

barrel for 2015, IMF recently cut Nigeria's forecast from 7% to 5% for 2015. Their official currency, Naira, has been depreciating and is currently being traded at N208 for every dollar. It has depreciated by almost 16% since June and the government refuses to devalue the currency. Reserves are enough only for the next 6 months as a result. With oil revenue falling, foreign exchange earnings are likely to fall down too. Their current account surplus has been positive since 1970 but, excluding oil, the balance is mostly negative.

Nigeria exports 2 million barrels per day. Nigeria's oil was prized for its low sulphur content and unfortunately, oil discovered in America is also low in sulphur content. As a result price of oil with low sulphur content has fallen more. Nigeria has also lost its entire share of oil exports to the United States.

Election, between President Goodluck Jonathan and General Muhammed Buhari of the opposition APC scheduled for February 14th, are also preventing the government from raising interest rates or devaluing the currency. The dollar reserves, as a result, are dwindling fast. Nigeria is also dealing with its militant Islamist group Boko Haram - which has caused havoc in Africa's most populous country through a wave of bombings, assassinations and abductions - in an

attempt to overthrow the government and establish its rule. They have been dominating the northern region for the past 5 years and recently kidnapped 200 girls in Chibok region in the northern state of Borno, Nigeria's northern region is hence poorer than its southern region. While the southern regions house multi-nationals and a growing middle class, the northern is poverty stricken. Another major economic loss to Nigeria is that agriculture is mostly concentrated in the northern states. Due to the presence of Boko Haram, production is slowing down.

Conclusion

Nigeria's overdependence on oil export revenue is its Achilles heel. Nigeria's economy has been undulating along the fall and rise in oil prices. The economy needs to invest in sectors such as agriculture, which has already been the mainstay of the economy. 35% of the population is employed in agriculture while the sector has a potential to absorb more people. Nigeria has a huge infrastructure deficit and the oil revenues need to be directed to build better roads, highways, factories etc. The country should ease rules for foreign investment by bringing transparency, reducing red tapism and corruption. Nigeria has abundant natural resources known and unknown. The bureaucracy needs to optimize on its wealth.

Impact Evaluation of Spaghetti Bowl Effect on South Asia-East Asia Trade

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Abstract: Trade relations between South Asia and East Asia have seen an upward trend since the start of the millennium. Before 2000, there was only one trade agreement, the Bangkok Agreement, connecting South Asia and East Asia. As per the current data in 2014, the number of operational trade agreements linking the two sub regions has grown to 10. Economists have pointed out that due to their overlapping conditionalities, these proliferating trade agreements are causing trade diversion and thus leading to overall loss of benefit for the trading nations. This phenomenon is referred to as 'spaghetti bowl syndrome'. In order to study its impact, this paper

carries out an econometric analysis (by using gravity model) of the trade flow between a selected group of South Asian and East Asian countries. The results show that the increasing number of trade agreements is indeed negatively affecting the trade relations between South Asia and East Asia.

1. Introduction

As this paper is about the poor trade relations between South Asia and the rest of Asia, particularly East Asia, it is imperative that we briefly delve into the history of economic, political and cultural relations between the two sub-regions (East Asia and South Asia).

Rana P. (2012) reveals that up till 18th century, China and India accounted for around half of the world's Gross Domestic Product (GDP).⁶⁷ He also points out that during that time, Asia was quite well integrated, with Northern Silk Road and Southern Maritime Highway providing major impetus for intra-Asian trade.

Then industrialization followed, and the balance of power shifted to the West. A period of isolation dawned upon South Asia, and its strong historical linkage with East Asia plummeted.

1990s witnessed a shift in the isolation policy of South Asia as India opened up its economy. At the start of the millennium, world saw a new era in South Asia-East Asia relations, which the economists commonly call South Asia's 'looking east' policy and East Asia's 'looking west' policy. Both the regions once again came closer. For example, India's growing attempts to link itself with East Asia eventually led to the signing of ASEAN-India free trade agreement in 2010.

Political scientists term these growing attempts at linking the two sub regions as the Renaissance of Asia. Two events, though not very important per se, holds considerable symbolic value in the 'Re-birth of Asia'. First, the reopening of Nalanda University after 800 years.⁶⁸ Second, on the wish of the then Indian Prime Minister Manmohan Singh, a commemorative ship expedition was carried out which went through the historical routes, which used to link the Indian subcontinent (South Asia) to the 'Maritime Asia' (East Asia).

Knowing trade statistics is important to comment upon where the economic relations between the two sub regions stand today. Trade data collected from IMF's online database, Direction of Trade Statistics (DOTS), can help us in this.

In 2013, South Asian exports to East Asia stood at \$ 67,914 million as compared to \$7441 million in 2000 and \$3955 million in 1990. We can witness a considerable trade boom in the lastdecade or so, with annual percentage growth of around 15%. Imports from East Asia to South Asia were valued at \$167,327 million in 2013, which grew from \$8,000 million in 1990.

However, these huge jumps should not be considered,

as a sign of victory because the total share of South Asian trade with East Asia has almost remained stagnant at around 22%. On the other hand, South Asia only constitutes around 3% of total East Asian trade. Thus, the statistics are not encouraging in real sense.

Some economists believe that the reason why trade integration between the two sub regions has not grown at a pace at which it should have, is the proliferation of Free Trade Agreements (FTAs) between them. Number of FTAs between East Asian and South Asian countries has gone up dramatically over the last decade or so. The mushroom growth of FTAs leading to slowing down of trade is known as 'spaghetti bowl syndrome'

This paper studies the impact of South Asia-East Asia spaghetti bowl using gravity model of trade. The regression results show that spaghetti bowl does exist and has indeed led to dampening of trade relations between the two sub regions.

2. Literature review

Before moving on to theoretically understanding the negative effects of spaghetti bowl, it is important to recognize the factors that drive the demand for such trade agreements.

The reasons behind growing number of FTAs are many. In Asian context, Jayant Menon (2009) identifies some specific reasons of proliferating BTAs (bilateral trade agreements). Generally, disillusionment from the liberalization at the worldwide level creates demand for small scale trade agreements.

In some cases, already created trade agreements gives impetus to the creation of more agreements. Talking about Market Restoring BTAs, Menon (2009) writes, "Countries that did not belong to a Preferential Trade Agreement (PTA) felt compelled to form or join one in order to secure regional markets, or compensate for markets in other regions that were becoming more isolated and less accessible as a result of preferential arrangements."

Furthermore, it is apparent that arriving at a conclusion is easier with less number of negotiators involved. Thus, a number of small PTAs emerge with members overlapping in them.

Some PTAs are formed to strengthen relations between members of a bigger PTA. This strengthening might not be possible in a larger PTA where a country may feel comfortable with some members but not with others due to political and/or economic reasons. Malaysia-India BTA can be one such example where both countries are also part of the larger India-ASEAN agreement.

Rai (2010) points out that the Asian financial crisis of 1997 further exacerbated the FTA creation amongst Asian countries as they came to realize that increased regional cooperation is necessary to sustain economic growth.

There is an interesting debate about whether this growing trend of trade agreements actually benefits the trade flow between the signing countries or not.

Bhagwati (1995) coined the term ‘ spaghetti bowl’ for the first time; he explained that the growing number of preferential trade agreements (PTAs) are just like spaghettis that tangle up with each other, restricting trade instead of facilitating it.

FTA proliferation can deflect trade through a number of routes.

1. Members of Free Trade Agreement (FTA) reduce tariff amongst them, but maintain their own external tariff on imports from non-FTA members. According to Bhagwati (1995), one of the ways through which increasing FTAs leads to reduction in trade is the complexity caused by Rules of Origin (ROOs). ROOs determine the country of origin of a traded product. This is important in order to identify what tariff rates are to be applied. These rules are designed to prevent goods from being imported into the FTA member country with the lowest external tariff and then transshipped to the country with higher external tariffs.

Because of globalization and other factors, classifying products according to the country of origin is near to impossible, as a product may have passed through tens or more of countries before reaching a final destination for assembly. ROOs multiply under proliferating FTAs because different members have different external tariffs. What happens is that countries avoid taking advantage of the most efficient supply network because of the fear of losing the ‘ origin’ status due to

overlapping ROOs. Thus, spaghetti bowl can divert trade through Rules of Origin problem.

2. Bhagwati (1995) also argues that apparent trade creating impact of FTAs can often turn to be trade diverting. He writes, “Thus, if the US crowds Mexico in an industry, potentially creating trade in the Vinerian sense, Mexico can, and probably will, start anti-dumping action against nonmember suppliers and seek to accommodate thus both its own and the US firms at the expense of nonmember suppliers, transmuting trade creation into trade diversion.”

3. Rana and Dowling (2009) add that many Asian countries have limited infrastructure for carving out trade policy, and thus the proliferation of free trade agreements cause huge financial and administrative burden on such nations, often outweighing the trade creating benefits of any such agreements.

Most of the studies on spaghetti bowl are theoretical in nature. There have been very few attempts to empirically study this phenomenon, especially in Asian context.

Elina (2011) tried to test the phenomenon of spaghetti bowl for African countries econometrically using the gravity model of trade. The regression results conclude that the growing number of trade agreements negatively affects extra- African trade; however intra- African trade is not.

This paper uses a similar econometric model.

3. Econometric Analysis

This section deals with the econometric methodology applied in assessing the impact of spaghetti bowl in South Asia-East Asia context.

3.1. Using Gravity Model Of Trade

Our model uses data for the following selected countries. Wherever this paper refers to the ‘ initially selected countries’ , it is referring to the following eight South Asian and twelve East Asian countries.

Eight countries from South Asia are selected⁶⁹, namely

1. THE PEOPLE’S REPUBLIC OF BANGLADESH

2. BHUTAN
3. THE REPUBLIC OF INDIA
4. THE REPUBLIC OF MALDIVES
5. NEPAL
6. THE ISLAMIC REPUBLIC OF PAKISTAN
7. DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
8. AFGHANISTAN.

Twelve countries from East Asia are selected⁷⁰, namely

1. SOCIALIST REPUBLIC OF VIETNAM
2. KINGDOM OF THAILAND
3. REPUBLIC OF SINGAPORE
4. REPUBLIC OF THE PHILIPPINES
5. UNION OF MYANMAR
6. MALAYSIA
7. LAO PEOPLE'S DEMOCRATIC REPUBLIC
8. REPUBLIC OF INDONESIA
9. KINGDOM OF CAMBODIA
10. BRUNEI DARUSSALAM
11. CHINA
12. JAPAN

This paper uses the gravity model of trade to assess the impact of spaghetti bowl on the trade volume. The model assumes that trade volume between two countries is positively related to their Gross Domestic Product and negatively related to the geographic distance between them.

In its general form as per academic textbooks, we can write the gravity equation as

$$X_{ij} = (G) (S_i) (M_j) (\emptyset_{ij}), \text{ where}^{71}$$

X_{ij} = Monetary value of exports from country i to country j

S_i = Factors affecting the supply of exports (such as exporter's GDP)

M_j = Factors affecting the demand of imports (such as importer's GDP)

G = Factors affecting which are independent of or

$\emptyset_{ij}$ = Ease with which exporter can access market (such as bilateral distance)

For econometric analysis, the original equation can be transformed as follows

$$\ln X_{ijt} = \beta_1 + \beta_2 \ln GDP_{it} + \beta_3 \ln GDP_{jt} + \beta_4 \ln DIST_{ij} + \epsilon_{ijt}, \text{ where}$$

X_{ijt} = Monetary value of exports from country i to country j at time t

GDP_{jt} = Gross Domestic Product of the exporting country at time t

GDP_{it} = Gross Domestic Product of the importing country at time t

$DIST_{ij}$ = Geographical distance between country j and i

$\beta_1, 2, 3, 4$ = Respective coefficients

ϵ_{ijt} = other factors which affects X_{ijt} at time t

Up till now, there has been no talk of the spaghetti bowl in the gravity model. The spaghetti bowl impact will now be incorporated in the gravity equation by using dummy variables.

First one will be called the 'PTA dummy'. It will take the value '1' if the trading couple (importer and exporter) have signed a trade agreement with each other, and '0' otherwise. Trade agreement can be bilateral (involving only country and country) or plurilateral (country and not being the only members). This dummy will judge the impact of signing a trade agreement on the trade volume between the signatories.

Second dummy variable can be called the 'spaghetti bowl dummy'. In order to capture the impact of proliferating trade agreements, this variable will take value '1' if both of the countries have signed another

trade agreement with a third party, and '0' otherwise. This dummy will not take into account the trade agreement accounted for in the first dummy – the 'PTA dummy'.

To assess the impact of spaghetti bowl, we now introduce a third dummy variable. This one can be called the 'interacted dummy variable', as it is formed by multiplying the values of 'PTA dummy' with the corresponding values of the 'spaghetti bowl dummy'. The interacted dummy variable will help us in answering our research question as it will capture the impact of spaghetti bowl on the original PTA affect.

After introducing these dummy variables, our final regression line now becomes

$$\ln X_{ijt} = \beta_1 + \beta_2 \ln GDP_{it} + \beta_3 \ln GDP_{jt} + \beta_4 \ln DIST_{ij} + \beta_5 PTA + \beta_6 INTER + \epsilon_{ijt},^{72} \text{ where}$$

β_5 = coefficient of the 'PTA dummy' which will measure the trade creating impact of a trade agreement

β_6 = coefficient of the 'interacted dummy variable' which will measure the impact of signing additional trade agreements (spaghetti bowl) on the PTA's trade creating affect

3.2. Data Collection

By looking at the regression equation, it is clear that the following data is required

- Trade flow between each South Asian and each East Asian country
- GDP for all the initially selected countries
- Bilateral distance between each selected South Asian and each selected East Asian country
- Trade agreements linking South Asian and East Asian countries (required for assigning values to dummy variables)

Data on trade flows was collected from World Integrated Trade Solutions (WITS), an online database of The World Bank. Trade of the eight South Asian countries with the twelve East Asian countries was recorded.⁷³ Import statistics were used rather than export data because it is believed to be more carefully reported as countries gain tariff revenue on imports. The trade data was collected over a period of 4 years, from 2008 to 2012. This makes a total observations of 384 (12x8x4).

Gross Domestic Product (GDP) figures were collected from World Development Indicators (WDI), an online database of The World Bank. A total of 80 values were collected (4 year data for twelve East Asian and eight South Asian countries). Note that all figures are in current US dollars.

Air distance between all South Asian and East Asian countries was collected in miles using Google Map statistics.

Each observation in the database can be identified through three unique indicators: importer, exporter, and year.

These separate data records were merged and compiled in one single file in STATA.⁷⁴

1.The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), 2004

<i>South Asia</i>	<i>East Asia</i>
Bhutan	Myanmar
Sri Lanka	Thailand
Bangladesh	
India	
Nepal	

2. Asia Pacific Trade Agreement (APTA), 1976

<i>South Asia</i>	<i>East Asia</i>
Sri Lanka	China
Bangladesh	Lao
India	

3.ASEAN-India Comprehensive Economic Cooperation Agreement (ASEAN-India CECA), 2010

<i>South Asia</i>	<i>East Asia</i>
India	Lao
	Cambodia
	Myanmar
	Singapore
	Malaysia
	Indonesia
	Vietnam
	Thailand
	Brunei
	Philippines

4. India-Singapore Comprehensive Economic Co-operation Agreement (India- Singapore CECA), 2005

<i>South Asia</i>	<i>East Asia</i>
India	Singapore

5. Japan-India Comprehensive Economic Partnership Agreement (Japan-India EPA), 2011

<i>South Asia</i>	<i>East Asia</i>
India	Japan

6. Malaysia-India Comprehensive Economic Cooperation Agreement (Malaysia-India CECA), 2011

<i>South Asia</i>	<i>East Asia</i>
India	Malaysia

7. Malaysia-Pakistan Closer Economic Partnership Agreement (Malaysia-Pakistan CEPA), 2008

<i>South Asia</i>	<i>East Asia</i>
Pakistan	Malaysia

8. People's Republic of China-Pakistan Free Trade Agreement (PRC-Pakistan FTA), 2007

<i>South Asia</i>	<i>East Asia</i>
Pakistan	China

9. Trade Preferential System of the Organization of the Islamic Conference, (TPS- OIC), 2004

<i>South Asia</i>	<i>East Asia</i>
Pakistan	Brunei
Afghanistan	Indonesia
Bangladesh	
Maldives	

10. Preferential Tariff Arrangement - Group of Eight Developing Countries (PTA-D8), 2006

<i>South Asia</i>	<i>East Asia</i>
Pakistan	Malaysia
Bangladesh	Indonesia

Information on Trade Agreements in Asia was taken from an online data base of Asian Development Bank, namely Asia Regional Integration Center (ARIC). This information was then used to assign '0' and '1' values to 'PTA dummy' and the 'spaghetti bowl dummy'.

ARIC data reports that a total of 10 trade agreements are operational between the selected South Asian and East Asian countries.

The trade agreements, with their names and the date of becoming operational are listed on the following pages. It also shows which of the South Asian and East Asian countries are connected through each of these agreements.

List of Trade Agreements (bilateral and plurilateral) operational between the selected South Asian and East Asian countries.⁷⁵

To depict how the codes to the dummy variables have been assigned, let's take the trading couple India and Malaysia. We know that from 2010, both are part of a common trading agreement, the India-ASEAN CECA. This means 'PTA dummy' for India-Malaysia couple would take value of '1' from 2010 and onwards, and '0' before 2010. The 'spaghetti bowl dummy' would take value '1' because both India and Malaysia are part of pacts other than the

ASEAN-India pact. For example Malaysia is part of PTA-D8 and India is signatory to Japan- India EPA. The 'interacted dummy' would equal '1' in this cases as $1 \times 1 = 1$.

3.3. Regression results

The results from the regression analysis are presented and commented upon in this section.

Table below shows the coefficients obtained through running the multiple regression on STATA.

Before explaining each variable and its associated coefficient, it is important to discuss R-square and P-value.

R-square comes out to be 0.688. This means that explanatory variables in our model describe 68.8% of the dependent variable (trade volume).

<i>Variable</i>	<i>OLS Coefficients for Gravity Model</i>
GDP of Exporting Country	1.578***
GDP of Importing Country	0.999***
Bilateral distance between importer and Exporter	-1.953***
PTA dummy	0.614**
Interacted dummy (PTA dummy x spaghetti bowl dummy)	-1.825***
R-Squared	0.688

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

P-value is used to test the overall reliability of the regression model. In our regression, it comes to be very small (0.000). This means that the group of variables (GDP of exporter, GDP of importer, bilateral distance, PTA dummy, and the interacted dummy variable) can be completely relied upon to test the trade volume.

As our model is log linearized, the coefficients of the explanatory variables predict the percentage change in the dependent variable caused by changing the concerned explanatory variable by 1% point.

As expected, the coefficient of the exporting country's GDP is positive and significant. For every 1% increase in exporting country's GDP, the bilateral trade volume increases by 1.57%.

The GDP of the importing country shows the same positive trend with the coefficient value of 0.999. Again, the p-value is 0.000, which means that the coefficient is significant at all levels. For every 1% increase in importing country's GDP, the bilateral trade volume increases by 0.99%.

The distance variable shows a strong negative relation with the trade volume. For every 1% increase in distance between the two trading countries, the bilateral trade volume goes down by 1.953%. Again, the p-value is 0.000, which means that the coefficient is significant at all levels.

The coefficient of 'PTA dummy', which shows the impact of signing a trade agreement between two countries, is positive and significant at 5% significance level (The p-value is 0.048 which is less than 0.05).

The value of the coefficient is 0.614. It is important to note that when PTA dummy switches from 0 to 1, the percentage impact on trade volume is given by

$$100 \times (\exp^{\text{coefficient of PTA dummy} - 1})$$

Thus, by signing a trade agreement, the trade volume between two countries increases by 84.7%.

Now comes the 'interacted dummy', which measures the impact of the spaghetti bowl on the PTA effect. The coefficient of this variable is negative (-1.825) and significant. This means that if both countries in the bilateral couple are engaged in trade agreements with other countries, then it would have a negative impact on the effect of PTA and thus on trade volume. Thus the hypothesis that spaghetti bowl is negatively impacting the trade between South Asian and East Asian countries holds true here.

4. Policy Recommendation

As the result of this paper goes against the increasing trade agreements, we need to cautiously look at the future integration plans of the two sub regions. The list of South Asia-East Asia preferential trade agreements shows us that there was only one agreement, Asia Pacific Trade Agreement, before 2004. In the last decade (2004 to 2014), the operational FTAs have gone up to 10 and there is no stopping. A number of other FTAs in the pipeline. Many have been signed but have not come into effect yet. Considering the current growth trend of FTAs, it seems very likely that these FTAs will be operational soon.⁷⁶

The remedy to deal with the spaghetti bowl is the consolidation of all FTAs into a region wide FTA. In our case, a pan-Asian FTA could work. A quantitative study done by Wignaraja (2014) shows substantial benefits for South Asian countries in particular and the world in general by the formation of an ASEAN+3 – South Asia FTA. Though this agreement does not cover all Asian countries, it serves the purpose of this paper well as it includes all South Asian and nearly all East Asian countries. The study takes 2017 as the baseline year (at constant 2001 dollars). The simulations predict an income gain of 2% of base income for South Asian countries and 2.4% for East Asian countries. However, there are variations in gains amongst the different countries of the two sub regions. For example, India's gains are estimated to be about

2.29% while Pakistan's gain is quite low (0.20%). The world as a whole is expected to gain 0.54% of its baseline income. The study also compares the gains from this FTA with some other proposed FTAs such as ASEAN+3 – India FTA and EU-India FTA. The results corroborate our recommendation as the gains from ASEAN+3 – South Asian FTA are expected to be the largest amongst all.

REFERENCES

Asia Regional Integration Center – Tracking Asian Integration. Asian Development Bank, n.d. Web. 11 Nov. 2014. <http://aric.adb.org/fta>

Bachetta, Marc. Beverelli, Cosimo. Cadot, Olivier. Fugazza, Marco. Grether, Jean-Marie. Helble, Matthias. Nicita, Alessandro. Piermartini, Roberta. (2012). A Practical Guide to Trade Policy Analysis. World Trade Organization.

Bhagwati, Jagdish. (1995). US Trade Policy: The Infatuation with FTAs. Columbia University, Discussion Paper Series No. 726

Direction of Trade Statistics – DOTS. International Monetary Fund, n.d. Web. 11 Nov. 2014. <http://elibrary-data.imf.org/DataReport.aspx?c=1449337 &d=33061&e=170921>

Durgesh, K. Rai, Asian Economic Integration and Cooperation:

Challenges and Ways Forward for Pan-Asian Regionalism (November 22, 2010). GIGA (German Institute of Global and Area Studies) Working Paper No. 152.

Fergin, Elina. (2011) Tangled Up in a Spaghetti Bowl-trade effects of overlapping preferential trade agreements in Africa. Lund University, School of Economics and Management.

Menon, Jayant (2009). What to do about Asia's spaghetti bowl. Malaysia: Office of Regional Economic Integration Asian Development Bank.

Rana, P. and J. M. Dowling (2009) South Asia: Rising to the Challenge of Globalization, World Scientific Press, Singapore.

Rana, P. Prandumna (2012). Renaissance of Asia. Evolving Economic Relations Between South Asia and East Asia. World Scientific.

Wignaraja, Ganeshan (2014). Assessing the Experience of South Asia-East Asia Integration and

India's Role. ADBI Working Paper 465. Tokyo: Asian Development Bank Institute.

World Development Indicators. World Bank, n.d. Web. 11 Nov. 2014. <http://data.worldbank.org/data-catalog/world-development-indicators>

World Integrated Trade Solution. World Bank, n.d. Web. 11 Nov. 2014. <<http://wits.worldbank.org/>>.

Thermodynamics and Economics: Entropy, Environment and Globalization

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Abstract: *The paper focuses on an obscure yet fascinating analogy between the laws of physics and the proofs and laws that govern economics. It seeks to understand the reasons for economic entropy such as movement of human capital through the laws of physics and builds upon the argument that as economic entropy is maximized, the economic outcome would largely be detrimental.*

"It is the business of the student of nature to know assign the "why" in the way proper to his science—the matter, the form, the mover, that for the sake of which" - Aristotle

Using theoretical constructs of physics to make sound arguments and deductions in economic analysis is a major, yet rare trend today. Econophysics, while being

strong in foundation and analysis is an infant branch of economics and its relevant analogies are not talked about in mainstream discussions. "Modeling itself on mathematics, mainstream economics is primarily deductive and based on axiomatic foundations. Econophysics seeks to be inductive, to be an empirically founded science based on observations, with the tools of mathematics and logic used to identify and establish relations among these observations." (Sinha & Chakrabarti, 2012) This paper intends to diminish the gap between pure empiricism and inductive social science and hence, presents the case for a confluence of the study of the nature/properties of matter/energy and mainstream economic analysis.

The main argument of this paper revolves around an