for the CAD is consistent with the notion that FDI may be adversely affected by the increasing amount of external deficit of a country. In addition, it is possible that the higher current account deficit of country add to the risk in view of foreign investors. The coefficient value for the exports and gross capital formation of these countries are positive and statistically significant indicates that the exports have a positive impact

on the amount of inward FDI. Increasing domestic investment is a healthy signal for the foreign investors to go ahead with increase in FDI as it ensures the expansion of the domestic market size.

Discussion

Regulations are essential for efficient functioning of labour markets and the protection of workers' rights. Weak labour market regulations can result in discrimination and curtailment of workers' rights. On the other hand rigid labour regulation may discourage inflows of foreign investment. This may affect adversely the growth prospects of the economy. The challenge for governments in developing labour policies is to strike a right balance between keeping workers legitimates rights and ensuring flexibility in labour regulations (Singh and Jun, 1997). One of the reasons for more strict employment protection legislation in low and lower-middle income economies is the lack of unemployment insurance to the working population.

In this paper we focused on the impacts of labour regulations on FDI inflows on the various developing countries. Are developing countries making compromises in terms of relaxing there rules and regulations which protect the interest of labour in terms of right of collective bargaining and unionization, relaxing the norms of social security obligations on employers, hiring and firing norms and following the minimum wages rules particularly for blue collar jobs? Applying a simple model, we illustrate how the extent of selective labour regulations affects the flow of FDI into these countries. Employment protection tends to push up labour cost which in turn would affect its prospects as a favourable destination for foreign investors. Overall, we find that FDI inflows are inversely related with the level of labour regulations in emerging markets, after controlling for some significant determinants. The labour regulations which strengthen the power of labour and protect their interests and rights, are losing battle in the globalisation phase of capitalism and in competitive pressure of attracting foreign direct investment. Foreign investment is required for accelerating the growth of these developing countries, but it needs more flexibility in regulation of the labour market. Our empirical results support the view that various kinds of labour regulations are fundamental determinants of the FDI inflows into the host economies.

Our results have some powerful policy implications, such as the governments first have to make the choice between maintaining the labour regulations which serve the interest of the labour or inviting higher amount of FDI. In addition to boosting the regulatory quality, host countries have to reform their fundamental framework for regulations to enhance chances that FDI inflows can contribute to higher growth rates. Thus, our research results are basically in line with those stressing the need for an adequate institutional framework, in order for trade liberalisation and economic integration to be successful particularly for inviting significant increase in their FDI inflows. To make the model as simple as possible, we do not include externalities or spillovers that would create potential benefits for the host country. However, our analysis shows that there is a significant relationship between labour market flexibility

and surge in the amount of FDI. Multinationals are investing in countries with the least restrictive regulatory standards. It does seem clear that the less-skilled, weakly unionized or non-unionized workers are at greater risk in the new global environment. In turn, this may stimulate policy-makers to respond by regulating and reforming rules for investment in their countries. Governments in these developing countries need to strike a balance between securing the interest of the workers on the one hand and making efforts to attract higher amount of FDI on the other.

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Appendix

Table-2: List of Countries Included in Estimation

Countries	Data Coverage	FDI (in '000 million US $)		
		Mean	Minimum	Maximum
Argentina (ARG)	Annual 1991 – 2014 (24 years)	7.09	1.65	24
Brazil (BRA)		33.7	1.10	101
China (CHN)		107	4.37	291
India (IND)		13.3	0.0735	43.4
Indonesia (INDO)		6.43	-4.55	25.1
South Korea (KOR)		7.14	0.588	13.6
Mexico (MEX)		19.6	4.39	46.9
Russia (RUS)		22.2	0.69	74.8
Chile (CHIL)		9.13	0.823	28.5
Malaysia (MALY)		5.80	0.115	15.1
Philippines (PHIL)		1.79	0.228	5.74
Singapore (SING)		24.7	2.20	68.5
South Africa (SAFR)		3.23	0.00033	9.89
Thailand (THAI)		5.99	1.37	15.9
Venezuela (VENZ)		2.34	-1.14	6.20

Table-3: Descriptive Statistics Based on Sample Data

Variable	N	Mean	Standard deviation	Minimum	Maximum
FDI	359	1.80e+10	3.72e+10	-4.55e+09	2.91e+11
Labor market regulations	254	5.37126	1.374212	1.8	8.2
Hiring and firing regulations	255	4.285882	1.786001	0.7	8.5
Centralized and collective bargains	253	6.280632	1.453533	2.7	8.9
GDP growth	360	4.530029	4.533955	-14.53107	18.28661
Current account balance	356	2.098854	6.425221	-9.744184	26.10381
Log (gross fixed capital formation)	360	8.63e+13	3.81e+14	1.19e+07	3.65e+15
Log (exports)	360	44.43031	45.048	6.598187	230.269

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Macroeconomic Determinants of FDI Inflows to India: An Empirical Estimation

Sarada Prasan Mohanty[1] and Samir Ranjan Behera[2]

In the existing literature it is already established that the FDI plays an important role for the growth and development of the emerging market economies like that of India. However, available literatures relating to the factors determining the FDI inflows are evolving. Apart from various other policy factors, sound macroeconomic fundamentals, sustained economic growth and well developed functioning of the financial market have a critical role to play in determining the FDI inflows into an economy. Keeping in view the above-mentioned background, this study tries to empirically assess the major macroeconomic determinants of FDI inflows in to India by using the ARDL approach developed by Pesaran et al. (2001).The empirical results estimated through the ARDL cointegraion approach suggest that in long run the current level of FDI inflows to India is affected by its inflows of one period lag. As expected, the fiscal deficit has a negative and significant impact on FDI inflows. The increase in gross domestic fixed capital formation (GGDFC) has negative impact on FDI inflows in long run. Higher growth in GDP (GGDP) is having positive and significant determinant of FDI but with one lag period in the long run. Complementing with the existing literature, it is found that the trade openness (TRDOP) is one of the most significant determining factor for FDI inflows to India. However, short term debt to forex reserve ratio (SDFX) could not be a significant determining factor for FDI inflows. Further, the short-run dynamic relationship estimated through the error correction mechanism reveals that in short run all other factors barring trade openness have no impact on FDI inflows. The results of the study corroborates with findings of most of the earlier work by different researchers in the emerging economies context.

Keywords: *FDI, India, ARDL, Macroeconomic Determinants*

1 **Sarada Prasan Mohanty** is General Manager, Department of Banking Regulations, Reserve Bank of India, Central Office, Mumbai and can be reached at: spmohanty@rbi.org.in

2 **Samir Ranjan Behera** is Assistant Advisor, Department of Economic Policy and Research, Reserve Bank of India, Bhubaneswar and can be reached at: samirrbehera@rbi.org.in

Introduction

With globalization, the world economy has been closely integrated. The integration has been further intensified during last two decades. This has led to free flow of capital, resources, technology from the surplus economies to potential deficit economies in the form of Foreign Direct Investment (FDI). In case of FDI, the investors are having longer term interest in the economies receiving the same.

The investor firms or investing bodies particularly in developed countries having surplus funds are in search for potential destination economies for investing the same. They search for destinations that can provide large market, can get higher returns on their investment. They also consider safety of their funds and give more emphasis on conducive policies and investment climate in the host country.

The developing countries, more particularly the emerging ones with high growth potential have higher demands for investment. The investment demand can be made through domestic savings or by the external savings. The domestic savings and consequent capital formation in the emerging countries are inadequate to meet the domestic investment demand. Therefore, there is need for capital supplement in the form of FDI.

FDI have been playing a crucial role in the economic development process in the South-East Asian economies over the last two decades by bringing capital and technological know-how (Diaconu, 2014). FDI also complements to local investments and the productivity capacities (Antonescu, 2015). One of the major factors behind some of the economies, especially developing ones, transforming into vibrant market systems from the centrally planned economies is FDI inflows through multinational corporations (Raluca and Alecsandru, 2012). FDI grew far more rapidly than trade in the last two decades of the last century (Lawrence, 1996).

FDI is generally considered as one of the driving factors for the growth of the economy (Hunady and Orviska, 2014) especially in the developing ones. Over the past decades FDI has been considered as major source of funding for the capital intensive projects in most of the countries (Bekhet and Al-smadi 2015). Li and Liu (2005) established a clear linkage between FDI and growth rates.

As per World Investment Report 2015 (WIR 2015, UNCTAD publication),the global FDI inflows are projected to grow by 11 per cent to $1.4 trillion in 2015. Expectations are for further increase to $1.5 trillion in 2016 and to $1.7 trillion in 2017. Both UNCTAD's forecast model and its business survey of large MNEs signal a rise of FDI flows in coming years. However, the global FDI inflows fell by 16 per cent over the previous year to $1.23 trillion in 2014, mostly because of the fragility of global economy, policy uncertainty for investors and elevated geopolitical risks.

Inward FDI flows to developing economies reached their highest level at $681 billion with a two percent rise during 2014. As per World Investment Report, 2015, among the top 10 FDI recipients in the world, China is the World's largest recipient of FDI and India

is in the ninth position. The recent trend in case of India reveal that it received around 34 billion USD in the year 2014 which constitutes about 2.76 percent of aggregate FDI inflows in the world. The FDI inflows to India in 2014 is higher than the previous year (2013), when the total inflow was about 28 billion USD, which was around 1.90 percent of aggregate world FDI inflows. Further, the trend is expected to accelerate in the near future, keeping in view the increase in growth potential of the Indian economy.

India being an emerging economy is aiming to have sustainable growth and development at a rate close to double digits. It needs huge investment to achieve and sustain the desired level of growth. However, the domestic savings and capital formation are inadequate to meet the domestic investment demand in long run. Further, India is a trade deficit country with major chunk of its import being oil is inelastic in nature. In short run it cannot substantially improve its trade balance. Therefore, it needs external capital to meet the domestic investment requirements.

There are increasingly competition among the emerging countries to invite more and more FDI to their respective countries. These countries make their domestic policies conducive to the foreign investors so as to attract more and more FDI. Further, when the growth phase of India started, the economy faced global slowdown resulting in averse attitude of the global investors for investing in different countries. However, to meet our investment demand, to achieve our growth targets, India needs to frame policies to attract more and more FDI. While framing policies conducive to attracting FDI inflows, we need to know and quantify the key factors that determines the FDI inflow to India and their extent of influence of FDI inflows. We need to know, what the foreign investors look in the host countries while taking the investment decisions.

Apart from various other policy factors, sound macroeconomic management, sustained economic growth and well developed functioning of the financial market have a critical role to play determining the FDI inflows into an economy (Ang 2008). To attract potential foreign investment, state and local governments offer not only information about the advantages of locating in local communities, but also lucrative incentive packages, including large tax reductions and major infrastructure projects (Feliciano and Lipsey 2006).

Literature on this area suggests that there are various factors which could influence FDI inflows into an economy. However, there are common set of macroeconomic variables which could potentially attract such flows without having any variance in country specific characteristics. The available literature in case of emerging economies like that of India are evolving and at a very nascent stage. Keeping in view gap in the existing literature, this study attempts to empirically estimate the major macroeconomic determinants of FDI inflows to India.

Review of Literature

The literature on this particular area in the case of developed economies are quite extensive and validated. However, for developing economies, the literatures are

evolving and debatable. In most of the cases, the country specific macroeconomic determinants of FDI varies across the region, keeping in view their stages of economic developments. In this section an attempt has been made to review some of the existing literature separately on the basis of plausible macroeconomic determinants of FDI inflows into an economy.

Role of Economic Growth and Size of the Market

Market size has been widely accepted as significant determinants of FDI flows nearly all empirical studies that explains determinants of FDI (Bhavan *et al.* 2011). Davidson (1980) has argued that market size influences the locational decisions of MNEs for two main reasons. First, FDI becomes an economically sensible option only when the volume of production exceeds a level at which the average cost of serving the market by exporting is larger than the average cost of production within the market. Second, market size of host countries is supposed to capture demand and scale effects. There must be sufficient domestic demand for final goods for production to take place in the host country. Wang and Swain (1995) argued that if an economy grows at a faster rate, it would attract more foreign funds and bring more FDI. In this case, the growth rate of the economy is a better indicator of the demand than the simple size of the economy.

A study by Asiedu (2002) found that market size are significantly impact the FDI inflows. Jana (2008) reported that GDP and access to European common market are important determinants of the foreign direct investment level in the transition economies. Addition to the size of the domestic market in the host country, FDI also depend on export markets (Lucas, 1993; Jun and Singh, 1996). Though the market size hypothesis argues that inward FDI is a function of the size of the host country market, many export-orientated countries attract more FDI as they serve the export market of the product. Jadhav (2012) explained that market size measured by real GDP is a significant determinant of FDI especially in case of BRICS countries.

Role of Trade Openness

Srivastava and Sen (2004) argued that India's market-oriented economic reforms undertaken in 1991 which were directed towards increased liberalization, privatization and deregulation of the industrial sector, and to re-orient the economy towards global competition by reducing trade barriers, and gradually opening up its capital account, has led India to increasingly become a favourable destination for foreign investors. Quazi and Mahmud (2004) found that trade openness is one of the major determents of FDI inflows in case of South Asia. A positive and significant impact of trade openness on FDI inflows was observed in case finding of the study conducted by Jadhav (2012) in Indian context. In case of Turkey, Kiran (2011) there is a strong relationship was found between FDI and trade represented by both exports and imports of that economy.

Role of Country Risk Specific Factors

Country risk is the probability that country-specific, governmental events or measures will adversely alter the perceived value of the international firm (Grosse and Behrman,

1992). For instance, a host government may limit profit remittances by subsidiaries to their parent companies. Investors are likely to be concerned with the potential negative impact of a country's economic, social and political instability on their planned and existing projects. It is expected that such risks are negatively related to inward FDI. Therefore, the greater the degree of host-country risk relative to that of the home country, the less attractive the host country will become to inward FDI. Further, political stability and risk generally affect the decision whether to invest or not in a particular location (Dunning 1993; Moosa 2002). Jun and Singh (1996) further, suggest that the riskiness of the economic environment within the host country may deter investment in emerging markets.

Role of Savings and Investments

Marc *et al*. (2012) investigated the impact of domestic investment on FDI in developing economies. Using a cross-country sample of 68 countries over a period (1984-2004) he discovered that lagged domestic investment has a strong influence on FDI inflows in the host-economy, implying that domestic investment is a strong catalyst for FDI in DC and that Multinational Companies do follow economic development. However, McMillan (1999) found a negative relationship between domestic investment and FDI. Ang (2009) examined the long run relationship between public investment, private DI and FDI in Malaysia for the period 1960 to 2003. The results show that public investment, private investment and FDI are cointegrated in the long run. Moreover, both FDI and public investment are statistically significant and positively related to the Private investments.

Role of Other Macroeconomic and Qualitative Factors

Wang and Swain (1995) examined the host country determinants of FDI in China. They find that the FDI in manufacturing sector is positively related to China's GDP, GDP growth, wages, and trade barriers, but negatively related to interest rate and exchange rate for the period of 1978–1992. Ekpo (1995) reported that political regime, real income per capita, inflation rate, world interest rate, credit rating and debt service were the key factors explaining the variability of FDI inflows into Nigeria. Loree and Guisinger (1995) studied the determinants of FDI by United States towards developed nations from 1977 to 1982. The study concludes that the host country policy related variables are significant in developed countries and infrastructure seems to be an important determinant for all the regions. Applying the qualitative economic variables Sing and Jun (1995) find a positive relationship between taxes on international transactions and FDI inflows to developing countries, where the export related variables strongly explain pulling of FDI to a country. Anyanwu (1998) paid particular emphasis on the determinants of FDI inflows to Nigeria. He identified change in domestic investment, change in domestic output or market size, indigenization policy and change in openness of the economy as major determinants of FDI inflows into Nigeria and that it effort must be made to raise the nation's economic growth so as to be able to attract more FDI. The study by Gopinath (1998) found that GDP and the forex reserves were the main positive determinants of FDI inflows into India.

Duran (1999) uses the Panel data and time series techniques to find out the drivers of FDI for the period 1970-1995. The study indicates that the size, growth, domestic savings, country's solvency, trade openness and macroeconomic stability variables are the catalysts of FDI. Beven and Estrin (2000) establish the determinants of FDI inflows to transition economies (Central and Eastern Europe) by taking determinant factors as country risk, labour cost, host market size and gravity factors from 1994 to1998. The study observes that country risks are influenced by private sector development, Industrial development, the government balance, reserves and corruption. A dummy variable employed for capturing the key announcements of progress in EU accession seems to be directly influencing the FDI receipts.

Levy-yeyati *et al.* (2002) examine the extent of business cycles and interest rate cycles of developed countries impact on FDI flows to developing countries for the period 1980 to 1990. They consider the determinants of bilateral FDI using a gravity model. They found that FDI flows from US and Europe move counter cyclical to the business cycle in the source country, as well as, the interest rate cycles are the important determinants of FDI inflows.

Garibaldi *et al.* (2002) analyse the FDI and portfolio investment flows to 26 transition economies in Eastern Europe including the former Soviet Union from 1990 to 1999. The regression estimation indicates that the FDI flows are well explained by standard economic fundamentals such as market size, fiscal deficit, inflation and exchange rate regime, risk analysis, economic reforms, trade openness, availability of natural resources, barriers to investments and bureaucracy.

A study by Nonnenberg and Mendonca (2004) found that the factors such as the market size measured by GNP, growth rate of the product, the availability of skilled labour, the receptivity of foreign capital, the country risk rating and stock market behaviour seem to be the important determinants of FDI flows for developing countries comprising of 33 countries from 1975 through 2000. Naeem, Ijaz, and Azam (2005) used time series data from 1970-71 to 1999-2000 for Pakistan and found the main economic factors are market size, domestic investment, trade openness, indirect taxes, inflation, and external debt. In the context of Latin American countries, Nunes *et al.* (2006) find the variables such as market size, openness of the economy, infrastructure, macroeconomic stability (inflation), wages, human capital and natural resources as the determinants of FDI flows during the period 1991 to 1998. The study observes that the market size, infrastructure and inflation are positively influencing and wage rate is negatively influencing the FDI flows. Similarly, by estimating the panel co-integration test, Sahoo (2006) finds that the market size, labour force growth, infrastructure index, and trade openness are the important determinants of the FDI flows in South Asian countries. Vijaykumar *et al.* (2010) made an attempt to identify the factors determining the FDI inflows of BRICS countries from the period 1975 to 2007. The determinant factors include: market size, economic stability and growth prospects, cost of labour, infrastructure facilities, trade openness, currency value and gross capital formation.

the study found that other than economic stability and growth prospects (measured by inflation rate and Industrial production respectively),

Pradhan *et al.* (2011) examined the relationship between FDI and economic growth in seven countries, namely Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka, and Maldives, using EX, INF, labor population (LPP), trade balance (TB), long term debt outstanding (LTDO) and GDP) as the determinants of FDI inflows for the (1980–2010) period. The results found significant short-run relationships between FDI and EX, INF, LPP, LTDO and TB.

Goel, *et al.* (2012) found that Trade to GDP, Reserves to GDP, exchange rate, R&D to GDP and are the main determinants of FDI inflows to India. Lower labour costs make countries with abundant skilled and/or unskilled workers more competitive and attractive, and are likely to encourage FDI inflows (Jun and Singh, 1996). Biswas (2002) indicated that low wages are not necessarily crucial for FDI, and that other factors such as *e.g.,* natural resources or a large market, also influence FDI inflows. Similarly, Meyer (1995) argued that MNEs in Central and Eastern Europe are not necessarily motivated by low labour costs. Veugelers (1991), however, found that labour costs are not an important determinant for FDI inflows.

The interest rate has also been considered as a factor influencing direct investment. Wei and Liu (2001) indicated that there are economic linkages between FDI and the cost of borrowing. If the cost of borrowing in the home country is lower than in the host country, home country firms have a cost advantage over their rivals in the host economy, and are in a better position to enter the host country through FDI. Several empirical studies have supported this relationship (Farrell *et al.,* 2000; Pan, 2003). However, the analyses by Bevan and Estrin (2004) and Onyeiwu and Shrestha (2004) fail to support this hypothesis for FDI inflows to Africa and to East and Central European transition economies. The exchange rate between the host and home country is often used to measure the costs of production inputs. Clegg and Scott-Green (1999) indicated that ceteris paribus an appreciation of the home country's currency should increase FDI flows as it becomes cheaper to 'hire' a given amount of labour in that host country. Thus, an increase in the real exchange rate (a real depreciation of the currency of the host country) is expected to have a positive effect on inward FDI in the host country. A certain number of studies revealed a negative relationship between the exchange rate and inward FDI (Kiyota and Urata, 2004; Wei and Liu, 2001). Yet, other analyses have illustrated that there is no clear evidence with regard to the long-run relationship (Pain and Van Welsum, 2003).

Data Description, Data Sources and Hypothesis to be Tested

Data Description and Data Sources

All the data are taken on quarterly basis from the first quarter (Q1) of 1996-97 till the last quarter (Q4) of 2013-14, *i.e.,* 72 data points. However, while calculating the growth

of different variables we have to sacrifice the four quarters of 1996-97 for quarterly growth estimates. All the figures are express in percentage term. Details about the definition of variables and their sources are given in the tabular form below:

Variable	Definition	Source
Foreign Direct Investment (FDI)	Net inflow of FDI in to India	RBI Database on Indian Economy available at http://dbie.rbi.org.in
Fiscal Deficit to GDP ratio (FDR)	FDR ratio is calculated by dividing fiscal deficit of the central government with GDP at current prices	RBI Database on Indian Economy available at http://dbie.rbi.org.in
Growth in Gross Domestic Fixed Capital Formation (GGDFC)	Gross domestic fixed capital formation at market prices	RBI Database on Indian Economy available at http://dbie.rbi.org.in
Short term debt to forex reserve ratio (SDFX)	The ratio is calculated by diving India's short-term external with total forex reserve	RBI Database on Indian Economy available at http://dbie.rbi.org.in
Trade openness (TRDOP)	TRDOP is derived by dividing total trade (export + import) with GDP at current prices	RBI Database on Indian Economy available at http://dbie.rbi.org.in

Hypothesis

From the above literature survey, we found that FDI inflows are found to be determined by several macroeconomic factors. The major common macroeconomic determinant factors which are highlighted in the various studies are fiscal deficit ratio (FDR), growth in gross domestic fixed capital formation (GGDFC), growth in gross domestic product (GGDP), short-term debt to forex reserve ratio (SDFX) and trade openness (TRDOP). According the following hypothesis are made for the empirical estimation purposes:

Fiscal deficit ratio (FDR) as found in the earlier literatures may be negatively influence the FDI inflows in to an economy. Increase in fiscal deficit of an economy will be create negative impact on the impact of fiscal deficit may affect FDI inflow with a lag.

Growth in gross domestic fixed capital formation (GGDFC) are hypothesized as one of the main determinant of inward FDI. FDI fill up the gap created by insufficient domestic resources to finance capital formation. The relation between FDI and capital formation is expected to be positive.

Gross Domestic Product (GDP) of an economy indicate the size of the market. Growth in GDP (GGDP) is the indication of growth in the size of the market. Therefore, GGDP is expected to be positively related to FDI inflow to a host country.

The ratio of short-term debt to total forex reserve (SDFX) of a country indicates its external debt serving capacity during any short-term sock. It is an important indicator which international investors usually observe. Lower the SDFX, the country is less vulnerable to any external vulnerability. Hence, a negative relationship is expected to be established between SDFX and FDI inflows.

Inflow of foreign capital to an economy generally depends on level of trade openness (TRDOP) of a host country with the foreign counterparts. Therefore, it is hypothesized that the trade openness positively influence the FDI inflow to a host country. Trade openness is calculated as ratio of sum of export and import to GDP expressed in percentage.

Econometric Techniques

Unit Root / Stationarity Test

The Unit root test or stationarity test is conducted to verify the stationarity properties of data. A stationary process has the property that the mean, variance and autocorrelation structure do not change over time. By stationarity we mean a flat looking series, without trend, constant variance over time, a constant autocorrelation structure over time and no periodic fluctuations. To examine the stationarity properties of the time series the Augmented Dickey Fuller (ADF) and Phillips and Perron (PP) tests have been used in this study. If all the data series are stationary at level, *i.e.,* I(0), we can estimate a simple regression model. If all the data are stationary at first difference *i.e.,* I(I), we have to conduct the cointegration tests. However, if some of the data series are stationary at level and some others are stationary at first difference that means some are I(0) and some are I(I), then the normal regression or cointegration techniques cannot be used to estimate the relationship among dependent and independent variables. In such cases a relatively new technique *i.e.*, Regressive Distributed Lag (ARDL) model can be used.

Auto Regressive Distributed Lag (ARDL) Model Procedure

The autoregressive distributed lag model (ARDL) is the major workhorse in dynamic single-equation regressions. Its popularity in applied time series econometrics.

The ARDL approach is selected for several reasons:

- The ARDL approach to cointegration test is more appropriate in case if finite or small sample studies.
- Unlike other well-known cointegration methods, the cointegration relationship can be estimated by using Ordinary Least Square (OLS) in the bound test procedure once the lag order of the model is identified.
- The ARDL approach is applicable irrespective of whether the variables are purely I(0), purely I(I) or mutually cointegrated.
- We can identify specific forcing relationships for regressors in the ARDL system.
- Unlike residual based cointegration analysis, the unrestricted error-correction

model (UECM) employed in bound testing does not push the short-run dynamics into the residual terms.

However, some limitations of bounds test are:

- Although the integration order of the series is only needed to identify critical values for inferences, the system crashes in the presence of I(2) series.
- It is not appropriate in situations where there are more than one long-run relationship (cointegrated relationship) among the variables. The test is appropriate when only one variable is explained by the remaining variables and not *vice-versa*.

The ARDL procedure involves two stages. At the first stage the existence of long-run relationship between the variables under investigation is tested by conducting Bound Test and computing their F-statistics. The second stage in the analysis is to estimate the coefficients of the long-run relations and make inferences about their values using ARDL option.

The error correction version of the ARDL model in the variables FDI, FDR, GGDFC, GGDP, SDFX and TRDOP is given by

$$DFDI_t = a_0 + \sum_{i=1}^{4} b_i\, DFDI_{t-i} + \sum_{i=1}^{4} c_i\, DFDR_{t-i} + \sum_{i=1}^{4} d_i\, DGGDFC_{t-i}$$
$$+ \sum_{i=1}^{4} e_i\, DGGDP_{t-i} + \sum_{i=1}^{4} f_i\, DSDFX_{t-i} + \sum_{i=1}^{4} g_i\, TRDOP_{t-i} + \delta_1 FDI_{t-1} + \delta_2 FDR_{t-1}$$
$$+ \delta_3 GGDFC_{t-1} + \delta_4 GGDP_{t-1} + \delta_5 SDFX_{t-1} + \delta_6 TRDOP_{t-1} + e_t$$

The null hypothesis that we will b^{e} testing is 'non-existence of long run relationship between FDI and other independent variables'. Thus the null hypothesis is

$H_0 : \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$

And

the alternative hypothesis $H_1 : \delta_1 \neq 0,\ \delta_2 \neq 0,\ \delta_3 \neq 0,\ \delta_4 \neq 0,\ \delta_5 \neq 0,\ \delta_6 \neq 0$

Analysis of the Results

Unit Root Test Results

To examine the order of integration of all the variables, we have applied Augmented Dickey Fuller (ADF) and Phillips and Perron (PP) tests. The assumption of the bounds test or ARDL test is that the variables will be either stationary at level or stationary at first difference *i.e.,* either I(0) or I(I). When the variables are integrates at I(2) or above, the computed F statistics by Pesaran *et al.* (2001) are no longer valid. The tests are conducted to ensure that the regressors are not I(2) and above so as to avoid spurious results. The test results are presented in Table-1. The ADF stationarity test results suggest that variables such as FDR, GGDP, SDFX are found to be stationary at level, *i.e.,* I(0). The rest of variables under consideration such as FDI, GGDFC and TRDOP

are stationary at first difference *i.e.,* I(I). In case of the PP stationarity test the variables such as FDR, GGDFC, GGDP and SDFX are found to be stationary at level, *i.e.,* I(0) and other variables such as FDI and TRDOP are stationary at first difference, *i.e.,* I(I). None of the variables are I(2). The findings of the above two stationarity tests supports the use of ARDL for testing the Cointegration.

Table-1: Test of Stationarity

Variables	Level	
	ADF test # (t-statistics)	**PP test # (t-statistics)**
FDI	-0.229	-0.851
FDR	-3.357**	-7.409*
GGDFC	-1.497	-3.239**
GGDP	-2.945**	-3.047**
SDFX	-3.167**	-3.164**
TRDOP	-0.424	-1.377
	First Difference	
FDI	-6.820*	-19.950*
FDR	-13.036*	-22.546*
GGDFC	-4.401*	-9.873*
GGDP	-6.312*	-8.109*
SDFX	-5.151*	-5.475*
TRDOP	-5.544*	-11.091*
Critical values		
1%	-3.537	-3.533
5%	-2.908	-2.906
10%	-2.591	-2.591

For ADF and PP tests, the null hypothesis H_0 = the series under consideration is non-stationary. H_1 = the series under consideration is stationary.

Note: (1) Asterisks (*), (**) and (***) indicate significance level at 1%, 5% and 10% level. (2) The tests are conducted with intercept and no trend.

Bounds Test of Cointegration

After, conducting the Unit Root test and knowing the stationarity properties of the variables under consideration, the bound tests are conducted to find out the cointegrated relationship among them (Table-2). The calculated F-statistics when normalized over FDI is 4.915 and is significant at 1% level. Thus, the null hypothesis of no cointegration exists between FDI and other regressors is rejected implying that a long run relationship

exists between FDI and FDR, GGDFC, GGDP, SDFX and TRDOP. However, when it is normalized over other variables such as FDR, GGDFC, GGDP, SDFX and TRDOP, the values of F-statistics in each case is lower than the lower bound of both 1% and 5% level. Thus, the null hypothesis of no cointegration exists is accepted. Therefore, the test results reveal that there is a long run cointegrated relationship exists between FDI and FDR, GGDFC, FFDP, SDFX and TRDOP.

Table-2: Results of Bound Test for Cointegration

Dependent Variable (Intercept and no trend)	**F- statistics**		**Outcome**	
F(FDI/FDR, GGDFC, GGDP, SDFX, TRDOP)	4.915*		Cointegration	
F(FDR/FDI, GGDFC, GGDP, SDFX, TRDOP)	1.495		No Cointegration	
F(GGDFC/FDR, FDI, GGDP, SDFX, TRDOP)	1.541		No Cointegration	
F(GGDP/GGDFC, FDR, FDI, SDFX, TRDOP)	0.613		No Cointegration	
F(SDFX/GGDP, GGDFC, FDR, FDI, TRDOP)	1.206		No Cointegration	
F(TRDOP/SDFX,GGDP, GGDFC, FDR, FDI)	2.239		No Cointegration	
Critical Values				
T	**1% level**		**5% level**	
	I(0) Lower Bound	**I(I) Upper Bound**	**I(0) Lower Bound**	**I(I) Upper Bound**
(n = 57, k = 6)#	– 3.267	– 4.540	– 2.476	– 3.646

n = number of observations, k = the number of regressors.
*, ** and *** significance at 1%, 5% and 10% level.
#: with intercept and no trend.

After empirically establishing the cointegration relationship between FDI and all other independent variables (FDR, GGDFC, GGDP, SDFX, TRDOP), the study estimated the long run coefficients by using ARDL methodology (Table-3). The maximum lag of 1 was selected for estimating the relationship.

The estimated coefficients of the long run relationship show that the present FDI inflows is having significant long run relationship its one lag value [FDI (-1)]. This implies FDI inflows in the previous quarter positively influences FDI inflows in subsequent quarters. A country already receiving FDI has more probability to receive further FDI inflows in future. This finding is in line with the earlier studies.

FDI is also having significant long-run relationship with FDR (-1). The negative coefficient value indicating that with increase in fiscal deficit ratio (fiscal deficit as percentage of GDP), there will be consequent decline in the flow of FDI but with a lag of one quarter. Fiscal deficit ratio indicates the financial strength of the government. The international rating agencies takes this as a key parameter for their sovereign rating calculation. In our literature survey, we have found that the country with higher sovereign rating attracts more inward FDI. Thus the finding is in line with those studies.

It is observed from the results that the Gross Domestic Fixed Capital Formation (GGDFC) is significant and negative with lag of one quarter. This indicates that with increase in GGDFC, there will be decline in inward FDI flow. As FDI inflow mainly caters to the domestic savings and investment gap, with increase in GGDFC, the gap is going to be narrowed down. Hence, there will be less demand for inward FDI.

It can be observed from the estimated results that growth in GDP (GGDP) positively influence the inward FDI with a lag of one quarter in the long-run. With increase in GDP growth rate (with increase in the size of the market of the host country), the host country will attract more and more FDI but with a lag of one quarter. This is in line with the earlier studies that countries having higher growth rate invite more inward GDP.

However, short term debt to forex reserve (SDFX) is found to be not having any significant relationship with FDI inflows in long run, FDI inflows do not depend on the forex reserve coverage of short term debt of any country. Further, it is observed from the estimated results that the trade openness (TRDOP) which is the ratio of sum of export and import to GDP significantly and positively influence inward FDI flows to host country in the long run. The country having more trade openness attracts more inward FDI. This corroborates the findings of the earlier researchers.

Table-3: Estimated Long-Run Coefficients Using ARDL Model

ARDL (1,1,0,0,1) selected based on Akaike Information Criterion. Dependent variable FDI				
Regressor	**Coefficient**	**Standard Error**	**T-Ratio**	**Probability**
FDI(-1)	0.367*	0.110	3.3463	0.001
FDR	0.857	3.768	0.228	0.821
FDR(-1)	-6.749***	3.980	-1.720	0.090
GGDFC	0.269	2.391	0.112	0.911
GGDFC(-1)	-8.217*	2.361	-3.480	0.001
GGDP	-1.400	5.078	-0.276	0.784
GGDP(-1)	10.385**	5.075	2.047	0.045
SDFX	0.647	4.178	0.155	0.877
TRDOP	12.221*	2.432	5.025	0.000
INPT	-183.699	73.107	-2.513	0.015
R-Squared: 0.873		R-Bar-Squared: 0.853		
Note: *, ** and *** denote statistical significance at 1%, 5% and 10% level, respectively.				

After estimating the long run coefficient, the study has empirically asses the short-run dynamics among the dependent and independent variables through the error correction mechanism within the ARDL framework (Table-4). It could be observed from the in the estimated results that the first difference of the original variables are taken in the empirical estimation and denoted as dFDR, dGGDFC, dGGDP, dSDFX and dTRDOP.

All the regresssors except dTRDOP are not having significant short-run relationship with inward FDI. However, trade openness is having significant and positive impact on inward FDI flows in short run at 1% level as is the case in the long run.

Further, the coefficient of *ECM (error correction mechanism)* at -0.633 is significant at 1% level indicating speed of adjustment to equilibrium following a short run shock is very quick. Approximately 63% of the deviation in inward FDI from long-run equilibrium level is corrected in the next quarter.

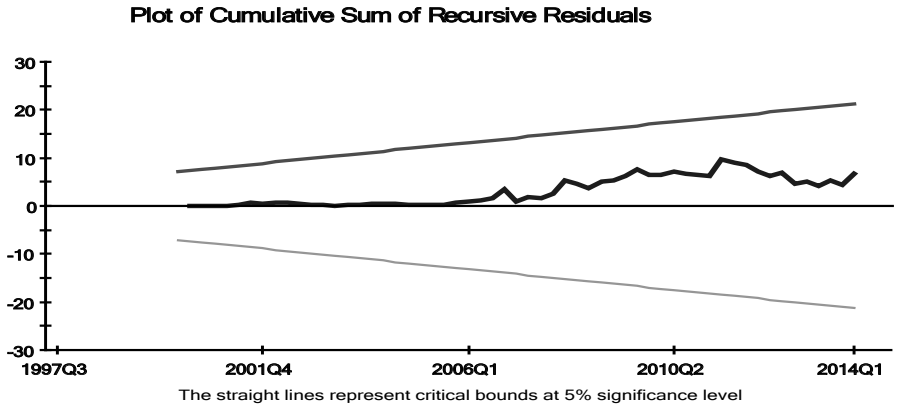
Table-4: Error Correction Representation for the Selected ARDL Model

ARDL (1,1,1,1,0,0) selected based on Akaike Information Criterion				
Regressor	**Coefficient**	**Standard Error**	**T-Ratio**	**Probability**
dFDR	0.857	3.768	0.228	0.821
dGGDFC	0.269	2.391	0.112	0.911
dGGDP	-1.400	5.078	-0.276	0.784
dSDFX	0.647	4.178	0.155	0.877
dTRDOP	12.221*	2.432	5.025	0.000
ecm(-1)	-0.633*	0.110	-5.764	0.000

Note: *, ** and *** denote statistical significance at 1%, 5% and 10% level respectively.
R-Squared: 0.41607 R-Bar-Squared: 0.32387.

Pesaran *et al.* (1997) suggest applying the Cumulative Sum of Recursive Residuals (CUSUM) test proposed by Brown *et al.* (1975) to assess the parameter constancy of the model (usually an econometric model consists of many parameters which are assumed to be constant). Therefore, it is recommended to check the parameter constancy over the sample and to modify the model if parameters are not constant. The CUSIM test shows that the parameters are fairly constant over the sample and are within the critical bound of 5%. Therefore, it is inferred that the model is stable.

Chat 1: CUSUM Test



Summary and Conclusion

The contribution of FDI for overall growth of any economy is already proven in the existing available literature. However, the estimating the determinants of such flows are still evolving in case of emerging economies like that of India. India being an emerging country aims at a sustainable growth rate of close to double digits. It needs to compete with other emerging economies to attract higher and higher FDI to meet the domestic savings and investment gap. Further, FDI along with capital inflows also will bring improved technology and managerial competence to augment its growth. Keeping in view the findings from the existing literature and the arguments given in the present context by the policy makers, researchers and academia, this study tries to empirically assess the probable determinants of FDI inflows.

The study has used the recent time series econometrics technique namely the ARDL model. The long-run and short-run determinants of FDI inflows has been estimated and the contribution of each variable is explained in detail. The major findings of the empirical results suggest that in long run the one lag period of FDI inflows has a positive and significant contribution for the current level of FDI inflows. As expected, the fiscal deficit has a negative and significant impact on FDI inflows. Therefore, lowering the fiscal deficit can attract more FDI to India. The growth in gross domestic fixed capital formation (GGDFC) has negative and significant impact on FDI inflows in long run due mainly to meet the savings investment gap. With increase in GGDFC, the gap will be narrowed down, hence it will possibly have negative impact on FDI inflows. Higher growth in GDP (GGDP) is a positive and significant determinant of FDI but with one lag period. With growth of the economy, the foreign investors are more likely to be attracted towards India. Short term debt to forex reserve ratio (SDFX) could not be a significant determining factor for FDI inflows. Complementing with the existing literature, it is found that trade openness (TRDOP) is one of the most significant determining factor for FDI inflows to India. However, in short run all other factors barring trade openness have no impact on FDI inflows, as FDI investors instantaneously react to the positive policy initiatives taken. The results of the study corroborates with findings of most of the earlier work by different researchers in the emerging economies context.

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Major Trade Indicators of Transport Equipment Industry in India

M Manonmani*

In this paper an effort was made to examine the major trade indicators of transport equipment industry in India for the reference period spreading between 2000-2014. This study was based on secondary data. Tools of analysis such as base year index number, chain index number,Market shares (MS), Trade Openness Factor, Exports to Imports Ratio, Export Propensity Index(EPI), Trade Specialization Co-efficient, Export Diversification (or Concentration) Index, Compound Annual Growth Rate (CAGR) and Revealed import dependence index were used to analyse the data. It was found that both export and import indices had shown fluctuations throughout the reference period under study i.e from 2000 to 2014. Export share was always lower than the import share except in the year 2001 and 2014. More than 90 percent of changes in the growth of export were due to the influence of time factor and the remaining negligible percentage might be due to other related factors which were incidental. The maximum trade openness was occurred to the extent of 72.12 percent in the year 2008. The export propensity index calculated based on the total output were ranging from 0.0458 and 0.1640 across the years. Strong international competitiveness was observed only after 2009. There was no concentration on country's exports since the value were near 0. Marginal improvements were found in terms of IMS. To a lesser extent India depend on import of this product during this particular period based on Revealed Import Dependence Index.

Keywords: *FDI, India, ARDL, Macroeconomic Determinants*

Introduction

In the modern world, there is mutual interdependence of the various national economies. Today it is hard to find the example of a closed economy. All economies of the world have become open. But the degree of openness varies from one country to another.

* **M. Manonmani** is Professor in Economics, Avinashilingam Institute for Home Science and Higher for Women, Coimbatore and can be reached at: manomyil @yahoo.com

Thus, in the modern world no country is completely self-sufficient. Self-sufficiency, in the sense used here, means the proportion of the goods and services consumed to their total output produced with in a country. But the degree of self-sufficiency varies from one country to another. Equally important are the roles of the regional and international specialization. Regional specialization means that various regions or areas in a country specialize themselves in the production of different products. International specialization means that different countries of the world specialize in producing different goods. Factors which determine regional specialization are more or less the same as those which determine international specialization.

Analysis of trade openness is regarded as significant since it also leads to better allocation of resources. When an economy opens up, forces of comparative advantage forces the economy to specialize in the sector for which it has better factor endowments. As a result, productivity of that sector goes up. The exports from that sector also increase which consequently boosts growth. Lastly, trade openness also encourages technology transfer from developed to developing economies which leads to an increase in factor productivity and finally enhances growth. The investigator had considered this aspect also from the economics point of view.

Many countries in the process of economic transition have adopted outward-looking export oriented policies based on Export Propensity Index. These policies have concentrated and focused its attention on encouraging domestic transformation of raw materials, with the aim to reduce foreign dependence, increase export competitiveness and improve economic stability and growth. The growing importance of the manufacturing sector supports the idea that it is important to promote firms that carry out exportation as a means of achieving sustainable growth and development. To achieve this, the movement of firms in and out of the industry and the procedure involved in exportation should be closely monitored. By so doing, firms' activities related to exportation can be enhanced, by bringing to light the variables that can motivate both the likelihood of exportation and the quantity that a firm finally sells to the foreign market (that is, export level or intensity). Thus, it was believed there is a need for a careful examination of export intensity or propensity index in this study.

Trade Specialization is a method of production where a business, area or economy focuses on the production of a limited scope of products or services to gain greater degrees of productive efficiency within an overall system. Many countries, for example, specialize in producing the goods and services that are native to their part of the world, and they trade for other goods and services. This specialization is therefore the basis of global trade, as few countries have enough production capacity to be completely self-sustaining. Therefore in order to see the specialization capacity of transport equipment industry Trade specialization co-effective was taken into account.

Export diversification (or Concentration) Index is held to be important for developing countries because many developing countries are often highly dependent on relatively few primary commodities for their export earnings. Unstable prices for these commodities may subject a developing country exporter to serious terms of trade shocks. Since the

co variation in individual commodity prices is less than perfect, diversification into new primary export products is generally viewed as a positive development. The strongest positive effects are normally associated with diversification into manufactured goods, and its benefits include higher and more stable export earnings, job creation and learning effects, and the development of new skills and infrastructure that would facilitate the development of even newer export products. Hence an effort was made in this study to analyze the Export diversification (or Concentration) Index.

Methodology

This study was based on secondary data for the period spanning between 2000 - 2014. Data relating to export, import and total trade for transport equipment industry at world and at India level they were drawn from WTO statistical Data base. Data on GDP and FDI were taken from Economics Survey and Reserve Bank of India publications. The variables namely export and import were converted in to real terms by dividing them by GDP. The reference period was based on the availability of data.

Tools of Analysis

- **Base Year Index**

Base year index was calculated to know the changes in export, import and total trade over the reference period under study by considering the following formula.

B.I= Vt / V0 x 100 Where

Vt= current year value

V0=Base year value (initial year value)

- **Annual Change in Trade**

It is calculated as follows

Annual change=Vt- Vt-1 / Vt-1 x 100

Where

Vt=current year value

Vt-1=previous year value

- **Trade Share**

a. Share of Export and Import Volume of Trade in Transport Equipment Industry

i) Share of export=Total export / Total export+total import x100

ii) Share of import=Total import / Total export+total import x100

b. Market Shares (MS)

The formula for calculating international market share is given as

$S_i = X_i / \Sigma_i X_i$

$0 \leq S_i \leq 1$

where: X_i = exports of country i

$\Sigma_i X_{i}$ = Export at international level

- **Trade Openness Factor (TOF):** It is calculated as follows

  The Trade Openness Index (TOF) is an economic metric calculated as the ratio of country's total trade, the sum of exports plus imports, to the country's gross domestic product (Exports + Imports)/(Gross Domestic Product).

  TOF=Export+import / GDP x100

  The interpretation of the Openness Index is: the higher the index the larger the influence of trade on domestic activities, and the stronger that country's economy.

- **Exports to Imports Ratio:**

  EI ratio= Exports: imports

- **Export Propensity Index(EPI)**

  $EPI_p = (X_p/D_p)*100$

  Where, X_P and D_P are exports and total domestic production respectively.

- **Trade Specialization Co-efficient**

Trade Specialization Coefficient (TSC), also known as the business competitiveness index or Trade Competitive Index(TCI). A method is used to demonstrate the product cycle theory, the coefficient of variation reflects the inverse process stage products imported by the import stage in the cycle, import substitution stage, export expansion, maturity to. Trade specialization coefficient is calculated for a product as follows:

$$TSCi = (Xi /Mi) / (Xi / Mi)$$

TSCi represents i trade specialization coefficient products, Xi, Mi represent exports and imports i products, therefore, trade specialization coefficient represents the ratio of net exports i products. Trade specialization coefficient between - between 1 and 1, from -1 to 1, reflecting the upward motion the process of change from a net importer to a net exporter, and from 1 to - net imports fell 1 reflects the movement from net exports to change process. In general, trade specialization coefficient of a product closer to 1, indicating that imports far exceeded exports, the stronger the kinds of products in the international market the other hand, if the trade specialization coefficient is closer to - 1, it indicates that imports far greater than exports, the products in the international market competitiveness weaker.

Between a value of -1 to 1, if the balance of import and export, the value if it is positive, that export specialization, indicating a high level of specialized production of such products, more when it is negative, that is, import specialization. If the TC index greater than zero, indicating that such goods with strong international competitiveness, closer to 1, the stronger TC index is less than zero, it indicates that such goods are

not competitive index of zero, indicating that such goods for the intra-industry trade, competitiveness and international level quite. Specifically judgment as follows:

If TSC0.8, it indicates that the product has a strong competitive edge or big comparative

If 0.5TSC 0.8, indicates that the product has a strong competitive or greater comparative

If 0TSC 0.5, indicates that the product has a low competitive or lesser comparative

If -0.5TSC 0, this indicates that the product has less comparative

If -0.8TSC -0.5, it means that the product has a larger comparative

If TSC -0.8, it means that the product has a large comparative disadvantage.

- **Export Diversification (or Concentration) Index**

The export diversification (DX) index for a country is defined as:

$DX_j = (\text{sum } |h_{ij} - x_i|) / 2$

Where h_{ij} is the share of commodity i in the total exports of country j and hi is the share of the commodity in world exports. The related measure used by UNCTAD is the concentration index or Hirschman (H) index, which is calculated using the shares of all in a country's exports:

$H_j = \text{sqrt } [\text{sum } (x_i/X_t)^2]$

Where x_i is country j's exports of product i and X_t is country j's total exports. The index has been normalized to account for the number of actual products that could be exported. Thus, the maximum value of the index is one and its minimum (theoretical) value is zero, for a country with no exports. The lower the index, the less concentrated are a country's exports.

- **Compound Annual Growth Rate (CAGR)**

Compound Annual Growth Rate (CAGR) is an average growth rate over a period of several years. It is a geometric average of annual growth rates. The compound growth rate was calculated by applying the following formula for the data relating to world trade in imports and exports of textile and clothing combining the period quota liberalization and global Economic crisis. The formula is as follows:

$$\hat{B} = yt - \frac{(\sum y^2)(\sum t)}{\frac{n}{\sum t - \frac{(\sum t)\hat{}2)}{n}}}$$

$\hat{B}$=Compound growth rate

y = Variables under study (exports and imports)

$\sum_t$= Summation of time(1,2,3,--------n)

n= Total number of years

- **Revealed Import Dependence Index**

The Revealed Import Dependence Index (RID) expresses the import dependency of a country on a particular product category. As RCA presents the comparative advantage, the RID presents comparative disadvantage of a country in the particular product category which can be expressed as follows:

$$\mathbf{RID_i = (M_{ia}/M_a)/ (M_{iw}/M_w),}$$

Where M_{ia} is equal to imports of commodity 'i' from a country 'a',

M_a is equal to total imports of a country 'a',

M_{iw} is equal to total value of the world imports of commodity i and

M_w is equal to total world imports.

RID index exceeding one suggests a strong dependence of the country on the import of a specific item in a reference period and vice-versa.

Results and Discussion

a) Indices of Trade

Table-1 provides details on the indices (base year) of export and import of transport equipment industry in order to clearly understand the change that had taken place at the end of the period compared to the initial period.

Table-1: Indices of Trade

Year	Export	Import	Total trade
2000	100	100	100
2001	102	84	92
2002	119	160	138
2003	168	213	151
2004	258	289	143
2005	378	420	145
2006	441	796	157
2007	555	688	99
2008	946	1644	211
2009	981	966	74
2010	1363	990	119
2011	1792	960	116
2012	1708	1228	108
2013	1843	1261	105
2014	2406	1086	111

Footnote: Calculations are based on WTO statistical data base.

It is observed from the table that from the beginning of the period to the end of the period the growth of export was 24.06 fold where as import had shown an increase of 10.86 fold. Both the indices had shown fluctuations throughout the reference period under study i.e., from 2000 to 2014. With regard to the movement of total trade in transport equipment industry of India for the same reference period, it had shown similar trend. Though individually the change was more for both export and import, at the aggregate level only marginal increase had taken place recording only 1.11 fold increases at the end of the period. An enormous change took place in the year 2008.

b) Annual Change in Trade

Table-2 gives details on the annual change that had taken place in export, import and total trade of transport equipment industry of India from 2000 to 2014.

Table-2: Annual Increase / Decrease

Year	Export	Import	Total trade
2000	-	-	-
2001	1.64	-15.59	-7.64
2002	16.74	60.16	38.13
2003	41.62	57.50	50.69
2004	53.41	35.81	42.90
2005	46.73	45.11	45.81
2006	16.66	89.61	57.85
2007	25.75	-13.46	-0.85
2008	70.44	138.85	110.93
2009	3.70	-41.26	-26.44
2010	38.92	2.44	19.39
2011	31.54	-2.99	15.68
2012	-4.67	27.91	7.87
2013	7.86	2.65	5.48
2014	30.56	-13.81	10.84

Footnote: Calculations based on WTO statistical data base.

It is observed from the table that the annual percentage decline was less in all the components namely import, export and total trade. In other words positive changes had taken place across the years mostly. It ranged between -4.67 percent and 70.43 percent in case of export, between 41.26 percent and 138.85 percent in case of import and -26.44 percent and 57.85 percent in total trade respectively across the period from 2000 to 2014. This showed clearly wider fluctuations in annual growth of export, import and total trade during the above mentioned reference period.

c) Share of Export and Import Volume of Trade

The share of export and import as a percentage of volume of trade (import plus export of transport equipment) is presented in Table-3.

Table-3: Export and Import Share in Volume of Trade

Year	Export share	Import share
2000	46	54
2001	51	49
2002	43	57
2003	40	60
2004	43	57
2005	44	56
2006	32	68
2007	41	59
2008	33	67
2009	46	54
2010	54	46
2011	61	39
2012	54	46
2013	56	44
2014	65	35

Footnote: Calculations are based on WTO statistical data base.

The calculation of trade share of transport equipment industry in India in the total trade (export + import of transport equipment) showed that export share was always lower than the import share except in the year 2001 and 2014. But from the initial period to the end of the period export share had shown 19 percent increase where as import share had shown a decline of 19 percent during the whole reference period under study.

d) Share of Export and Import in Total Sector's Trade

Table-4 explains percentage share of export and import of transport equipment industry in total trade of all the sectors in India during the reference period under study.

Table-4: Percentage Share of Export and Import in Total Trade of All the Sectors

Year	Export of India	Import of India
2000	2.72	2.61
2001	2.70	2.26
2002	2.78	3.22
2003	3.28	3.95
2004	3.87	3.90
2005	4.37	3.96
2006	4.17	6.01
2007	4.26	4.04
2008	5.59	6.90
2009	6.85	5.06
2010	6.93	3.81
2011	6.82	2.78
2012	6.63	3.38
2013	6.74	3.65
2014	8.59	3.16

Footnote: Calculations are based on WTO statistical data base.

Figures on percentage share of export and import of transport equipment industry to the aggregate trade (including all the sectors) of India revealed that from the beginning of the period to the end of the period both the items revealed increase at the end of the period compared with the initial year. It was gradual for export compared with import. The changes were moderate.

e. Growth Rate in Trade

Details on growth rate of export, import and total trade of transport equipment industry in India is given in Table-5.

Table-5: Growth Rate in Trade

Items	Export	Import	Total trade
Mean	1485845	10105	1495951
Std. Deviation	437807	8547	445516.2
Coefficient of variation	29.47	84.57	29.78
R^2	.89311	0.9734	.8967
F- value	108.619*	475.876*	112.857*
Constant	808628.37*(16.375)	830.67*(9.582)	807623.37*(16.485)
Growth rate	7.00*(10.422)	25.04* (21.815)	7.09 * (10.623)

Footnote: Calculations are based on WTO statistical data base.

Figures in parentheses indicate t-values

* Significant at 1% level.

Based on the above figures it is very clear that the fit was good since the F-value was statistically good. The trend rate was recorded as 7.00 percent and 25.04 percent respectively in export and import of the transport equipment industry in India which were statistically significant. It was obvious that the annual trend rate in the total volume of trade in the transport equipment was mainly due to import component. The co efficient determination (R^2) explained the fact that more than 90 percent of changes in the growth of export was due to the influence of time factor and the remaining negligible percentage might be due to other related factors which were incidental. The magnitude variability indexes in these variables were found to be high in import component to the extent of 84.57 percent.

g) Trade Openness Factor (TOF)

Details regarding trade openness (export and import as a percentage of GDP) of transport equipment industry of India during the particular reference period was calculated and it is reported in Table-6.

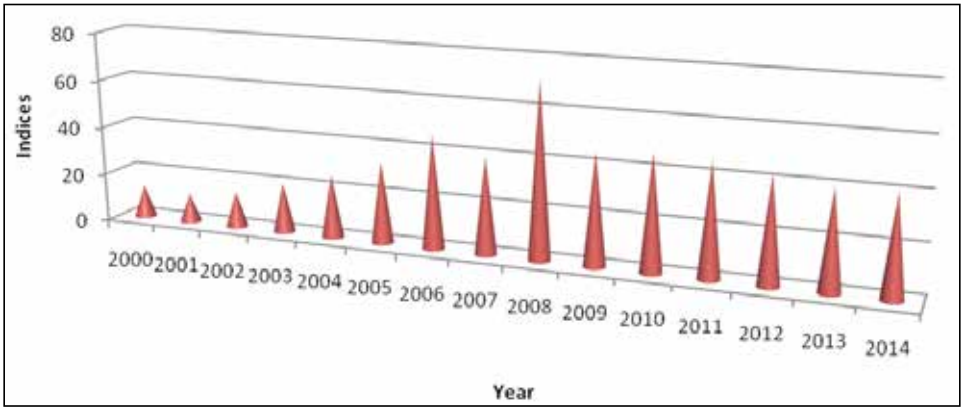
Table-6: Trade Openness Factor (TOF)

Year	Trade openness
2000	13.45
2001	11.54
2002	14.66
2003	20.50
2004	26.14
2005	33.69
2006	46.60
2007	39.63
2008	72.12
2009	45.84
2010	47.51
2011	46.21
2012	43.36
2013	40.38
2014	40.44

Footnote: Calculations are based on WTO statistical data base.

Trade Openness Factor (TOF) during the period 2000-2014 witnessed a substantial opening up on the Indian transport equipment industry. It had increased from 13.45 percent to 40.44 percent. The maximum trade openness was occurred to the extent of 72.12 percent in the year 2008. This explained the fact that the pattern of growth of a country in terms of trade dependence with particular reference to transport sector was witnessed in the year 2008. Figure-1 shows the same.

Figure-1: Trade Openings



h) Exports to Imports Ratio

In Table-7 the ratios calculated as export-import ratios for the reference period as a whole is given.

Table-7: Exports to Imports Ratio

Year	Exports to Imports Ratio
2000	1: 0.8552
2001	1: 1.0299
2002	1: 0.7506
2003	1: 0.6750
2004	1: 0.7625
2005	1: 0.7711
2006	1: 0.4744
2007	1: 0.6893
2008	1: 0.4919
2009	1: 0.8684
2010	1: 1.1775
2011	1: 1.5965
2012	1: 1.1893
2013	1: 1.2501
2014	1: 1.8936

Footnote: Calculations are based on WTO statistical data base.

Exports to imports of transport equipment industry of India over the reference period from 2000 to 2014 showed that the ratio exceeded after 2009 (i.e. from 2010-2014) continuously and also in initial year 2001. The minimum ratio was recorded in the year 2006 (1: 0.4744) and maximum in the year 2014 (1: 1.8936).

i) Export Propensity Index (EPI)

The following Table-8 explore details on export propensity index for the whole reference period under study.

Table-8: Export Propensity Index (EPI)

Year	EPI
2000	0.0510
2001	0.0522
2002	0.0458
2003	0.0480
2004	0.0598
2005	0.0674
2006	0.0870
2007	0.0835
2008	0.1143
2009	0.1626
2010	0.1395
2011	0.1435
2012	0.1640
2013	0.1483
2014	0.1556

Footnote: Calculations are based on WTO statistical data base.

The export propensity index calculated based on the total output of transport equipment industry in India over the reference period under study were ranging from 0.0458 and 0.1640 across the years. The minimum index was recorded in the year 2002 and maximum in the year 2012. The trend recorded was showing gradual increase from the beginning of the reference period to the end of the period under study with 3 fold increase.

j) Trade Specialization Co-efficient

Details on trade specialization co-efficient from 2000 to 2014 for the transport equipment industry of India is shown in the following Table-9.

Table-9: Trade Specialization Co-efficient

Year	Trade Specialization Co-efficient
2000	-0.08
2001	0.015
2002	-0.14
2003	-0.19
2004	-0.13
2005	-0.13
2006	-0.36
2007	-0.18
2008	-0.34
2009	-0.07
2010	0.08
2011	0.23
2012	0.09
2013	0.11
2014	0.31

Footnote: Calculations are based on WTO statistical data base.

The positive trade specialization index recorded only after 2009 which indicated a high level of specialized production of such transport equipment products since the value of it was positive. Also it indicated that such goods have strong international competitiveness. The less than zero indices indicated such goods were not competitive in nature and those goods were meant for intra industry trade. This phenomenon was present before 2010 except the year 2001.

k) Export Diversification Index

In Table-10 Export diversification index based on general export diversification index and concentration index or Hirschman (H) index is presented from the year 2000 to 2014.

Table-10: Export Diversification Index

Year	Dxj	Hj
2000	0.013	0.027
2001	0.013	0.027
2002	0.013	0.028
2003	0.015	0.033
2004	0.018	0.038
2005	0.020	0.043
2006	0.019	0.041
2007	0.019	0.043
2008	0.025	0.056
2009	0.030	0.069
2010	0.030	0.069
2011	0.029	0.068
2012	0.028	0.066
2013	0.028	0.067
2014	0.036	0.086

Footnote: Calculations are based on WTO statistical data base.

Based on the general export diversification index (Dxj) it could be observed that the indices ranged between 0.013 and 0.036 across the years. It showed clearly that there was no concentrations on country's exports since the value were near 0.

The related measure used by UNCTAD is known as concentration index or Hirschman (H) index. Based on H index there was a slight improvement in the indices compared to Dxj indices. It ranged between 0.27 and 0.086. Only after 2007 the indices were above 0.1 which brought out the fact that a little concentration was made to country's transport equipment trade.

L) International Market Share (IMS)

International Market Share (IMS) ratios were calculated for transport equipment industry of India for the reference period from 2000 to 2014. The ratios are presented in Table-11

Table-11: International Market Share (IMS)

Year	IMS
2000	0.138369
2001	0.139861
2002	0.152535
2003	0.187818
2004	0.242368
2005	0.331398
2006	0.346896
2007	0.371798
2008	0.593587
2009	0.823706
2010	0.930192
2011	1.052165
2012	0.99919
2013	1.04498
2014	1.315046

Footnote: Calculations are based on WTO statistical data base.

From above ratios it is made clear that International competitiveness is strengthened if IMS scales up with wider fluctuations. These marginal improvements in IMS might be due to the adjustment of country's industrial structure , product structure, or reflect changes in consumption structure.

c) Revealed Import Dependence Index (RIDI)

Revealed Import Dependence Index (RCA from import) were calculated for transport equipment industry during the reference period under study. The results are presented in Table-12.

Table-12: Revealed Import Dependence Index (RIDI)

Year	RIDI
2000	0.2092
2001	0.1732
2002	0.2381
2003	0.29644
2004	0.29963
2005	0.3212
2006	0.5017
2007	0.3310
2008	0.6119
2009	0.4653
2010	0.3436
2011	0.2579
2012	0.3153
2013	0.3350
2014	0.2811

Footnote: Calculations are based on WTO statistical data base.
Figures in parameters indicate 't' value.
* Significant at 1% level.

Based on the above RID index, it is understood that the transport equipment industry trade had failed to prove that India had strong dependence on the import of this particular product during the reference period under study. In other words to a lesser extent India depend on import of this product during this particular period.

Conclusion

Hence, in case of India, the study recommends that in order to make Indian exports more competitive in the international market and to improve level of productivity of Indian export sector, a number of measures, including, the diversification of export commodities, infrastructure development, further more reduction in tariff barriers and quantitative restrictions, increase in the incentives and subsidies to exporters and operationalization of Export Processing Zones (EPZs) are required. When accessing a firm's export propensity managerial implications from the findings can be drawn mainly

from three perspectives; attracting human resources, relationship development and information management. We can expect that if a country can encourage a proper and diverse mixture of export portfolio, then all or remarkable portion of the fluctuations in a subset of export goods may be evened out. The results underpin the importance of improving the infrastructural facility of the economy and to form strategies to encourage FDI inflows in more diversified areas. It has been suggested that India has to make effective policy to promote export. In order to achieve sustain growth in trade, Indian policy makers should consider role of trade openness in their policy actions.

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International Trade and Sustainable Development Goals (SDGs) of Economies : A Way Forward

U Sarangi*

The research paper studies the relationships and inter-linkages existing between international trade and Sustainable Development Goals(SDGs) adopted by the United Nations, of various economies. It is observed that in order to fully implement the SDGs goals and their indicators adopted by the UN, least developing countries and particularly, the small island developing states need to adjust their economies to adapt to achieving the SDGs by the turn of 2030 as slated by the UN. The paper also dwells into the issues of poverty, inclusiveness and equality, implementation of Addis Ababa Action Agenda on SDGs, National Level Efforts undertaken for Development of International Community, discusses the recommendations of the 2017 Task Force on SDGs, issues on financing investment and social protection, domestic and international finance, international development cooperation, role of international trade in achieving SDGs and the 2030 Agenda, SDGs and their indicators, financing for development and small island developing states, SIDS and economic growth, SIDS and Human Development, SIDS, international climate and environmental funds & SIDS and remittances and SIDS and Financing for Shocks. Certain statistical tools such as Gamma Distribution, Normal Distribution and Pearson Correlation Coefficient have been estimated to analyze the economic relationships existing among the variables like SDGs & SIDS and their indicators such as human development, financing for development, environmental funds, financing for shocks etc., The paper analyzes that there are wide variations in the data sets and their statistical and probabilistic distribution functions with respect to these variables. Hence, it may not be possible to assign systematic economic relationships and inter-linkages among the parameters/ economic variables, which if systematic relationships could have been established, would have led to achieving the SDGs among the macro-variables for the various economies thereby leading to achieving the target set by UN by the turn of 2030.

Keywords: *Sustainable Development Goals, Sustainable 2030 Agenda, SIDS, International Climate, Environmental Funds, Social Protection, Development Financing*

* **U. Sarangi** is an officer in Government of India and can be reached at: usarangi68@gmail.com

Introduction

Major international conferences and summits on financing for development, sustainable development, and climate change have defined a new sustainable development agenda for the next 15 years. At all levels, from global to local, the focus would be on implementing this ambitious agenda of Global Sustainable Development adopted by the UN. The mandate emerges from the Rio+20 Conference to contribute to strengthening the science-policy interface for sustainable development in the context of the high-level political forum on sustainable development (HLPF). Given the adoption of the 2030 Agenda for Sustainable Development with its sustainable development goals (SDGs), it adopts the SDGs as its scope. The endeavour is to present a range of scientific perspectives and to be policy-relevant but not policy-prescriptive. It explores possible approaches and vantage points from which to examine the science-policy interface, as well as scientific approaches that can inform policies building upon integration and inter-linkages across sustainable development goals, sectors, and issues. The SDGs focus on 'ensuring that no one is left behind'. The paper aims to bring together information and cutting-edge knowledge from a wide range of sustainability science disciplines across all regions of the world. The research paper aims to provide a reference frame for exploring the implications of the principle of "leaving no one behind" for the operationalization of the SDGs from a science-policy perspective. The paper presents and showcases how those left behind are defined by different disciplines and development practitioners. It points to existing mechanisms for targeting and reviews of the effectiveness of development interventions in targeting and reaching those left behind, and existing scientific reviews of how closely aligned they are with the objective of leaving no one behind and with the aspiration to reach the furthest behind first.

The paper examines inter-linkages between infrastructure, inequality and resilience. Based on a consultation of scientists from different disciplines, it highlights important channels of interconnection among these areas and distils the results of scientific analyses of the synergies and trade-offs among them. The paper also aims to strengthen science-policy interface by showing policymakers how key inter-linkages are analyzed by the scientific community, while providing the scientific community with some key policy questions and highlighting areas that may need further research. The paper provides an overview of perspectives on technology and the sustainable development goals. It aims to show-case promising actions and policy elements for fully leveraging technology for the achievement of the SDGs, also paying attention to the imperative to leave no one behind. It provides an overview of a range of technologies that contributing scientists identified as the most crucial in the implementation of the SDGs from now to 2030. The paper focuses on institutions as essential components and enablers of inclusive societies. The paper looks at these institutions both in terms of how inclusive they are, and how important they are in supporting inclusive outcomes. The HLPF is mandated to ensure appropriate consideration of new and emerging sustainable development challenges. The paper provides an overview of existing approaches and processes to identify emerging issues for sustainable development. It introduces

potential guiding criteria that could be used among a multitude of emerging issues identified by different processes. The paper also presents the main insights from an expert consultation process whose aim was to test the methodology proposed for identification of emerging issues and examine how best these issues could be brought to the attention of policy-makers. The objective of achieving SDGs is to ensure that no one is left behind for Sustainable Development and its implementation. It emphasizes that goals and targets should be met for all nations and people and for all segments of society; and highlights the endeavour to reach the furthest behind first. As such, the pledge to leave no one behind relates to the Agenda in its entirety.

Leaving no One Behind, Poverty, Inclusiveness, Equality and SDGs

The pledge to leave no one behind relates closely to three important dimensions of the 2030 Agenda: poverty, inclusiveness and inequality. Poverty in its various dimensions remains at the center of the New Agenda, as it used to be at the center of the Millennium Development Goals (MDGs) and was identified as one of the three over arching objectives of sustainable development. In the eyes of the lay person, poverty is an obvious way to identify those left behind. Poverty measures have also commonly been used to identify those left behind in development practice. Inclusiveness (social, economic, political and cultural) refers to the notion of empowerment and the principle of non-discrimination. It refers to the need to include everyone in societal processes, and conveys the notion that people should not only be allowed to thrive, but should have a voice and effective opportunities to shape the course of development. SDG 5, SDG 10 and SDG 16, inter alia, have very strong connections to inclusiveness and empowerment. The cross-cutting commitment to disaggregate data to monitor the SDGs also reflects the notion of inclusiveness. The concept of equality or inequality is also prominent in the 2030 Agenda. It has a standalone goal, SDG 10, which aims to reduce inequalities within and among countries, and is also directly reflected in goals and targets in the 2030 SDG Agenda, including in the goals for health, education, gender and others. At the national level, targets explicitly aiming at 'leaving no one behind' are multiple. Many targets aim to reduce inequalities of outcome. This includes: ensuring universal and equal access to basic services, ensuring access to food for all, and end malnutrition, achieving and sustaining income growth of the bottom 40 per cent of the population at a rate higher than the national average and doubling agricultural productivity of small-scale food producers. Targets that detail measures in support of these objectives include putting in place social protection systems and policies, building the resilience of the poor and vulnerable, access to employment and expanding infrastructure with a focus on affordable and equitable access for all. Other targets focus on ending discrimination which includes empowering and promoting the social, economic and political inclusion of all, ending all forms of discrimination against women and girls, eliminating violence against women and girls, ending abuse, exploitation, trafficking and all forms of violence against and torture of children, recognizing unpaid care and domestic work, equal access to technical, vocational and tertiary education and equal pay for work of equal value. Targets that detail measures

in support of these include eliminating discriminatory laws, policies and practices and promoting and enforcing appropriate legislation, policies and action in this regard, promoting the rule of law and ensure equal access to justice for all, protecting fundamental freedom, eradicating forced labour, including the worst forms of child labour and human trafficking, protecting labour rights and providing legal identity for all including birth registration.

National Level Efforts Undertaken for Development of International Community

The following efforts have been undertaken at the National Level for the development of the International Community to achieve SDG implementation and sustainable development viz;

- Efforts are underway on many levels to develop and strengthen financing frameworks to support SDG implementation and sustainable development.
- There are calls for national strategies and plans to guide implementation efforts in almost all action areas, including for example medium-term revenue strategies, financial inclusion strategies and infrastructure plans, development cooperation strategies, science, technology and innovation strategies and many others.
- Recommendation of the Task Force to ultimately bring together into a cohesive framework.
- In each case, stakeholders with diverse interests need to arrive at a common understanding, priorities have to be set within budget constraints and technically complex policy issues have to be tackled, often despite limited capacities.
- As challenges invariably differ by country contexts and evolve over time, these strategies also have to be country-specific and responsive to changing circumstances.
- Finally, they must be coherent with the broader overall sustainable development strategy. Integrated national financing frameworks that take into consideration all financing sources and policies, can provide this coherence.
- The Addis Agenda that “cohesive nationally owned sustainable development strategies, supported by integrated national financing frameworks need to be followed for SDG implementation and sustainable development.
- These strategies and frameworks also serve as guideposts for national priorities and SDG-related opportunities to investors and development partners. Developing and implementing them is one of the central challenges that countries face as they embark on achieving the SDGs.

Though the task is complex, UNDP has undertaken Development Finance Assessments that comprehensively scan a country’s financing landscape both flows and policies and this methodology is currently being refined by UN. Such assessments can be a

baseline for integrated national financing frameworks. Work is also ongoing on many of the action area-specific plans and strategies, including for example on financial market development and how to incentivize long-term investment, alignment with sustainability and inclusiveness. In the upcoming year i.e. 2017/18 work cycle, the Task Force members would continue analytical work in this area, with a view to share emerging lessons and support Member States' efforts to strengthen these frameworks.

Success of the 2030 Agenda will rely on changing the current growth dynamic. International cooperation that supports policies to increase public and private investment in sustainable development and generate employment, while protecting the vulnerable against crises and shocks, would help achieve the SDGs while stimulating global growth and reducing the risk of future crises thereby creating a virtuous cycle.

Financing Investment and Social Protection

The Addis Agenda emphasizes the need to increase long-term investments, including in infrastructure, where investment needs are largest. It explores when and how public and private investments and blended finance can be mobilized for quality investments aligned with sustainable development, noting the role of development banks and specific challenges in the least developed countries (LDCs). Long-term and high quality investments will sustainably increase productivity and economic growth and enhance households' incomes and resilience to shocks. However, measures to directly ameliorate the living conditions of the poor are also needed, particularly in light of their vulnerability to economic downturns, natural disasters and humanitarian crises. National, regional and multilateral development banks can play an important role in this regard, by channeling savings into development investments, by mobilizing private capital for specific projects, by improving capacity and by promoting best practices aligned with sustainable development.

International Trade as an Engine for Development

International trade is an engine for inclusive economic growth and poverty reduction, and is a means of implementation for the sustainable development goals. It has been a significant source of public and private finance in developing countries. The decades before the 2008 global financial and economic financial crisis saw significant expansion in world trade. During this period, rapid trade growth contributed to a steady improvement in many countries' income generating capacity, which helped reduce extreme poverty. More recently, however, trade growth has slowed significantly. Faced with the current challenging scenario in international trade, the trade-related commitments in the Addis Agenda which include measures to strengthen the multilateral trading system, facilitate international trade, and promote policy coherence in trade take on new importance. It is important to recognize that trade has distributional effects. To contribute to the Sustainable Development Goals (SDGs), trade must become more inclusive and beneficial to all, and create wealth and decent jobs, especially for the poor. Governments should work together to resist inward-looking and protectionist pressures, and to ensure that the benefits of trade are spread more widely and

equitably. International institutions should work with Governments to address any distributional effects of international trade and trade agreements and promote world trade growth that is consistent with the SDGs. Increased uncertainty in world trade disproportionately harms LDCs and small economies. National Governments should work towards improving market access conditions for the exports of LDCs, LLDCs and SIDS by reducing the trade costs facing them and simplifying and harmonizing preferential rules of origin. Governments should reduce the potential for regulatory measures in the areas of food, health, environment, and labour policies to inadvertently act as non-tariff barriers to exports from developing countries. The United Nations development system is moving to implement a more coherent approach aligned with sustainable development, as are other regional and global organizations, though efforts are more advanced in some institutions than others. All regional and global organizations, especially those with norm-setting functions, should continue efforts to align their strategies, policies, and practices with the Sustainable Development Goals. Finally, governance of global systems should reflect changes in the global economy and be responsive to the risks faced in all parts of the world. The Member States should commit to increasing the voice of developing countries in international economic-decision making and norm-setting processes and other main international regulatory standard-setting bodies. The existing regular reviews of governance at the World Bank and IMF are meant to address this. Other international organizations are also implementing reforms, though progress is uneven. Periodic processes to examine governance structures at global and regional organizations, with the goal of strengthening the voice of developing countries, would help meet commitments.

Science, Technology, Innovation and Capacity Building

Technology and innovation are at the heart of economic, social and environmental development. Over the past several decades there has been important progress in access to many technologies, particularly in information and communication technology. Access remains uneven within and between countries, with the greatest growth in technology investment occurring mainly in developed regions and select developing countries. Substantial divides in access rates to certain technologies, for example the internet, persist between men and women as well as between urban and rural areas. Knowledge and technology transfer from developed to developing countries is a necessary part of ensuring access to technology, since many technologies are initially developed in industrialized countries. Technology transfer involves more than the importation of hardware. It involves the complex process of sharing knowledge and adapting technologies to meet local conditions. The STI performance of a country, as well as its economic and social impact, are affected by the quality and level of interactions and flows of knowledge between agents in the innovation system such as firms, universities, research centers, public agencies and intermediate organizations. These interactions are enabled by infrastructure, market forces and public policies. The systemic nature of the innovation process underlines the need to incorporate scientific and technological knowledge into national development strategies and plans

in order to make effective use of innovation. Capacity building is an integral part of the global partnership for sustainable development.

Preamble to Sustainable Development Goals 2030 Agenda

The preamble to the 2030 Agenda describes the areas of critical importance for humanity and the planet in the coming 15 years as:

- People to end poverty and hunger and to ensure that all human beings can fulfill their potential in dignity and equality and in a healthy environment;
- Planet to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations;
- Prosperity to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature;
- Peace to foster peaceful, just and inclusive societies which are free from fear and violence (there can be no sustainable development without peace and no peace without sustainable development);
- Partnership to mobilize the means required to implement the SDG through a revitalized 'Global Partnership for Sustainable Development', based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

Sustainable Development Goals (SDGs) and Their Indicators

Goal 1, Targets and Indicators

- End poverty in all its forms everywhere
- By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day
- Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)
- Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
- Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable

- By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
- Direct economic loss attributed to disasters in relation to global gross domestic product (GDP)

Goal 2, Targets and Indicators

- End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

Prevalence of Undernourishment

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age

Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities

Proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction

Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries

The agriculture orientation index for government expenditures

Total official flows (official development assistance plus other official flows) to the agriculture sector

Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

Agricultural export subsidies

Goal 3, Targets and Indicators

- Ensure healthy lives and promote well-being for all at all ages
- By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births
- Maternal mortality ratio
- Proportion of births attended by skilled health personnel
- By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births
- Under-five mortality rate
- Neonatal mortality rate
- By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
- Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations
- Tuberculosis incidence per 100,000 population
- Malaria incidence per 1,000 population
- Number of people requiring interventions against neglected tropical diseases
- By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being
- Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease
- Suicide mortality rate
- Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
- Harmful use of alcohol, defined according to the national context as alcohol per

capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol

- By 2020, halve the number of global deaths and injuries from road traffic accidents
- Death rate due to road traffic injuries
- By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes
- Proportion of women of reproductive age (aged 15-49 years) who have their need for family planning satisfied with modern methods
- Adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group
- By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
- Mortality rate attributed to household and ambient air pollution
- Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
- Mortality rate attributed to unintentional poisonings
- Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all
- Total net official development assistance to medical research and basic health sectors

Goal 4, Targets and Indicators

- Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education
- Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex
- Participation rate in organized learning (one year before the official primary entry age), by sex

- By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
- Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated
- By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
- Volume of official development assistance flows for scholarships by sector and type of study

Goal 5, Targets and Indicators

- By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States
- Proportion of teachers in: (a) pre-primary; (b) primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country
- Achieve gender equality and empower all women and girls
- Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
- Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age
- Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation
- Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18
- Proportion of girls and women aged 15-49 years who have undergone female genital mutilation/cutting, by age
- Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
- Proportion of seats held by (a) women in national parliaments and (b) local governments

- Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences
- Proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care

Goal 6, Targets and Indicators

- Ensure availability and sustainable management of water and sanitation for all
- By 2030, achieve universal and equitable access to safe and affordable drinking water for all
- Proportion of population using safely managed drinking water services
- By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
- Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water
- By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
- Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
- By 2030, implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate
- Degree of integrated water resources management implementation (0-100)
- By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
- Amount of water and sanitation-related official development assistance that is part of a government-coordinated spending plan
- Support and strengthen the participation of local communities in improving water and sanitation management
- Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management

Goal 7, Targets and Indicators

- Ensure access to affordable, reliable, sustainable and modern energy for all
- By 2030, ensure universal access to affordable, reliable and modern energy services
- Proportion of population with access to electricity
- Proportion of population with primary reliance on clean fuels and technology
- By 2030, increase substantially the share of renewable energy in the global energy mix
- Renewable energy share in the total final energy consumption
- By 2030, double the global rate of improvement in energy efficiency
- Energy intensity measured in terms of primary energy and gross domestic product (GDP)

Goal 8, Targets and Indicators

- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all Total
- Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries
- Annual growth rate of real GDP per capita
- Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour intensive sectors
- Annual growth rate of real GDP per employed person
- By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
- Unemployment rate, by sex, age and persons with disabilities
- Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms
- Proportion and number of children aged 5-17 years engaged in child labour, by sex and age
- Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all

- Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider
- Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-related Technical Assistance to Least Developed Countries.
- Aid for trade commitments and disbursements

Goal 9, Targets and Indicators

- Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all Passenger and freight volumes, by mode of transport
- Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries
- Manufacturing value added as a proportion of GDP and per capita
- By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
- CO_2 emission per unit of value added
- Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending
- Research and development (R&D) expenditure as a proportion of GDP
- Researchers (in full-time equivalent) per million inhabitants
- Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States
- Total official international support (official development assistance plus other official flows) to infrastructure
- Significantly increase access to information and communications technology and

strive to provide universal and affordable access to the Internet in least developed countries by 2020

- Proportion of population covered by a mobile network, by technology

Goal 10, Targets and Indicators

- Reduce inequality within and among countries
- Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions
- Proportion of members and voting rights of developing countries in international organizations
- Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements
- Proportion of tariff lines applied to imports from least developed countries and developing countries with zero-tariff
- Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes
- Total resource flows for development, by recipient and donor countries and type of flow (e.g. official development assistance, foreign direct investment and other flows)
- By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent
- Remittance costs as a proportion of the amount remitted

Goal 11, Targets and Indicators

- Make cities and human settlements inclusive, safe, resilient and sustainable
- By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums
- Proportion of urban population living in slums, informal settlements or inadequate housing
- By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
- Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities

- Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)

Goal 12, Targets and Indicators

- Ensure sustainable consumption and production patterns
- By 2030, achieve the sustainable management and efficient use of natural resources
- Material footprint, material footprint per capita, and material footprint per GDP
- Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
- By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
- Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement

Goal 13, Targets and Indicators

- Take urgent action to combat climate change and its impacts
- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030

Goal 14, Targets and Indicators

- Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics
- Proportion of fish stocks within biologically sustainable levels
- By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information
- Coverage of protected areas in relation to marine areas

Goal 15, Targets and Indicators

- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements
- Forest area as a proportion of total land area
- Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
- The following tables reflect the proportion of population below the international poverty line of US$1.90 per day, both sexes, prevalence of undernourishment, Proportion of coastal and marine areas covered by protected areas and Manufacturing value added share in GDP at constant 2010 United States dollars of various countries/regions in the world. Certain statistical tools have been used such as Gamma Distribution, Normal Distribution and Pearson Correlation Coefficients to test the various variables/parameters/indicators pertaining to various countries/ regions in the world for the period from 1999 to 2016.

Table-1: Proportion of Population Below the International Poverty Line of US$1.90 Per Day, Both Sexes

(Percentage)

Regions	1999	2013
World	28	10.7
Sub-Saharan Africa	57.7	42.3
Northern Africa and Western Asia	9.6	2.6
Central and Southern Asia	37.5	14.4
Eastern and South-Eastern Asia	34.7	3.2
Latin America and the Caribbean	13.9	5.4
Australia and New Zealand	1.3	0.7
Oceania (excluding Australia and New Zealand)	44.3	27.2
Europe and Northern America	1.8	0.6

Source: *World Development Indicators Database, World Bank.*

Gamma Dist 9.55E-05 0.4181553

Returns the gamma distribution. One can use this function to study variables that may have a skewed distribution. The gamma distribution is commonly used in queuing analysis.

GAMMADIST (**x**, **Alpha**, **Beta**, **Cumulative**)

X is the value at which you want to evaluate the distribution.

Alpha is a parameter to the distribution.

Beta is a parameter to the distribution. If beta = 1, GAMMADIST returns the standard gamma distribution.

Cumulative is a logical value that determines the form of the function. If cumulative is TRUE,

GAMMADIST returns the cumulative distribution function; if FALSE, it returns the probability density function.

The equation for the gamma probability density function is:

$$f(x;\alpha,\beta) = \frac{1}{\beta^{\alpha}\Gamma(\alpha)} x^{\alpha-1} e^{-\frac{x}{\beta}}$$

$$f(x;\alpha) = \frac{x^{\alpha-1} e^{-x}}{\Gamma(\alpha)}$$

The standard gamma probability density function is:

When alpha = 1, GAMMADIST returns the exponential distribution with:

$$\lambda = \frac{1}{\beta}$$

Table-2: Prevalence of Undernourishment

(Percentage)

Regions	2000-02	2005-07	2010-12	2014-16a
World	14.9	14.3	11.8	10.8
Sub-Saharan Africa	30	26.5	24.1	23
Northern Africa and Western Asia	7.1	6.8	6	5.5
Northern Africa	<5.0	<5.0	6.2	5.8
Western Asia	8.9	8.4	8.1	7.6
Central and Southern Asia	18.3	19.8	15.9	15.4
Central Asia	14.5	12.9	9.8	7.7
Southern Asia	18.5	20.1	16.1	15.7
Eastern and South-Eastern Asia	16.8	15.3	11.5	9.3
Eastern Asia	14.9	14.3	11.3	9.2
South-Eastern Asia	22.3	18.3	12.1	9.6
Latin America and the Caribbean	11.4	8.4	6.4	5.5
Oceania	16.5	15.4	13.5	14.2

Australia and New Zealand	<5.0	<5.0	<5.0	<5.0
Oceania (excluding Australia and New Zealand)	16.5	15.4	13.5	14.2
Europe and Northern America	<5.0	<5.0	<5.0	<5.0
Europe	<5.0	<5.0	<5.0	<5.0
Northern America	<5.0	<5.0	<5.0	<5.0
Landlocked developing countries	33.6	28.1	24.1	22.7
Least developed countries	36.5	31.4	27.7	26.5
Small island developing States	22.5	21.3	18.2	18

Source: *Food and Agriculture Organisation of United Nations (FAO).*

a Projections.

GAMMA Dist 5.36825E-23 2.91619E-32 3.24109E-28 3.66796E-27

Returns the gamma distribution. You can use this function to study variables that may have a skewed distribution.

The gamma distribution is commonly used in queuing analysis. From the table it is observed that the various regions/countries for the variable(s) for the period 2000-02, 2005-07, 2010-12 & 2014-16 show skewed gamma distribution as it varies from range 2.91619E-32 to 5.36825E-23.

GAMMADIST(**x**, **Alpha**, **Beta**, **Cumulative**)

X is the value at which you want to evaluate the distribution.

Alpha is a parameter to the distribution.

Beta is a parameter to the distribution. If beta = 1, GAMMADIST returns the standard gamma distribution.

Cumulative is a logical value that determines the form of the function. If cumulative is TRUE, GAMMADIST returns the cumulative distribution function; if FALSE, it returns the probability density function.

The equation for the gamma probability density function is:

$$f(x;\alpha,\beta) = \frac{1}{\beta^{\alpha}\Gamma(\alpha)} x^{\alpha-1} e^{-\frac{x}{\beta}}$$

The standard gamma probability density function is:

$$f(x;\alpha) = \frac{x^{\alpha-1} e^{-x}}{\Gamma(\alpha)}$$

When alpha = 1, GAMMADIST returns the exponential distribution with:

$$\lambda = \frac{1}{\beta}$$

Table-3: Proportion of Coastal and Marine Areas Covered by Protected Areas

(Percentage)

Regions	2000	2005	2010	2016
World	1.72	2.89	7.44	12.74
Sub-Saharan Africa	0.2	0.25	4.75	8.96
Northern Africa and Western Asia	0.5	0.6	1.03	1.11
Central and Southern Asia	0.28	0.11	0.12	0.13
Eastern and South-Eastern Asia	1.97	2.5	3	3.56
Latin America and the Caribbean	1.45	1.66	3.17	9.64
Australia and New Zealand	2	6.12	16.56	34.3
Oceania (excluding Australia and New Zealand)	0.09	0.15	6.79	15.58
Europe and Northern America	4.19	6.99	12.57	13.43
Landlocked developing countries	1.38	1.49	1.81	1.81
Least developed countries	0.23	0.26	3.58	3.73
Small island developing States	0.19	0.26	2.42	7.68

Source: *UNEP-WCMC (2017), Protected Planet: The World Database on Protected Areas (WDPA)*

Mean 1.18 1.94 5.27 9.39

SD 1.208472615 2.3610745 4.90877693 9.37756846

Normal Dist **0.5656 0.1648 0.3653 0.0337**

Returns the normal distribution for the specified mean and standard deviation.

This function has a very wide range of applications in statistics, including hypothesis testing. From the table it is observed that the normal distribution function varies between 3 percent to 50 percent in range.

This indicates wide variability among the variables across various regions in the world.

NORMDIST(**x**, **Mean**, **Standard dev**, **Cumulative**)

X is the value for which you want the distribution.

Mean is the arithmetic mean of the distribution.

Standard_dev is the standard deviation of the distribution.

Cumulative is a logical value that determines the form of the function. If cumulative is TRUE,

NORMDIST returns the cumulative distribution function; if FALSE, it returns the probability mass function.

The equation for the normal density function (cumulative = FALSE) is:

$$f(x,\mu,\sigma) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

When cumulative = TRUE, the formula is the integral from negative infinity to x of the given formula.

Table-4: Manufacturing Value Added Share in GDP at Constant 2010 United States Dollars

(Percentage)

Regions	2000	2005	2010	2016
World	15.2	15.3	15.8	16.2
Sub-Saharan Africa	11.3	10.2	9.2	9.9
Northern Africa and Western Asia	11	11	11.3	11.6
Central and Southern Asia	14	14.6	15.5	16
Southern Asia	13.6	14.4	15.5	16.1
Eastern and South-Eastern Asia	20.9	22.4	25.3	26.2
South-Eastern Asia	23.7	24	23.1	22.6
Latin America and the Caribbean	16.1	15.8	14.4	13
Australia and New Zealand	9.8	9	7.8	6.9
Oceania (excluding Australia and New Zealand)	9	9.1	8.2	7.8
Europe and Northern America	13.8	13.4	13	12.7
Landlocked developing countries	13.8	12.6	11.3	10.9
Least developed countries	10.5	10.2	10.1	11.4
Small island developing States	22.6	22.3	21	19.1

Source: *UNIDO MVA 2017 Database, United Nations Industrial Development Organisation (UNIDO).*

Pearson Corr Coeff 0.990976

Returns the Pearson product moment correlation coefficient, r, a dimensionless index that ranges from -1.0 to 1.0 inclusive and reflects the extent of a linear relationship between two data sets. From the table it is observed that there exists a linear correlation coefficient between the variables for the various regions/countries for the above period (i.e. 2000, 2005, 2010 & 2016).

The formula for the Pearson product moment correlation coefficient, r, is:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

where x and y are the sample means AVERAGE(array1) and AVERAGE(array2).

Concluding Observations

The research paper studies the relationships and inter-linkages existing between international trade and Sustainable Development Goals(SDGs) adopted by the United Nations, of various economies. It is observed that in order to fully implement the SDGs goals and their indicators adopted by the UN, least developing countries and particularly the small island developing states(SIDS) need to adjust their economies to adapt to achieving the SDGs by the turn of 2030 as slated by the UN. The paper also dwells into the issues of poverty, inclusiveness and equality, implementation of Addis Ababa Action Agenda on SDGs, National Level Efforts undertaken for Development of

International Community, discusses the recommendations of the 2017 Task Force on SDGs, issues on financing investment and social protection, domestic and international finance, international development cooperation, role of international trade in achieving SDGs and the 2030 Agenda, SDGs and their indicators, financing for development and small island developing states, SIDS and economic growth, SIDS and Human Development, SIDS, international climate and environmental funds & SIDS and remittances and SIDS and Financing for Shocks. Certain statistical tools such as Gamma Distribution, Normal Distribution and Pearson Correlation Coefficient have been estimated to analyze the economic and statistical relationships existing among the variables like SDGs & SIDS and their indicators such as human development, financing for development, environmental funds, financing for shocks etc., The paper analyzes that there are wide variations in the data sets and their statistical and probabilistic distribution functions with respect to these variables. Hence, it may not be possible to assign systematic economic and statistical relationships and inter-linkages among the parameters, which if systematic relationships could have been established, would have led to achieving the SDGs among the macro-variables for the various economies thereby leading to achieving the goals on SDGs by the turn of 2030, the target year set by UN. Sustainable Development and the Sustainable Development Goals (SDGs) suggest that countries achieve sustainable development in all three dimensions, that is, economic, social and environmental, simultaneously. In this context, international trade is expected to play its role as a means of implementation for the achievement of the SDGs. "Means of implementation" include factors that facilitate countries' progress towards the achievement of sustainable development, such as public and private financial resources, capacity building, and transfer of environmentally sound technologies. In practice, however, it remains a considerable challenge to trade policymakers to map out inter-linkages between trade policy and sustainable development, let alone to ensure that trade policy outcome positively influence sustainable development. In this increasingly globalised world, achieving the SDGs as universal agenda requires policy coherence at all (national, regional and global) levels, where trade policy and its policy and institutional interfaces with all the SDGs is one part of the jigsaw.

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BOOK REVIEW

How Will Capitalism End

Author: Wolfgang Streeck **Reviewer: S Sai Rohit***

The book "How Will Capitalism End" by Wolfgang Streeck is one of many of those books that have dwelt at length on the theme of capitalism. The book on capitalism have either supported the ideology of capitalism or criticized it.

The title of the book suggests that there is an obvious end to capitalism. The only question is about, how will it end? will it create a revolution? Whether it would be peaceful or violent?

This book is well-timed and well-written by economist and liberal analyst Wolfgang Streeck. It goes into underlying assumption that capitalism and post globalized democracy will not co-exist, because of the global financial crises the author claims that marriage between capitalism and democracy has ended with a heavy divorce.

"Capitalism has always been improbable social formation full of conflicts and contradiction therefore permanently unstable and in flux and highly conditional on historically contingent and precarious supportive as well as constraining events and institution" says Wolfgang Streeck in his introductory sentence.

The book consists of eleven chapters, which have appeared as articles in various books and journals. The author mentions that the chapters have sprung from his continuing attempt to understand the implications of the financial crisis of 2008. "The thrust of the book is to inspire thinking on how capitalist system might in a not-too-distant future come to an end, even without a successor regime in sight, as a consequence of its internal contradictions unfolding" says the author.

The author's style of writing is very lucid, shorn of jargons and complicated language.

The author gives a short recapitulation of the history of modern capitalism wherein it began with a revolutionary labor movement, international wars, private property, invisible hand of market forces followed by western liberal capitalism succeeded by Keynesian state administrated capitalism and then ended with welfare state.

He says that 2008 global financial crisis is the watershed movement in the history of capitalism. We can see the disintegration of capitalism before our eyes. The only thing

* Mr S Sai Rohit is a PGDM student at Institute of Public Enterprise, Hyderabad and he can be reached at: 1701189@ipeindia.org

is there is no alternative to the present regime and we cannot see a successor coming up.

The basic argument is that the capitalist system is divorced from the moral and cultural economic systems which govern each nation and it varies from nation to nation.

At the end of chapter 1 he says that"what is to be expected, on the basis of capitalism recent historical record is a long and painful period of cumulative decay"

There is a conflict between the institution and the social order and it is getting impossible day by day to resolve the issue .The very structure of the institutions are against the moral order

In the Chapter "The Rise of the European Consolidation State" he says that "The institutional restructuring towards a consolidation state abandons democratic principles in several other respects"

In the chapter on "Market and People" he outlines that capitalism breeds social division and insecurity in society. Trade unions power to bargain is disappearing and inequality is increasing, with power being vested with people having money.

He also points out the future of European capitalism wherein he says that "the future is one of growing economic disparities and of increasing political and cultural hostilities between its people". He analyzed the role of technocrats who are ready to undermine democracy for their ability to capture and retain power.

This view is not very different from what is happing today, where Greece has suffered from economic downturn and in Spain the elements of disintegration like Catalonian declaration of independence.

While most of the political analysts couldn't predict the changing environment like Brexit and Trump's election victory, people have been accustomed to status quo that there are indifferent to what's happening in the world. The title of the book suggest that the end of capitalism is inevitable . As a matter of fact any form of system is not permanent with the changing times the revolution is possible. Bureaucracy is the brain child of capitalism; bureaucracy is an instrument of rich to prevent poor from rising.

At the end Wolfgang emphasizes that in order to bring back capitalism in the ambit of democracy there needs to be a De-Globalization of capitalism.

At the end it can be said that this book is a must read for the critics and also the supporters alike.

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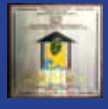

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