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Lancaster University Management School
BA (Antwerp); MPhil, MA, PhD
(Cambridge)

Dr. Carlos García Pont
Associate Professor of Marketing
IESE Business School, University of
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Doctor of Philosophy (Management),
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MBA/BBA (University of Saarbrücken)

Dr. Miguel Angel Ariño
Professor of Decision Sciences
IESE Business School
Barcelona, Spain (Universidad de Navarra)
CEIBS (China Europe International Business
School).
Beijing, Shanghai and Shenzhen
Ph.D. in Mathematics
University of Barcelona
BA in Mathematics (Licenciatura)
University of Barcelona

Philip G. Moscoso
Technology and Operations Management
IESE Business School, University of Navarra
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Management, ETH Zurich
M.Sc. in Chemical Engineering, ETH Zurich

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Arrhythmia
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Poland 2014: Twenty Five Years of Transition: Is Poland Now a Normal Country?

By Richard J. Hunter Jr. & Leo V. Ryan, C.S.V.

Seton Hall University, United States

Abstract- This article discusses the past twenty-five years of economic and political transition in Poland. It traces the origin of the "Polish dilemma" by pointing out the "Grand Failures" of the command-and-control economy; discusses the philosophical underpinnings of the reform effort; and delineates the major components of the Balcerowicz Plan-with a special emphasis on Poland's privatization program. The article then moves to a discussion of the importance of Foreign Direct Investment (FDI) in the Polish economy and describes several important surveys which point to the success of the Polish experiment in areas such as business attractiveness, overall climate for business, and business friendliness. In addition to providing up-to-date statistics on Polish economic performance through the end of 2013, the article concludes with an observation as to the future for Poland's commitment to economic change and economic development.

Keywords: command-and control economy; economic transformation; foreign direct investment; privatization..

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POLAND2014TWENTYFIVEYEARSOFTRANSITIONISPOLANDNOWANORMALCOUNTRY

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Poland 2014: Twenty Five Years of Transition: Is Poland Now a Normal Country?

Richard J. Hunter Jr. [α] & Leo V. Ryan, C.S.V. [σ]

Abstract- This article discusses the past twenty-five years of economic and political transition in Poland. It traces the origin of the "Polish dilemma" by pointing out the "Grand Failures" of the command-and-control economy; discusses the philosophical underpinnings of the reform effort; and delineates the major components of the Balcerowicz Plan— with a special emphasis on Poland's privatization program. The article then moves to a discussion of the importance of Foreign Direct Investment (FDI) in the Polish economy and describes several important surveys which point to the success of the Polish experiment in areas such as business attractiveness, overall climate for business, and business friendliness. In addition to providing up-to-date statistics on Polish economic performance through the end of 2013, the article concludes with an observation as to the future for Poland's commitment to economic change and economic development. The authors have spent more than twenty five years researching, writing, and commenting on economic transition in Poland, publishing more than 35 peer-reviewed academic articles, 51 papers, and two academic-research books during the period of their collaboration. Much of the background information for this paper is based on prior research, framed especially for this appraisal.

Keywords: command-and control economy; economic transformation; foreign direct investment; privatization.

I. Introduction

Consider this quotation:

" In just 20 years, Poland has reversed 500 years of economic decline. It hopes to soon join the euro zone of single currency nations. Foreign investment is flowing and the Warsaw stock exchange continues to grow. The remake of Poland is a remarkable feat, considering this nation, pinned between Germany and Russia, has spent the better part of the past 200 years fighting invasions, near complete destruction and communism's iron grip." (Talaga, 2013).

It is certainly demonstrable that "There is a Polish phenomenon of a growing, dynamic country that did not go through any recession when the rest of the Eurozone countries went through recession over the last five or six years." Ministry of Foreign Affairs, 2013, p. 3). Indeed, Stephan Faris of Bloomberg Businessweek noted: "With much of Europe still struggling to recover from the impact of the 2008 financial crisis, Poland stands as an unlikely island of economic success, a place where companies and individuals strive to plan for growth rather than decline." (Faris, 2013, p. 63). And, as Andrzej Ratajczyk reported: "Poland is climbing International league tables and improving its position among the world's most attractive investment destinations."(Ratajczyk, 2013, p. 57). What are some indications of this growth, competitiveness, and attractiveness?

In 1992, Poland's per capita GDP stood at 33 percent of the European Union fifteen member states. By 2012, it had more than doubled and had grown to 60 percent. In 2009, the GDP of the European Union had contracted by 4.5 percent, yet Poland's GDP saw a growth—modest as it was—of 1.6 percent. While the EU economy as a whole "remains smaller than it was at the beginning of 2009…, Poland is projected to enjoy a cumulative growth of more than 16 percent." (Faris, 2013, p. 63).

Marek Belka, former Deputy Prime Minister and Minister of Finance (1997 and 2001-2002), and Prime Minister (May 2004 to October 2005), commented on the reasons for Poland's economic "resilience." He cites balanced economic growth, a floating exchange rate, a stable current account balance, a flexible labor market with less than 10 percent of Polish firms covered by automatic wage indexation (Ministry of Foreign Affairs, 2013, p. 16), a well-capitalized banking sector, and well-managed public investments. Bloomberg Businessweek underscores Minister Belka's comments and cites Poland's "large internal economy, a business-friendly political class, and a hyper-charged potential of a developing country catching up with its western peers." (Faris, 2013, p. 63).

These factors have resulted in Poland attaining the 42nd position out of 150 countries in terms of global competitiveness in a report issued by the World Economic Forum. According to the A.T. Kearney Global Services Location Index, Poland is in the 24th position— jumping from 38th position in 2009 in terms of its service sector, noting that "Poland enjoys sole position in terms of modern business services in Central and Eastern Europe. More than 400 business service centers with foreign capital are already in operation across the country, with a combined work force of 111,000." (Reported in the Warsaw Voice, 2013, p. 37). And, according to the 2013 World Bank rankings on Doing Business, Poland moved up 19 positions from 2012 from 74th to 55th position.

What do these statistics indicate from a historical as well as a practical point of view? (Adapted

Author α σ: (Hunter): Seton Hall University; (Ryan): DePaul University. e-mails: hunterri@shu.edu, leovryan@viatorians.com

from Hunter & Ryan, 2006). From the perspective of more than twenty years, it is now possible to state with certainty that despite a "propaganda of success" trumpeted by adherents to the former system, the system of central planning, also called the command-rationing method or CRM, literally had imploded because of a combination of four interrelated factors, which we have termed as the "Grand Failures" of the socialist system as it existed in Poland:

a) Failure to create economic value or to improve the standard of living for the average Pole;

b) Failure to provide adequate individual and organizational incentives;

c) Failure to "measure up" to comparative economies, not only those capitalist economies in the West, but also several "fraternal" socialist economies in Central and Eastern Europe (most notably, Hungary, Czechoslovakia, and Slovenia—then a part of Yugoslavia); and

d) Failure to satisfy basic consumer needs, essentially creating an unofficial dollarization of the Polish economy through the existence of a large, open, semi-official, and surprisingly efficient black market, and the existence of official "dollar" stores and foreign currency shops.

The Attempt at Reform of the CRM

In attempting to implement the macro and micro economic strategies required to affect the enormous policy shift from the CRM to one based upon a free market philosophy, certain core assumptions were adopted by the Mazowiecki government in the initial period after it came to power in the summer of 1989:

a) The authoritarian nature of society must change into a society based on administrative and bureaucratic competence, so as to weaken the decisive role of central authorities and to strengthen the role of the market in critical resource and financial allocations and in the management of the economy;

b) The top-down "command-and-control" economy and bureaucratic-administrative system (Generally, Balcerowicz, 1995; Hunter & Ryan, 2000) had to change into one based upon information sharing, transparency, and consultation in Polish society; and

c) The state-dominated and state-centered society must change into a full civil society (Hunter and Ryan, 1998, p. 162), marked by community self-governance, economic discipline, honest career building, and one in which "independent individuals characterized by self-esteem, self-reliance, and self-empowerment" (Fulin, 2002) were in charge of economic decision- making.

In this context, we have raised three key "policy questions" which are at the core of economic transformation:

- How would it be possible to create capitalism in a nation where there was neither capital nor capitalists?

- What should be the role of the nomenklatura and other former-Communist Party members in the political and economic life of Polish society? And,

- What would the system do about workers and others most negatively affected by the transition?

As might be imagined, because of the dual economic and political aspects of the CRM and the enormity of its negative legacy that had led to an almost total collapse of the economy in the period immediately before the Round Table in 1989, reform of the central planning system posed a considerable challenge. From the outset, "real" reform involved a delicate blending of both political and economic considerations in the following macro strategies:

a) Attaining political stability and pluralism, which would be accomplished through holding free and multiparty elections as soon as possible. The initial elections agreed upon at the Round Table took place on June 4, 1989, in which Solidarity was victorious, winning all contested seats in the lower house or Sejm and "winning ninety-nine of a hundred seats in the Senate. The first non-Communist government in East Europe (since Yalta) was formed with Tadeusz Mazowiecki named Premier. Lech Walesa was elected President of the Polish Republic in 1990." (Kubow, 2013, p. 14).

b) Implementing a program of "real" economic reform with the evolution to a private market economy, involving an emphasis on the development of a substantial private sector through a multi-track program of privatization; and

c) Creating the basic institutions of capitalism, including a private banking system, credit institutions, customs and clearing houses, currency exchanges, a private insurance system, the reintroduction of the Polish stock market, the creation of investment funds and investment vehicles, and the introduction of a new system of taxation into Polish society (which eventually included a drop in Poland's top personal rate of taxation from 40 percent to 32 percent and the introduction of a corporate rate of 19 percent).

In the process of economic transformation, following the elevation of Tadeusz Mazowiecki to the position of Prime Minister in the summer of 1989, Finance Minister and Deputy Prime Minister Balcerowicz was aided by a well-prepared transition team consisting of both Polish nationals and so-called Polonia (émigré) specialists. The leading foreign experts were certainly then Harvard Economist Jeffrey Sachs (now the Director of the Earth Institute at Columbia University) and David

Lipton. (Generally, Sachs, 1993, pp. 45-46; Lipton & Sachs, 1990, pp. 293-339).

The "Balcerowicz Team" consisted, among others, of Marek Dabrowski, later deputy in the Ministry of Finance; Stefan Kawalec, first chief adviser, responsible for financial institutions; Janusz Sawicki, responsible for foreign debt negotiations; Andrzej Podsiadlo, who oversaw state enterprises; and Grzegorz Wojtowicz, first deputy chairman of the Polish National Bank, and its chairman in 1991. All were graduates of the Faculty of Foreign Trade of the Central School of Planning and Statistics in Warsaw, Poland's premier school for state planning and for producing "policy experts." Wojciech Misiag and Ryszard Pazura were also deputies in the Ministry of Finance. In addition, the team included numerous foreign advisers—Jeffrey Sachs, David Lipton, Wladyslaw Brzeski, Stanislaw Gomulka, Jacek Rostowski, and Stanislaw Welisz—and Polish ones—Karol Lutkowski, Andrzej Bratkowski, Antoni Kantecki, Adam Lipowski, Andrzej Parkola, and Andrzej Ochocki. Many of the foreign advisers were of Polish origin—so called Polonia academics. Minister Balcerowicz was a Professor of Economics at the Warsaw Institute of Economics. Balcerowicz had graduated from the Faculty of Foreign Trade of the Central School of Planning and Statistics—now the Warsaw School of Economics. Between September 1972 and January 1974, Balcerowicz had studied business administration at St. John's University in New York City. In 1978, Balcerowicz presciently had established a "think tank" composed of ten young economists who would meet regularly to discuss and debate potential programs for economic reform. These informal meetings shaped the program of transformation adopted by the Mazowiecki government and subsequent Solidarity governments, and greatly influenced all post-1989 Polish governments—both positively and negatively—in their policy assessments. Former Prime Minister Mazowiecki died in November of 2013 and has been acclaimed as one of the most important persons of the transition period.

II. Components of Economic Reform

Mirroring what has come to be known as the Balcerowicz-Sachs model, Poland undertook the following concrete actions as the main components of its process of economic reform and transformation:

- Liberalizing prices from state control, opening up the economy to foreign trade, and formalizing and simplifying the requirements for new market entry;
- Stabilizing the Polish zloty, eliminating hyperinflation, regularizing public finance, and managing foreign debt;

- Effecting changes in the economy leading to privatization of state property and to an increase in the nature and volume of international trade;
- Remodeling and upgrading the important social-safety net, most especially, the pension, education, social insurance, and unemployment systems (largely still not accomplished);
- Assuring eventual full convertibility of the Polish zloty;
- Gaining extensive external assistance of the International Monetary Fund, and the "London" (private commercial creditors) and "Paris" Clubs (public creditors);
- Gaining full membership in NATO, the OECD, and the European Union;
- Creating new market institutions, a viable commercial code, a revised tax code, recognizing private property rights, and the creation of a financial and capital market—perhaps most importantly, the creation of a viable stock market and a properly functioning central bank. (See Appendix I: An Informational Note).

a) The Privatization Process: A Multi-Track Approach

The multi-track approach to privatization involved the simultaneous implementation of a multiplicity of strategies including: reprivatization to former owners, the "small" privatization process, eventual privatization by liquidation, "mass" privatization, and the sectoral approach involving the creation of the National Investment Funds (NIFs). (Hunter & Ryan, 2008). In this context, four specific options or variants for privatization in Poland were adopted: commercial (traditional) privatization through the capital market; privatization through employee ownership (ESOP option); privatization through some form of general and diffuse "citizen ownership"; and privatization through institutional investors. (Blaszcyk & Dabrowski,1993, p. 64). In the first half of 1990, more than 100 state-owned-enterprises indicated their interest in participating in the privatization process. On September 27, 1990, the Ministry of Privatization undertook its first major step. Professors De la Rosa, Crawford, and Franz (2004) report that the "Magnificent Seven," a name given to the first seven enterprises privatized according to the 1990 Law on Privatization, were established as wholly-owned companies of the Polish state treasury. This group included Exbud (construction), Fampa (industrial paper production machinery), Inowroclaw (meat packing), Kable (industrial electro-engineering), Krosno (commercial and consumer glass products), Norblin (metal industrial products), and Prochnik (clothing). When the public subscription began on November 30, 1990, shares of Exbud, Kable, Krosno, and Prochnik, as well as a new firm, Tonsil (electro-acoustic equipment), were offered to

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the public. (De la Rosa, Crawford & Franz, 2004, pp. 121-134).

A bit of the history of the sectoral approach is in order. Fifteen national investment funds or NIFS were initially created to implement the "mass privatization" program and to provide the necessary framework in order to restructure and privatize more than 500 state-owned-enterprises or SOEs. (Act on the National Investment Funds and Their Privatization, 1997). In December of 1994, the Ministry of the Treasury established the fifteen funds as joint-stock, limited liability companies. During the next two-year period, the Ministry transferred the shares of the SOEs to the NIFS, retaining 25 percent in the Treasury and reserving 15 percent for employees. Share certificates were then distributed to Polish citizens—with more than 27 million Poles eligible to purchase one certificate each for twenty zlotys (approximately U.S. $7.00). One original certificate purchased on the so-called primary market could later be redeemed for one share in each of the 15 NIFs. The funds began trading on the WSE on July 15, 1997. The mass privatization program, conducted between 1993 and 1996, resulted in the creation of over 1.5 million individual investment accounts through the state Treasury program. Poland is clearly coming to the end of its program of privatization. While there are more than 200 companies that are on the list of companies still to be privatized, these tend to be "smallish companies," with less than two-hundred employees.

Historically, in terms of reprivatization, attempts by some German nationals to pursue claims against Poland for compensation for various expropriations carried out in Poland in the period following World War II seem to have been foreclosed. This is the conclusion reached by the team of Polish and German attorneys, headed by Jan Barcz (Poland) and Jochen Frowein (Germany), in a report presented on November 10, 2004. The report indicated that the question of claims was finally closed by a Declaration made in Warsaw on August 1, 2004 by then Germany Chancellor Schroder who stated unequivocally that there was "no room for property claims connected with World War II and that the [German] federal government did not support individual claims." (Polish Voice, 2004, p. 8; generally, Luxmoore, 2004; Hunter & Ryan, 2004). The issue of returning property or offering compensation to relatives of those whose property was confiscated either by the Nazis (1939-1945) or the Communists (1945-1989) is much more difficult and problematic. (Greenberg, 2005). To this date, there has not been a final, national solution to the problem, although individuals may file claims which will be adjudicated on a case-by-case basis.

As an overall macro assessment of the Polish economy, Stephan Faris summarizes the results of the transformation as follows: "From 1989 to 2007, its economy grew at 177 percent, outpacing its Central and Eastern European neighbors as it nearly tripled in size…." (Faris, 2013, p. 62). Mariusz Adamiak, Chief Financial Officer of PKO Bank Polski states, "Poland's transformation from a centrally planned to a market economy proved to be a tremendous success." (Warsaw Voice, 2013b, p. 47). In fact, since joining the European Union, Poland has been able to absorb almost 101.5 billion euro ($137 billion) from the European Union, with a major portion of the capital used to finance the development of Poland's infrastructure. According to the Financial Times, in the period 2014-2020, "Poland again will be the largest recipient and will receive 73 (additional) billion euro in structural funding. That, added to the 25.5 billion euro in Common Agricultural Policy Funds, will send another modernizing jolt through the economy." (Cienski, 2013, pp. 1-2).

III. Foreign Direct Investment: The Key to Success

It is important to note that from the outset, the attraction of foreign direct investment was an important—perhaps indispensible—part of overall economic transformation of the Polish economy. (Hunter & Ryan, 2012; Hunter & Ryan, 2013). One of the main reasons for the emphasis in Poland on attracting Foreign Direct Investment [FDI] was that there were few domestic options available in 1989 for a rapid and radical transformation of the Polish economy.

According to the Polish Information and Foreign Investment Agency [PAIiIZ] since the early 1990's, international business has so far invested over USD 200 billion in Poland. (www.paiz.gov.pl).This clearly ranks Poland as a regional leader. The most significant inflow of FDI could be observed in the period 2006-2007, the lowest inflow between 1994 and 1996. Indeed, in the early 1990s, state owned enterprises or SOEs were responsible for more than 80 percent of Poland's GDP. In 2013, they account for less than 20 percent. Two factors converged to create this phenomenon—the success of the privatization process and the development of the private sector—both of which were accomplished at least in part by the infusion of foreign direct investment into the Polish economy.

Six factors have been identified as basic preconditions to Poland's continued success in attracting foreign direct investment:

- Poland's large potential domestic market. As of the fall of 2013, Poland's population stood at approximately 38,500,000. The largest numbers of residents are to be found in the voivodships of Mazowsze, Śląsk, Wielkopolska, and Małopolska and the least in Podlasie, Opole, and the Lubuskie regions. As might be expected, population density is directly related to the development of industry and the infrastructure in the region. As a result, urban population accounts 61.8 percent of the country's

population, of which the largest concentrations are found in the voivodships of Dolny Śląsk, Zachodniopomorskie, and Pomorze. The remaining 38.2 percent of people live in rural areas; the largest populations were in the Lublin, Podkarpacie, and the Swiętokrzyskie regions.

- Mainly as a result of the boundaries of Poland, drawn as a result of World War II, 96.7 percent of the population is "ethnically Polish." Of the remaining 3.3 percent of the population, there is a pattern of "self-declaration," with some declaring themselves to be German, Belarusian, Ukrainian, and Romany, with 2.1 percent not stating their ethnic origin. It might also be interesting to note that the character of Poland's social structure has seen a shift once again. The Warsaw Voice (2013b) reports that by 2020, the number of farms in Poland will have dropped to around 370,000 from its current two million figure. Agriculture occupies 12 percent of the Polish workforce, while producing only 3.8 percent of GDP—indicating rather low productivity in its farming sector, once considered the mainstay of the Polish economy;

- Relatively low labor costs. The GBS Recruitment Agency reports: "Poland's employment costs are among the lowest in the whole of Europe. The country's wage costs are not only lower in comparison to western Europe, but also when compared to Slovenia, Estonia, Slovakia, the Czech Rep., Hungary and Latvia. Lower employment costs in national average incomes can only be found in Ireland, Greece and in Italy. When compared to Central and Eastern Europe, lower employment costs are only to be found in Rumania. Lithuania and Bulgaria have similar wage levels to Poland." (Bukanski, 2013);

- Poland's location. PNO Consultants note: "Poland due to its central location in Europe, has very favourable road, rail and aviation links with all of the EU countries and is well placed to trade with the EU neigbours in the East. Poland's three main sea ports, Szczecin-Świnoujście, Gdynia and Gdańsk, are connected to the world's most important ports. All this makes Poland the best location for companies that are active in both the Central and Eastern European markets." (www.pnocee.com).

The report continues: "The infrastructure of highways, rail, airports, and harbours is improving fast after a sluggish decade of neglect. The legal system improved significantly in the past decade, ensuring reliability to the business community."(PNO Consultants, 2013).

- A stable and transparent legal and tax system;
- A well-educated labor force which is able to carry out projects involving a strong advanced technology component. The number of higher education

institutions in Poland in 2011/2012 is 400, of which 328 are private. There are 1,764,000 students in these institutions, of which 520,000 studied at private schools. (Sarmatian Review, 2013); and
- Solid macroeconomic policies.

Andrzej Ratajczyk, who writes for the Warsaw Voice-Business & Economy section, noted in 2010: "Foreign investors have welcomed the stability of the Polish economy and its prospects for further growth." (Ratajczyk, 2010, pp. 45-47; Ratajczyk, 2011, pp. 8-10).

a) Poland According to Some Recent Surveys

According to the Ernst & Young Attractiveness Survey (2013), "In the next three years Poland will be Europe's second most attractive investment site after Germany." The Report noted that "While 35 percent of the 840 corporate managers surveyed said they considered Germany as Europe's top investment destination, 10 percent opted for Poland. This placed the country in second position in Europe, before economic powerhouses such as Britain (8 percent), France (4 percent) or Russia (7 percent) in terms of investment attractiveness." (EY,2013). The report highlighted Poland's very stable macroeconomic situation and underscored the views of Andrzej Ratajczyk. "Two or three years ago businesspeople and corporations considered investing in Poland without having too much knowledge about the country. Today, they ask very concrete questions regarding particular cities. Poles working abroad are also the country's ambassadors." (Warsaw Business Journal, 2012).

The consulting firm of PwC bolsters the conclusions of Ernst & Young in its Central and Eastern Europe Economic Scorecard—A Sustainable Future in a Great Region, when it writes: "Poland's economic growth prospects and the size of its economy make it the most attractive market in Central and Eastern Europe." (PwC, 2013). The report considered the following investment factors in its decision-making:

- Access to global markets and domestic market prospects;
- Human capital;
- Financial sector development;
- Knowledge resources;
- The relationship between labor costs and the quality of human capital;
- Financial, political and environmental sustainability; and
- A nation's tax system, governmental institutions, infrastructure and overall transparency of the economy.

What did the PwC report indicate as to future prospects for Poland? The analysis cited Poland's stable political environment, human resources, and labor costs as three significant positive factors. On the negative side, however, Poland's largest challenge

continues to be its infrastructure, falling behind Hungary, the Baltic States, Slovenia, and the Czech Republic.

A third survey, again conducted by EY (formerly known as Ernst & Young), done in conjunction with the University of Navarra in Spain, mirrored both previous surveys, and ranked 118 countries according to their "attractiveness for venture capital and private equity funds," taking into account a country's overall economic performance, its capital market, tax regulations, corporate governance standards, and the quality of its human capital. Poland moved up one place to number 28—which is five places higher than the first table compiled in 2009. Poland ranked higher than such "power house" economies as India, South Africa, Italy, and Brazil and higher than countries with which Poland regularly competes for investment such as Turkey (33), Czech Republic (35), and Hungary (42). The EY report noted an increasingly strong business sector, the stability of the Polish economy, and a continuing attractiveness to venture capital and private equity. Especially strong ratings were given to Poland's capital market, overall economic activity, and the "friendliness" of its tax system for both venture capital and private equity. The survey found that Poland ranks 41st in the world in terms of its tax system (the United States ranks 37th)—showing an improvement from its first ranking of 80.

There has also been one persistent negative—that is, Poland's unemployment problem. Unemployment remains "stubbornly high" at 10.3 percent; however, among Poland's young, the figure stands at an alarming 26 percent. (www.tradingeconomics.com/poland/unemploymentrate). As an indication of Polish society's impatience with persistent unemployment, in September of 2013, Poland's trade unions organized the most massive demonstration since 1989. The Prime Minister (Donald Tusk) reshuffled his cabinet, fired the incumbent Finance Minister, and pledged to accelerate economic growth in an effort to positively impact the unemployment rate and to attempt to appeal to Poland's workers in anticipation of parliamentary and presidential elections in 2014 and 2015.

IV. Some Tentative Observations

What is clear from this brief retrospective study is that Poland has made amazing strides since throwing off the shackles of its central planning past and boldly embarking on a program of reform twenty five years ago. On the political front, it must be recognized that none of these changes would have been possible without the creation of the Solidarity movement. Writes Magdalena Kubow: "it is crucial for Poles to remember their heritage is continually striving to fully achieve their heritage in continuously striving to fully achieve freedom from the remnants of their oppressive recent past." (Kubow, 2013, p.14).

On the economic front, partly responsible was the monumental decision made by the Mazowiecki government, under the leadership of Finance Minister Leszek Balcerowicz, to adopt its strategy of "shock therapy" and move towards both political and economic reform at the same time. In rejecting the "gradualist" strategy adopted by China, Russia, and others, Poland was called upon to make hard economic and political decisions at a difficult time period, pushing Poland to what Professor Mieczyslaw Nasilowski, a scion of the nomenklatura system, termed would be the "barrier of social endurance." In retrospect, although perilous from both the political and economic standpoints, the strategy turned out to be the right one—turning Poland from economic catastrophe to the only nation in the EU that was able to avoid the worst negative aspects of the deep recession of the past five years.

However, the question remains: Will Poland have the courage to continue down this path in the face of mounting political and economic turmoil and the specter of a new round of elections in the immediate future that will certainly be divisive and contentious? Only time will provide that answer.

Appendix I: Informational Note

The Warsaw Stock Exchange (WSE) dates back to 1817. The exchange had ceased its operation in 1939 after the German invasion of Poland. The WSE recommenced activity on April 16, 1991. It has operated on the basis of the Act on Public Trading in Securities and Trust Fund of March 1991 and the Law on Public Trading in Securities of August 21, 1997, under the supervision of the Polish Securities Commission (PSC). (Dziennik Ustaw (The Journal of Laws), 1994); Dziennik Ustaw (The Journal of Laws), 1997). An Act Amending the Law on the Public Trading of Securities and Amending Other Acts (dated March 12, 2004) was later enacted by the Sejm. See Dziennik Ustaw (The Journal of Laws), 2004). The State Treasury established the Warsaw Stock Exchange as a joint-stock company in April 1991. In 1999, the National Bank of Poland (NBP) became the "clearinghouse" for all securities transactions. As of November 6, 2013, 446 individual companies, with a market value of 208.2 billion euro, were listed on the exchange, in addition to the fourteen operating National Investment Funds (NIFs). (www.gpw.com.pl (the official website of the Warsaw Stock Exchange). The Stock Exchange is known in Poland as the GPW—the initials stand for the Gelda Papierow Wartosciowych). As noted by Professors de la Rosa, Crawford, and Franz, the Polish Security Commission or PSC was modeled on the U.S. Securities and Exchange Commission, while the WSE was modeled on the Paris Bourse. (Buczek & Grzedzinski, 1991, p. 10). The WSE is actually the largest stock exchange in Central and Eastern Europe, with 20 percent of the capitalization of the CEE capital markets.

The State Treasury still hold a 35 percent share in the Exchange.

In the years 2006 to 2012, Polish market capitalization grew by 19 percent, whereas over the same period, all of the other EU countries' stock exchanges capitalization dropped by 20 percent. In terms of the trading volume of the WSE during this same period, its growth amounted to 12 percent, whereas the trading volume in EU countries dropped by 43 percent. For an update on the recent amendments to Polish securities laws, see Andrzej W. Kawecki and Justyna Miodzianowska (2013).

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The Research on Utilization and Interoperability of XBRL Taxonomy Elements of Listed Companies Financial Report

By Hu Renyu, Peng Chen & Ni Kaishi

East China University of Science and Technology, China

Abstract- This article is based on the research on utilization and interoperability of Chinese XBRL taxonomy elements, focusing on the improvement of the insufficient XBRL taxonomy elements. The authors believe that increase the number of XBRL taxonomy elements can enhance the interoperability of financial reports and accuracy of compiling XBRL software elements.

THERESEARCHONUTILIZATIONANDINTEROPERABILITYOFXBRLTAXONOMYELEMENTSOFLISTEDCOMPANIESFINANCIALREPORT

Strictly as per the compliance and regulations of:

The Research on Utilization and Interoperability of XBRL Taxonomy Elements of Listed Companies Financial Report

Hu Renyu [α], Peng Chen [σ] & Ni Kaishi [ρ]

Abstract- This article is based on the research on utilization and interoperability of Chinese XBRL taxonomy elements, focusing on the improvement of the insufficient XBRL taxonomy elements. The authors believe that increase the number of XBRL taxonomy elements can enhance the interoperability of financial reports and accuracy of compiling XBRL software elements.

Keywords: XBRL taxonomy; elements utilization; elements interoperability.

I. Introduction

In October 2010, the Chinese National Standardization Management Committee and the Ministry of Finance issued a standard of the common XBRL taxonomy, which not only provides XBRL elements standard to financial software manufacturers and comprises who use it, but also unifies data format of financial reporting and improve relevance of the fina-ncial information, to promote the development of data industry and the efficient use of data as well. In the past three years, the application of practitioners and the research of theorists continue to test the accuracy and applicability of XBRL taxonomy, send various proposals to improve the quality of financial data generated by XBRL taxonomy. However, there is still missing and ambiguity in the elements of Chinese XBRL taxonomy elements (We call them XBRL-China in the following text), which caused some hinders when listed enterprises try to extend it. Redundancy and insufficiency of XBRL-China affect the interoperability of financial reporting data.

With the development of XBRL both at home and abroad , XBR plays a very important role in the development of information technology., The unique advantage of XBRL--- the unstructured data structures, makes the correlation between data more dimensional. XBRL can process more complex multi-dimensional data. These advantages make XBRL gains more concern, and the constitution of data directly related to the XBRL taxonomy modeling methods. International organizations and countries have already formulated and promulgated the standard of XBRL taxonomy according to their accounting standards. The standard XBRL taxonomy directly affect the accuracy, relevance and understandability of XBRL financial reporting. Chinese scholar Zhang Tianxi [1], foreign scholar Roger[2], Bovee[3] all found evidences of this view.

Through the study on the utilization and interoperability of XBRL-China, we match the disclosure elements of financial reporting and XBRL-China. We find the unreasonable XBRL element definitions, point out the existing problems of XBRL taxonomy to improve the situation of insufficient XBRL-China. So that we can improve the interloper ability of financial reports in all industries. Meanwhile, by additions and amendments to the elements , reducing the number of future expansion by companies, we can reduce the possibility of future expansion and differences caused due to the applica-tion of XBRL in more comprises, to improve the quality of financial reporting disclosure .

II. Current Situation of Chinese XBRL Taxonomy

Bovee [4] [5] pointed out that in the constitution of taxonomy standard, there must be some differences between the taxonomy standard and elements required by the comprises. On the one hand, because the high gather level of standard taxonomy elements, if companies prepare financial reports all by the taxonomy standard, part of the standard may not be suitable to the enterprises, which will lead to the loss of information.

However, if the gather level of taxonomy standard is too low, the companies have to expand the elements by themselves which will lead to the lack of comparability of financial data.

The constitution of Chinese XBRL taxonomy also faces the same situation, which Bovee [4] [5] has identified. Gao Jinping [1](2006) compared the "Chin-ese Listed Company Information Disclosure classific-ation standards" issued by SSE and annual reports of 117 Listed Companies, found that there existed great differences between SSE standard and annual reports, which could not meet the need of disclosing data.

Zhao Xianming [6] (2010) studied the influence of earnings on annual reports, the results showed: although XBRL had disclosed information, it had not been recognized by the market. There were two reasons: First, the quality of standard XBRL taxonomy need improvement to meet the requirements of the

Authors α σ ρ: the Research Center of Accounting Informationization and Financial Decision-Making, East China University of Science and Technology, Shanghai, China. e-mail: hryhr@tom.com

financial disclosure. Second, it was not enough only apply XBRL to financial reporting, it should be extended. Our standard XBRL taxonomy is promulgated in accordance with the relevant Chinese accounting standards , so there are some differences between XBRL-China defined by authorities and elements used by comprises. The differences will effect the utilization and efficiency of the element. There exist elements with very low utilization, but there also exist some elements used by different companies frequently but have not been defined by the standard. In addition, the suitability of elements definition also have impact on the interoperability. The Higher the interoperability is, the better the definition is made.

III. Utilization and Interoperability of XBRL Taxonomy Elements

a) XBRL Taxonomy Elements and Elements Disclosed by Companies

The differences between the standard XBRL-China and the disclosed elements of comprises effect the interoperability of financial reports. For example (Please see table 3-1 for the Descriptive Statistics), the elements of individual balance sheet "Net Oil and Gas Assets" and "Special Reserve" as well as the consolidated balance sheet elements "Settlement Provisions", "Net Premiums Receivable", "Net Receiva-bles from Reinsurers", "Net Reserve Reinsurance Contract" and so on are all defined by the standard. But many companies do not use them in the disclosure process. Another example, the balance sheet element "Insurance Contract Reserve", "Total Long-term Liabilities", "Total Non-current Liabilities" and so on, which many companies disclosed in their reports but have not defined in the taxonomy standard.

Moreover, there existed mismatch between XBRL-China and corporate disclosure elements. For example (Please see table 3-2 for the Descriptive Statistics), when matching the elements of Inventories (general industrial and commercial sectors) in the notes, different companies have different descriptions for "Goods in Transit", such as "Merchandising", "Goods in transit" and "Material Procurement". The disclosure of these elements does not belong to the provisions of accounts and cannot meet the requirements of accounting comparability and understandability.

b) Utilization of XBRL Taxonomy Standard Elements

The list of Chinese Standard XBRL Taxonomy Elements has defined 2845 elements, but the frequencies of different elements varies greatly (Please see the picture 3-1 for the utilization of XBRL taxonomy). We find that about 35 % of the elements have high utilization, such as "Currency Funds", "Other Receivables", "Paid-up Capital or Equity". But nearly 50 percent of the elements have low utilization, utilization of

such elements as "Special Reserve" is almost zero. Thus, the differences between standard XBRL-China and disclosing elements used by companies are very large. All of the above will affect the interoperability of financial reports.

c) Interoperability of Standard XBRL Taxonomy Elements

Due to the differences between standard XBRL-China and disclosing elements used by companies, and the differences in the utilization of XBRL-China, there are differences in the interoperability of financial reports. These Mainly reflected in the following aspects: First, the interoperability of the financial statements level is different. Second, there are differences in the interoperability of financial reporting elements within the same industry, which means on the enterprise level there are different disclosure elements. Finally, the interoperability of elements between different industries is also different. (Please see the picture3-2 for the interoperability).

d) Interoperability of Extended XBRL Taxonomy Elements

Now the XBRL taxonomy are not decided by the companies, and the extended XBRL-China are also not be decided by the companies themselves. But because there are some elements the standard taxonomy has not defined (we call these elements: missing elements), and the listed companies have to use lots of elements exceeded the standard taxonomy, the companies have to extend the taxonomy (we call these elements: extended elements). Meanwhile, the extended elements are defined by different companies, so that there are some differences in their disclosure elements with the same meaning, which in turn affect the interoperability.

IV. Policy Recommendations for XBRL-China

a) Standard of Corporate Disclosure Elements

In the process of enterprises disclosing their financial reports based on XBRL taxonomy in China, there exist some issues such as inaccurate elements. Some elements disclosed by companies and defined by standard XBRL taxonomy are totally different. Such as the element in the note: inventory. The enterprises will disclose "Product", "Stock Goods", "Raw Material", but the standard XBRL taxonomy defined "Inventories Beginning Balance", "Increase of the Amount of Inventories ", "Decrease of the Amount of Inventory", "Inventory Impairment". Companies should strictly follow the XBRL taxonomy to define the elements and disclose information in accordance with accounting standards, thereby they can improve the interoperability of their financial reports.

b) Adjust Part of the Elements in XBRL Taxonomy

XBRL defines some elements that companies almost do not use in their disclosure (we call them: redundant elements), such as the elements in the balance sheet, "Net Oil and Gas Assets" and so on. Moreover, the utilization of some elements is low, or even zero, we recommend that such elements could be adjusted or omitted in the standard. More prominent problem is that the XBRL-China are insufficient and missing, leading to the definitions of the elements by enterprises is not unified and not standardized. All these cause the low interoperability of the XBRL financial reports. Therefore, we recommend toadd new XBRL-China. Set bank as an example, we can add the elements such as "Financial Subsidiaries Deposit". In addition, we have to add elements to standardize and refine the notes. For example, "Other Current Assets" can be roughly divided into "Prepaid Items"," Deductible Items", "Financial Products", "Accounts Receivable", "Entrusted loan Items" and so on.

c) Add Extended XBRL Taxonomy Elements

The Outstanding issue of XBRL-China is the missing elements, which lead to the low interoperability of the elements defined by the companies themselves. Therefore, the extended XBRL taxonomy have to be added to the the development of existing standard XBRL taxonomy, so that the quality and comparability of financial reports of all the industries and different companies can be improved

V. Summary

Based on the research on utilization and interoperability of XBRL-China by analyzing the descriptive statistics of Chinese listed companies, we find that XBRL-China and companies disclosed elements are not matched. There are redundant elements and insufficient elements both existed in the standard, and nearly 50% of all the standard XBRL-China are low utilized, which all seriously affect the interoperability of financial reporting data. Therefore, this paper also put forward a proposal to amend the existing XBRL taxonomy, aimed at improving the interoperability of financial reporting and enhancing the quality of financial information.

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Table 1 : Descriptive Statistics of XBRL-China in the balance sheet

	N	Full Distance	Summary	Mean	Standard Deviation	Variance	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	standard error	Statistics	standard error
Currency Funds	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Trading Financial Assets	120	1.0	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Notes Receivable	120	1.0	83.0	.692	.4637	.215	-.841	.221	-1.316	.438
Acc Receivable	120	1.0	119.0	.992	.0913	.008	-10.954	.221	120.000	.438
Prepayments	120	1.0	118.0	.983	.1286	.017	-7.647	.221	57.432	.438
Net Interest Receivable	120	1.0	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Dividends Receivable	120	1.0	19.0	.158	.3666	.134	1.896	.221	1.620	.438
Other Receivables	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Inventories	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Non-current Assets Due Within One Year	120	1.0	18.0	.150	.3586	.129	1.985	.221	1.974	.438
Other Current Assets	120	1.0	65.0	.542	.5004	.250	-.169	.221	-2.005	.438
Total Current Assets	120	.0	120.0	1.00	.0000	.000	.	.	.	.
Net Financial Assets Available for Sale	120	1.0	32.0	.267	.4441	.197	1.069	.221	-.873	.438
Held-to-maturity Investments	120	1.0	8.0	.067	.2505	.063	3.519	.221	10.556	.438
Long-term Receivables	120	1.0	19.0	.158	.3666	.134	1.896	.221	1.620	.438

	N									
Net Long-term Equity Investments	120	1.0	104.0	.867	.3414	.117	-2.185	.221	2.820	.438
Net Real Estate Investment	120	1.0	75.0	.625	.4862	.236	-.523	.221	-1.756	.438
Net Fixed Assets	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Net Works in progress	120	1.0	97.0	.808	.3953	.156	-1.587	.221	.526	.438
Construction Materials	120	1.0	33.0	.275	.4484	.201	1.021	.221	-.975	.438
Disposal of Fixed Assets	120	1.0	13.0	.108	.3121	.097	2.552	.221	4.591	.438
Net Production of Biological Assets	120	1.0	4.0	.033	.1803	.032	5.266	.221	26.161	.438
Net Oil and Gas Assets	120	.0	.0	.000	.0000	.000	.	.	.	.
Intangible Assets	120	1.0	112.0	.933	.2505	.063	-3.519	.221	10.556	.438
Development Expenditure	120	1.0	13.0	.108	.3121	.097	2.552	.221	4.591	.438
Goodwill	120	1.0	55.0	.458	.5004	.250	.169	.221	-2.005	.438
Long-term Prepaid Expenses	120	1.0	96.0	.800	.4017	.161	-1.519	.221	.312	.438
Deferred Tax Assets	120	1.0	112.0	.933	.2505	.063	-3.519	.221	10.556	.438
Other Non-current Assets	120	1.0	47.0	.392	.4902	.240	.450	.221	-1.829	.438
Total Non-current Assets	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Total Assets	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Short-term Borrowings	120	1.0	100.0	.833	.3742	.140	-1.812	.221	1.303	.438
Trading Financial Liabilities	120	1.0	7.0	.058	.2354	.055	3.817	.221	12.781	.438
Notes Payable	120	1.0	70.0	.583	.4951	.245	-.342	.221	-1.915	.438
Accounts Payable	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Advances	120	1.0	119.0	.992	.0913	.008	-10.954	.221	120.000	.438
Accrued Payroll Taxes	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Interest Payable	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Dividends Payable	120	1.0	74.0	.617	.4882	.238	-.486	.221	-1.794	.438
Other Payables	120	1.0	74.0	.617	.4882	.238	-.486	.221	-1.794	.438
Other Payables	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Non-current Liabilities Due Within One Year	120	1.0	68.0	.567	.4976	.248	-.272	.221	-1.959	.438
Other Current Liabilities	120	1.0	39.0	.325	.4703	.221	.757	.221	-1.452	.438
Total Current Liabilities	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Long-term Borrowings	120	1.0	77.0	.642	.4815	.232	-.598	.221	-1.670	.438
Bonds Payable	120	1.0	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Long-term Payables	120	1.0	50.0	.417	.4951	.245	.342	.221	-1.915	.438
Special Payables	120	1.0	32.0	.267	.4441	.197	1.069	.221	-.873	.438
Estimated Liabilities	120	1.0	23.0	.192	.3953	.156	1.587	.221	.526	.438
Deferred Income Tax Liabilities	120	1.0	62.0	.517	.5018	.252	-.068	.221	-2.030	.438
Other Non-current Liabilities	120	1.0	79.0	.658	.4763	.227	-.676	.221	-1.569	.438
Other Liabilities	120	.0	.0	.000	.0000	.000	.	.	.	.
Total Liabilities	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Paid-up Capital or Equity	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Capital Reserve	120	1.0	119.0	.992	.0913	.008	-10.954	.221	120.000	.438
Special Reserves	120	.0	.0	.000	.0000	.000	.	.	.	.
Treasury Shares	120	1.0	3.0	.025	.1568	.025	6.162	.221	36.582	.438
Surplus	120	1.0	117.0	.975	.1568	.025	-6.162	.221	36.582	.438
Undistributed Profit	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Total Equity	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Total Liabilities and Shareholders' Equity	120	.0	120.0	1.000	.0000	.000	.	.	.	.
Effective N (Listing Status)	120									

Table 2 : Descriptive Statistics of Disclosed Elements in Notes_Inventories

	N	Full Distance	Summary	Mean	Standard Deviation	Variance		Skewness	
	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics		Statistics	standard error
Products	120	61.0	.508	.5020	.252	-.034	.221	-2.033	.438
Inventory of Goods	120	109.0	.908	.2898	.084	-2.866	.221	6.320	.438
Goods in Transit	120	16.0	.133	.3414	.117	2.185	.221	2.820	.438
Raw Materials	120	107.0	.892	.3121	.097	-2.552	.221	4.591	.438
Consumables	120	65.0	.542	.5004	.250	-.169	.221	-2.005	.438
Entrust Goods	120	3.0	.025	.1568	.025	6.162	.221	36.582	.438
Reusable Materials	120	18.0	.150	.3586	.129	1.985	.221	1.974	.438
Processing Materials	120	30.0	.250	.4348	.189	1.169	.221	-.644	.438
Cost of Production	120	45.0	.375	.4862	.236	.523	.221	-1.756	.438
Goods Ship-out	120	19.0	.158	.3666	.134	1.896	.221	1.620	.438
Other Inventories	120	12.0	.100	.3280	.108	3.401	.221	11.898	.438
Effective N (Listing Status)	120								
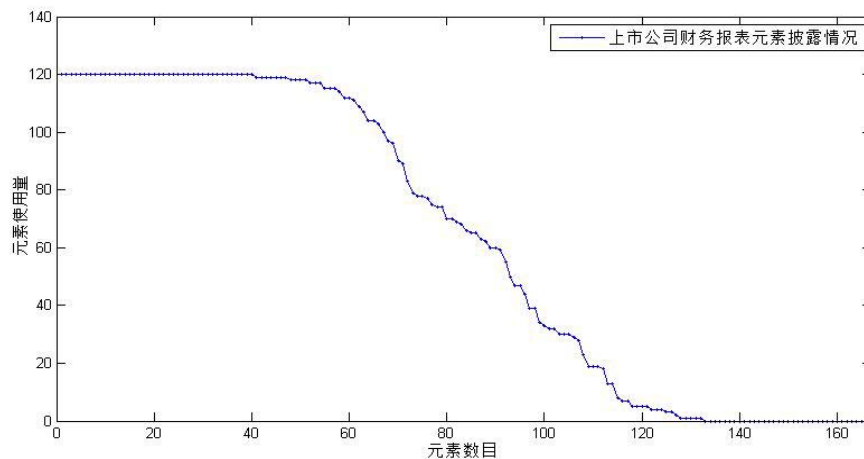
Picture 1 : The Utilization of XBRL Taxonomy Elements

(The data come from Chinese listed companies. The horizontal axis means the number of the elements, and the vertical axis means the utilization of XBRL taxonomy elements)
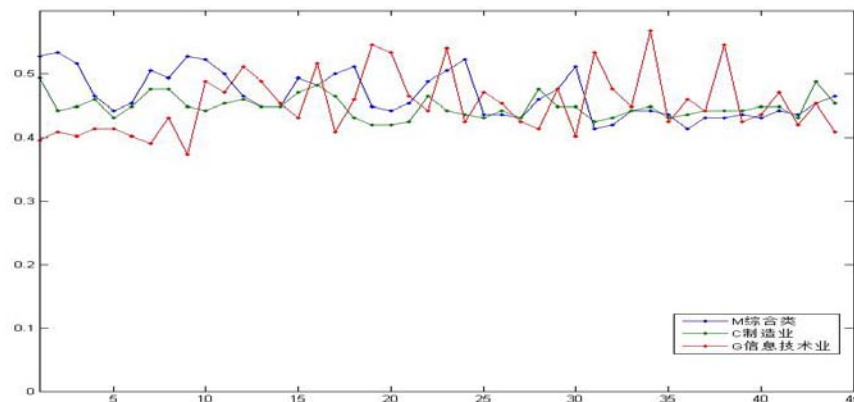
Picture 2 : The Interoperability of XBRL Taxonomy Elements

(The photo is the interoperability of Chinese listed companies of comprehensive industry, manufacturing industry an IT industry

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A Constrained Choice: Productivity and Political Activity

By Rohnn Sanderson

Brescia University, United States

Abstract- Collective choice has been a topic of research for many years. Recent research has focused on individual's trust in government and how a lack of trust can actually lead to an increase in the size of government; and, as the size of government increases, we may again see a further increase in the lack of trust in government. (Garen & Clark, 2011). As I thought about this interesting result I concluded it would be worthwhile to step back and look at this issue through the lens of a constrained optimization problem. In this paper, I solve for an individual making a constrained choice between work and political activity to identify some baseline stylistic characteristics of what may or may not cause increased political activity among individuals.

Keywords: collective choice, utility, political activity, government trust, agency issues, regulation, distrust.

GJHSS-E Classification : FOR Code: 349901p

ACONSTRAINEDCHOICEPRODUCTIVITYANDPOLITICALACTIVITY

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A Constrained Choice: Productivity and Political Activity

Rohnn Sanderson

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I. Introduction

There have been many papers that have focused on various public choice issues. For a small admeasurement we could look at the following: Trust in government (Clark & Lee, 2001), (Garen & Clark, 2011); optimal tax rates and taxation (Mirrlees, 1971), (Abel, 2005); redistribution (Beasley & Coate, 1991); voting issues such as apathy and rational ignorance (Clark & Lee, 2005), (Mcloskey, 2002); thrown away votes (Meehl, 1977); socio-tropic voting (Kinder & Kiewiet, 1979); what goods and levels of provision should be provided by either the government or private markets (Epple & Romano, 1996); or what the state ought to be (Buchanan & Tullock, 1962). Also, there have been many studies such as the effects of political activism and citizen participation (Paloheimo, 2004), (Brady, Verba & Schlozman, 1995), and (Rigolini, 2003). There has also been a measured negative correlation between regulation and trust in government (Aghion et. Al, 2010). In this paper I will not focus on any of these issues per se, although, the resulting model may help to explain further the observed behavior of individuals. Instead, I wish only to focus on determining a set of stylized facts that may help provide insight into individual behavior in response to constrained choices of hours of time spent in political activity, which will almost evidently affect voting behavior, trust and size issues in government, as well as individual's incentives between political activity and work.

Author: Assistant Professor Finance/Economics, W.H Thompson School of Business, Brescia University 717 Frederica St., Owensboro. e-mail: rohnn.sanderson@brescia.edu

II. Model

The model is an expansion similar to Garen & Clark, 2011. Here each individual maximizes the following utility function:

$$Max\, U = (1-t)wh + rs - (h^2 + hs + s^2)$$

Subject to

$$twh = Y + rs$$

With the variables being the following:

t = tax rate
w = wage rate
r = return political activity
h = hours of productive activity
s = hours of political support activity
Y = per capita amount of public good

In this case, the agent gets positive utility from productive work or from political support activity and has an opportunity cost to participate that is quadratic in nature. This allows appropriate trade-offs between the two activities that we would expect; that is to say that there is increasing marginal cost to each type of effort which is separate from the agent's budget constraint. In this model I am assuming a hypothetical situation where the agent is constrained to the provision of both a "true" public good as well as political returns due to the amount in which they contribute. Similar to previous research, I am using the term "true" public good to reflect a public good that is the textbook definition of the term, not the public provision of a private good. That is to say, the "true" public good is truly a public good and actually enhances productivity while being both non-rival and non-excludable. This paper will not deal with the metaphysical debate (Dahlman, 1979) upon the terminology of what makes a public good a public good with externalities and the like. This model allows us to see the choice of an agent when faced with the direct trade-off between the two choices of productive work and political support activity (rent seeking). Solving the model, in the standard utility maximizing fashion, yields the following optimality conditions. As a side note, I did not add a second constraint for the number of hours available to individuals per day/week/month etc. to avoid unnecessary complexity in the model. The behavior will be the same. We just may not reach the global maximums inherent in the functions below.

$$s^* = \frac{(2r+tw)Y - trw^2}{-(2r^2 + 2twr + 2t^2w^2)}$$

$$\frac{\partial s^*}{\partial Y} = -\frac{tw+2r}{2t^2w^2 + 2rtw + 2r^2} \qquad (-)$$

$$h^* = \frac{rw}{2r+tw} - s^* \frac{r+2tw}{2r+tw}$$

$$\frac{\partial h^*}{\partial Y} = \frac{2tw+r}{2t^2w^2 + 2rtw + 2r^2} \qquad (+)$$

From these equations, we can see that the addition to an individual's optimal choice of work also depends on the optimal level of political support activity aside from what we might consider typical such as wages and tax rates. Before we look at some phase diagrams of how the independent variables in the system cause the optimal amounts of productive labor and political activity to change, let us first look at the comparative statics in the system.

$$\frac{\partial s^*}{\partial w} = \frac{(t^3w^2 + 4rt^2w + r^2t)Y + r^2t^2w^2 + 2r^3tw}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \qquad (+)$$

$$\frac{\partial h^*}{\partial w} = -\frac{(2t^3w^2 + 2rt^2w - r^2t)Y + r^2t^2w^2 - r^4}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \qquad (\pm)$$

$$\frac{\partial s^*}{\partial r} = -\frac{(t^2w^2 - 2rtw - 2r^2)Y - t^3w^4 + r^2tw^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \qquad (\pm)$$

$$\frac{\partial h^*}{\partial r} = -\frac{(t^2w^2 - 4rtw + r^2)Y - 2rt^2w^3 - r^2tw^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \qquad (+)$$

$$\frac{\partial s^*}{\partial t} = \frac{(t^2w^3 + 4rtw^2 + r^2w)Y - rt^2w^4 + r^3w^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \qquad (\pm)$$

$$\frac{\partial h^*}{\partial t} = -\frac{(2t^2w^3 + 2rtw^2 - r^2w)Y + 2r^2tw^3 + r^3w^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \qquad (-)$$

What we see is that there are differing results depending on the type of change. It is notable to see, that while it is possible not to engage in political support activity until a certain wage. Increasing wages lead to increasing political support activity. Often we might conclude the opposite to be true by assuming that agents who earn a lower wage have a lower opportunity cost and are more readily willing to substitute work for political activity. That being said, as we would expect, the hours one works will increase as wages increase over a certain wage range, and then decrease once the wage is much higher. The return to political support activity is ambiguous as we will see. The return to political activity will increase political activity for a while, but will quickly cause a reduction in political activity if the return gets "too" high. It also makes some intuitive sense that as taxes increase, so does political support activity and as taxes rise, hours of work will fall. What is perhaps the most interesting is that, as the public good per capita increases, the hours of political support falls and the hours of productive work rises. Perhaps, this is why we see the proliferation of the public provision of private goods and not as much of "true" public goods as there is no rent seeking behavior for public goods.

In general the shapes of the phase diagrams do not change much based on a time constraint, although they do change in regards to the magnitudes of the numbers.

Hours Worked vs Wage r = 10 Y = 1

Hours Political Activity vs Wage r = 10 Y = 1

Hours Worked vs Wage r = 10 Y = 10
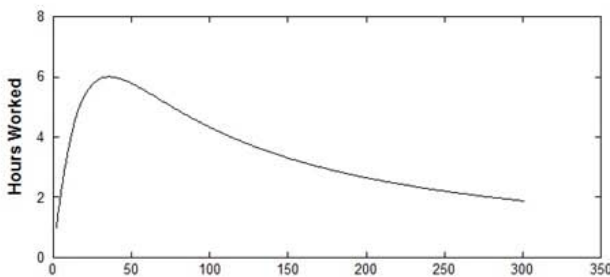
Hours Political Activity vs Wage r = 10 Y = 10
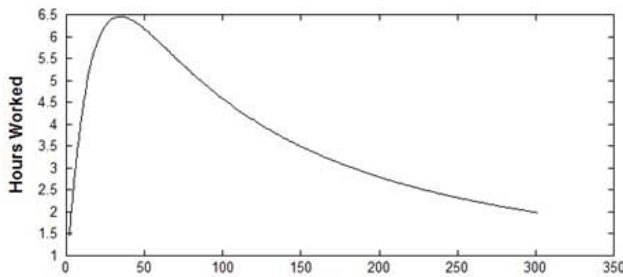
Hours Worked vs Wage r = 10 Y = 100
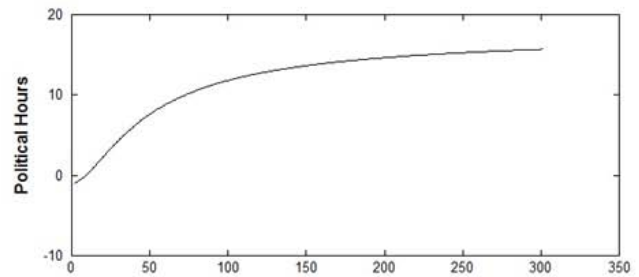
Hours Political Activity vs Wage r = 10 Y = 100
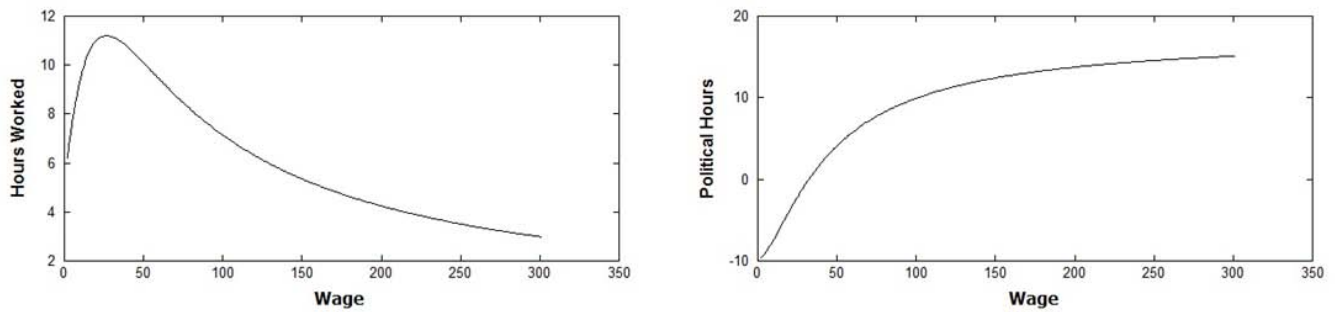
Figure 1 : Phase Diagrams of Varying Wages

Some basic stylistic facts of the model suggest that hours worked will fall as the wage gets high enough, and that political support activity is constantly increasing, but at a decreasing rate. Since Y affects productivity, it does indeed cause a change in the number of productive hours spent working. However, it does not affect the number of political hours as much. The exception being that, as the per capita amount of good public goods increases we see a faster increase in political support activity.

Let us now turn our attention to how the change in tax rates could affect work and political support. As we would expect, an increase in tax rates lowers the amount of productive work. On the contrary, an increase in the tax rate initially increases the amount of political support activity before it falls. Note that, unlike productive work, political support will never go to zero even at a tax rate of 100 percent. This certainly may lend credence to why we see persistence of political support.
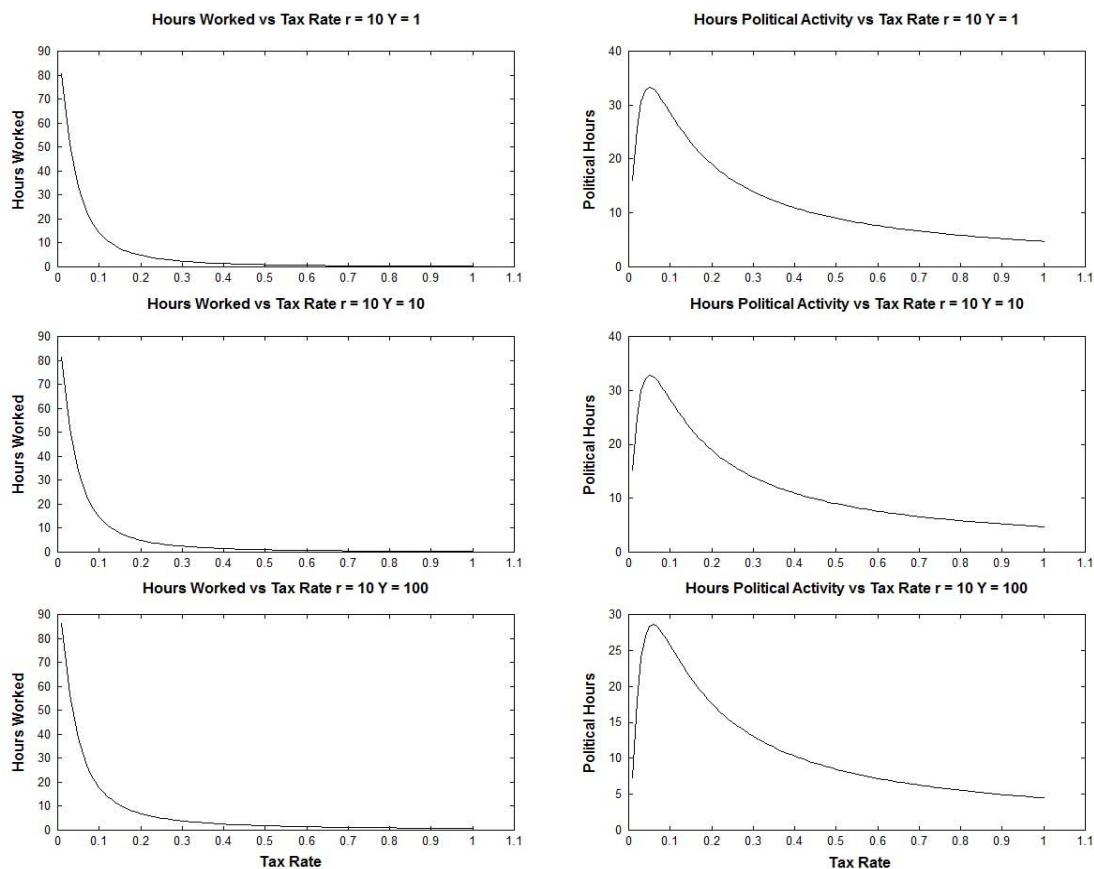
Figure 2 : Phase Diagrams of Varying Tax Rates.

Finally, we will turn our attention to how the political return affects the hours spent on either activity. I have fixed the tax rate at 28 percent and the wage at $50 for this scenario. This leads us to a surprising result. As the political return increases we find that hours of productive work increases. On the other hand, we find that as the return to political activity increases, we see that the hours spent on political activity will fall. Again, one might ask the question "Is there an incentive, for the return to political activity, not to get "too" great?"
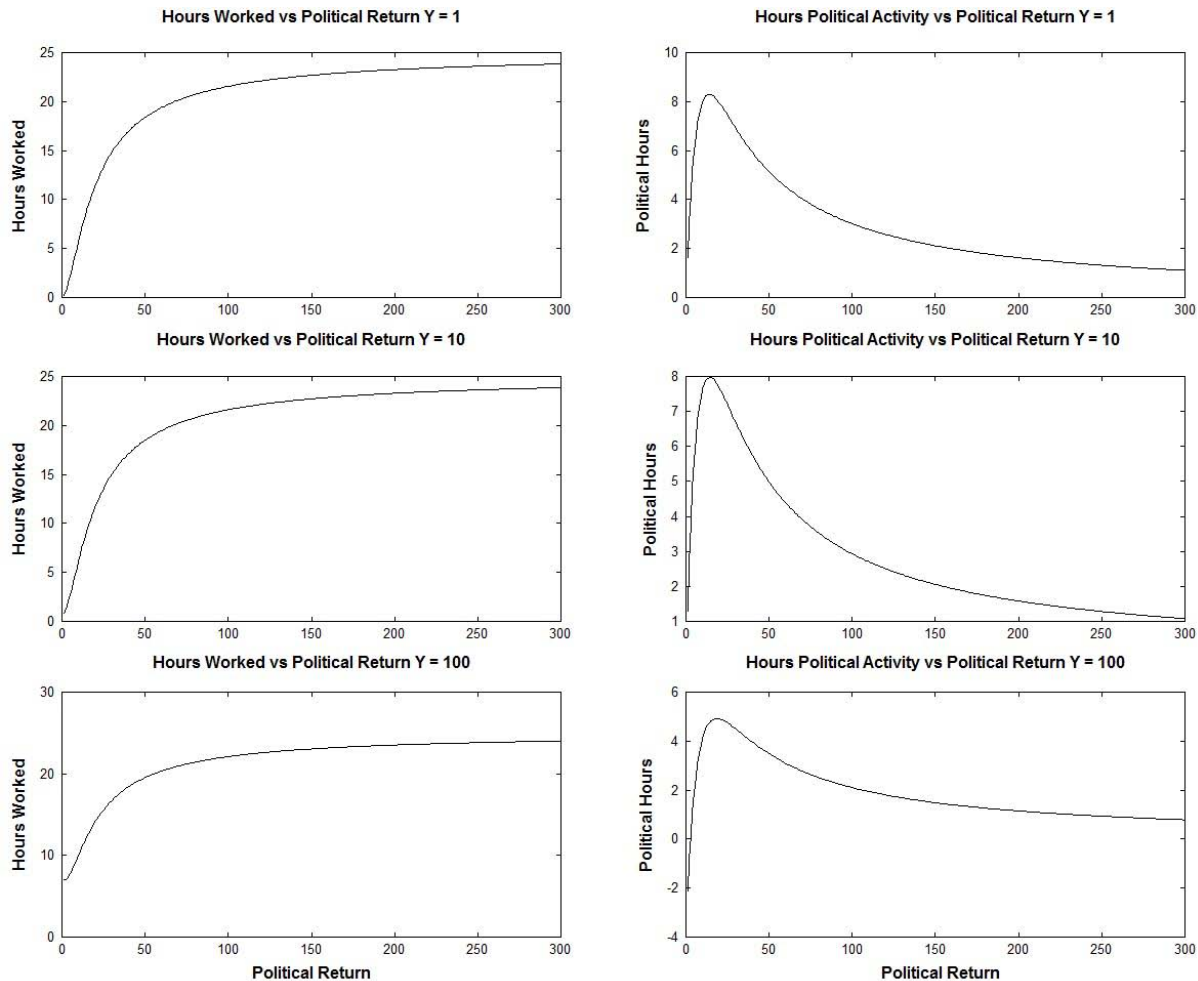
Figure 3 : Phase Diagrams of Varying Political Return

III. Conclusion

Looking at political choice through the lens of utility and constrained choice may give us a valuable insight to how individuals choose between productive work and political activity. The model suggests that contrary to what may be popular opinion, increases in the wage rate can lead to more political activity. Also, what seems evident is, that as the return to political activity increases we will see fewer hours devoted to political activity. Also, "true" public goods reduce rent seeking so we may not see political support activity for public goods. Does this incentivize a political structure of promising much and offering little? There may be a theoretical case that it does.

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Assessment of Households' Food Access and Food Insecurity in Urban Nigeria: A Case Study of Lagos Metropolis

By Odusina Olaniyi A.

Tai Solarin University of Education, Nigeria

Abstract- The study was carried out to assess the prevalence of food insecurity and the level of household food access, as household transit from major harvest period to hunger/lean period in Lagos metropolis. Panel data set was gathered from a total of 180 households in three income settlements of Lagos metropolis using questionnaire. Analysis of data was done using descriptive statistics such as frequency and percentages; Household Food Insecurity Access Scale (HFIAS) and Household Dietary Diversity Scale (HDDS) were used to assess food insecurity and access, while a probit regression model was specified to determine the variables responsible for increasing the probability of household's being food insecure during the hunger period.

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Keywords: access, assess, dietary, food, harvest, hunger, insecurity, metropolis, probit, secure.

I. Introduction

Ensuring food security is currently one of the greatest challenges facing the world community presently because of soaring food prices. This challenge is said to be most critical in Low Income Food Deficit African countries, of which Nigeria is one (FAO, 2008). The problem of food insecurity over the past decade has worsened. The National Planning Commission (NPC, 2005; 2010) pointed out that the existence of this problem of food insecurity when in 2004, more than a third of the population (34.9%) lived in a state of food poverty and worsened over a five year period in 2010 to 38.7% of the Nigerian population. Giovanni *et al* (1987) and Delisle (1990) pointed out that food problems was worsening over the rural - urban divide with more and more people in the urban areas becoming less food secure. This phenomenon arguably arises from the fall out of the urbanisation problem. Again, given that rural areas are the sites for majority of the food consumed in Nigeria, food problem are less likely to be pronounced in rural areas compared to the case of urban areas where agricultural activities are minimal. Urbanisation coupled with the volatile world food prices present a situation of food crisis. As Badmus and Yekini (2011) pointed out, a steady increase in the number of people living in and around cities in Nigeria has implications for food security since the costs of supplying food from rural to urban areas are also rising.

In order to be able to tackle the problem of food insecurity in a country with high levels of urbanisation like Nigeria (NPC, 2005), it is paramount to understand the nature of food insecurity in the area. The International Institute of Tropical Agriculture (IITA, 2012) using the Global Food Security Index (GFSI) of the Economic Intelligence Unit helped in understanding the dimension of food insecurity experienced presently in Nigeria. Using the GFSI, IITA ranked Nigeria very high in terms of food availability or supply among many other countries. However, in the area of food affordability or food access, Nigeria was ranked very low. In fact, out of a total of 105 countries, Nigeria ranked 80. This throws to the fore the fact that food insecurity problems in Nigeria is particularly access related.

A failure to address the problem of food insecurity in Nigeria, has the capacity of tilting the polity, thereby creating political and economic instability as was the case in the Arab Spring, where soaring food prices and hunger triggered a revolution that ousted governments of the country where this uprising began (Egypt and Tunisia). Therefore, if the rapidly emanating trend of food crisis in urban areas relative to rural areas is to be arrested, it is paramount to understand the characteristics of urban dwellers that predispose them to poor food access and ultimately food insecurity for policy making purposes.

a) Theoretical and conceptual framework

The United States Agency for International Development (USAID, 1992) defined food security as a situation when all people at all times have both physical

Author: Department of Agricultural Production and Management Sciences, Tai Solarin University of Education, PMB 2118, Ijebu Ode, Ogun State, Nigeria. e-mail: niyigoke@gmail.com

and economic access to sufficient food needed to meet their dietary needs for a productive and healthy life. Three pillars of food security are also identified as food availability, food access and food utilisation.

Food insecurity on the other hand is the condition of limited or uncertain ability to procure food required to meet dietary needs for a productive and healthy life. Food insecurity problem in Nigeria has been identified to be mainly access dominated. Food access has been defined as the ability of individuals or households to acquire sufficient quantity(s) and quality of food to meet all households' members' nutritional requirements (Langsworthy *et al* 2003). An attempt to assess food insecurity in a country like Nigeria where food insecurity is dominated by lack of access would be largely successful, if the focus of the analysis is on household or individuals' food access. Thus households or individuals with adequate food access would be food secure while those with inadequate food access would be food insecure. As such, in a country like Nigeria, under the prevailing access dominated food insecurity condition, food access can be used as a proxy for measuring food insecurity. A household is said to have adequate food access when it has adequate incomes or other resources to purchase or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet or nutritional level (USAID, 1992).

There are two major approaches to measuring the food access component of food security (or food insecurity as the case may be). The first of the approaches to measuring food insecurity, albeit the access aspect is the quantitative approach which though methodologically sophisticated and empirically grounded as a measurement scale, poorly reflects an individuals' true deprivation. This is because such scales use income-based measures of food insecurity at the household level (Webb et al., 2002) which may not truly reflect food security or insecurity status especially for households producing own food. Usually, this income-based measure of food security at the household level involves manipulation of data of the household income and determining relationships between income-based variables and certain household characteristics (Coates et al., 2003). A typical example of such empirical approach is found in the work of Omonona and Agoi (2007) in which food insecurity situation among urban households in Nigeria was measured. Omonona and Agoi (2007) developed an index for food insecurity as the ratio of per capita food expenditure for a household to the mean per capita food expenditure of all households. An index greater than or equal to one was interpreted as being food secure while one with an index less than one was interpreted as being food insecure. Though empirically appealing, this approach could be limited in its usefulness if one considers households whose food consumption consists of home grown or produced food, or those

households who enjoy food aids or source for food in socially acceptable ways but which do not necessary involve expenditure for food acquisition. A more direct approach which would address household food experience arguably needs be evolved. Recent field validation has shown the usefulness of qualitative approaches in measuring food insecurity in the world over (Webb et al., 2002, Coates et al., 2003, Frongillo and Nanama, 2003). Qualitative measures were found to be strongly correlated with common indicators of poverty and food consumption as well as with indicators used by international aid agencies for monitoring food security-related activities. For the purpose of measuring food insecurity or the food access component of food security, the Food and Agriculture Organisation (FAO, 2008) utilised two types of qualitative measures namely, the Household Food Insecurity Access Scale (HFIAS) and the Household Dietary Diversity Score (HDDS). For the purpose of this study, these two tools were also utilised. Both are simple tools providing information on household's diets in relation to their ability to access food. The HFIAS tool is composed of nine questions that asked about modifications households make in their diet or food consumption patterns when having limited resources to acquire food. The tool elicits whether in the previous month households experienced anxiety about household food supply, and if they reduced the quality or quantity of food consumed. On the other, the HDDS is a measure of the total number of different food groups eaten in the previous 24 hours and such reflects both availability and in particular food access on the premise that households consume a variety of foods when they have the means to consume them.

Therefore using the qualitative approach, the objectives of the study are therefore

i. To determine the level of household food access during harvest and hunger periods in Lagos metropolis.
ii. To determine the prevalence of food insecurity among urban households between the harvest and hunger periods in Lagos metropolis.
iii. To determine the factors responsible for urban households food insecurity in Lagos metropolis.

II. Research Methodology

The sample population for this research was drawn from Lagos metropolis to capture Low Income high population density areas, Medium Income medium population density areas and High Income low population density areas. Based on a classification model adopted by Okuneye et al (2007) to study the interplay of migration and urban expansion on health and environment in Lagos metropolis, the three types of settlements were drawn from Lagos metropolis. Ikoyi LGA was selected to represent High Income Low Population density settlements. Surulere LGA was

selected to represent Middle Income and Medium Population Density settlements. While Agege LGA was selected to represent Low Income and High Population density settlements.

The sampling procedure used for this research is a multi-stage sampling technique. Firstly, using the classification criteria adopted from Okuneye et al.,(2007) the metropolis was classified as described above. A total of 180 randomly selected respondents were covered and these were drawn from three purposively selected Local Government Areas (LGAs) specified above. In each LGA, the street listings of the 2006 National Census were used to draw a random list of six streets after which systematic random sampling was used to select 10 houses (first house was selected by the use of random numbers, subsequently, every fourth house was selected) per street from which a household was subsequently selected. From this starting point, socio-economic, economic, household food consu- mption and risk structure investigations were then carried out in the metropolis. The selected households were interviewed during the post harvest period when food stores are normally good, between September and October of 2010. This was based on the predictions of the Famine Early Warning Systems Network (2010) of harvest season for the southern part of Nigeria where the metropolis is located. A repeat survey was carried out on the same set of households during the hunger period, between December and January of 2011. This was done in order to be able to compare the prevalence or otherwise of food insecurity among households in both settlements over a period of time and to capture accurately the concept of volatility of household consumption between the two time periods. The research instrument was a combination of structured questionnaires designed to elicit responses on household characteristics, socio-economic as well as economic characteristics and HFIAS tool as discussed in the body of this work.

Data obtained was analysed using descriptive statistics such as tables, percentages, frequencies, mean etc. to describe socio-economic characteristics of households. Probit regression model was specified to determine the influence of certain socio-economic characteristics in increasing or decreasing the probability of households being food insecure.

➢ The mean HFIAS score from the HFIAS scale and the mean HDDS score from HDDS scale both of the of the USAID supported FANTA (2003) were used to analyse objective (i) which is to determine level of food access for households in the urban areas. The HFIAS module contains 9 questions with each having a maximum score of 3 for frequency of experience food hunger experience(s). Based on the response to the nine questions and frequency of occurrence over the past 30 days, households are

assigned a score that ranges from 0 to 27. A higher HFIAS score is indicative of poorer access to food and greater household food insecurity. Three degrees of severity of food insecurity was developed adopting the approach of FAO (2008) most food secure = scores of 0-11; medium food secure/moderately food insecure = 12-16; and least food secure/severely food insecure = 17 or more. The HDDS measured the total number of different food groups eaten in the previous 24 hours by any household member. This type of measure according to FAO (2008) is a reflection both of food availability and in particular of food access, on the premise that households consume a variety of foods when they have the means to acquire them. The food groups covered by the HDDS adopting FAO (2008) approach are meant to reflect a range from foods, from those that do not contribute to a nutritious diet but require resources to acquire, such as sugar, sweets, beverages and condiments, to foods that contribute to the quality of the diet in terms of essential nutrients. The tool asked questions on about 12 food groups which for simplicity and compactness was reduced to 8 for the purpose of analysis. The score is a simple sum of food groups consumed by any household member from the total of twelve (FAO 2008). Households were classified into three dietary groups based on the overall distribution of the dietary diversity (DD) score for the metropolis, each combined using data from the first survey. The same categories were maintained for analysis of the metropolis in the second round: low DD = 3 or fewer food groups; medium = 4; and high = 5 or more. Ranges for the mean HFIAS and HDDS were arrived at 95% confidence interval.

➢ The HFIAP tool of the HFIAS scale was used to analyse objective (ii) which is to determine the prevalence of food insecurity among urban households between the harvest and hunger periods in Lagos metropolis.

➢ The probit regression model was specified to determine the factors increasing the probability of households being food insecure or otherwise.

Stating the probit model as a latent variable model, and supposing an auxiliary random variable Y* exists, then

$$Y = 1_{\{Y^*>0\}} = \begin{cases} 1 & \text{if } Y^* > 0 \ \ \text{i.e.} \ \ -\varepsilon < X'\beta, \\ 0 & \text{otherwise.} \end{cases}$$

$$Y^* = X'\beta + \varepsilon,$$

$$\begin{aligned} \Pr(Y = 1 \mid X) = \Pr(Y^* > 0) &= \Pr(X'\beta + \varepsilon > 0) \\ &= \Pr(\varepsilon > -X'\beta) \\ &= \Pr(\varepsilon < X'\beta) \quad \text{(by symmetry of the normal dist)} \\ &= \Phi(X'\beta) \end{aligned}$$

and following the work of FAO (2008) a dichotomous dependent variable of food insecurity is set. Taking household food insecurity (access) as the dependent variable, the probability of the ith household being food insecure or not depends on unobservable index Y_i, that is determined by the explanatory variable in such a way that the larger the value of index Y_i, the greater the probability of the household being food insecure (access). The index Y_i can be expressed as $Y_i = \beta_1 + \beta_2$ X_i, where X_i are the explanatory variables. Therefore, for each household there is a critical or threshold level Y_i^*, such that if Y_i exceeds Y_i^* (HFIAS > 17), the household would be food insecure, otherwise not. Values equal to one are assigned for non-zero observations, so that they have dichotomous value for household food insecurity. The following equation is thus specified given the set of parameters β reflecting the impact of changes in X on the probability of Y being 1.

$$P(Y=1|X) = \Pr(Y^*>0) = \Pr(\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\ldots+\beta_iX_i+\alpha >0).$$

X_1 = Household head's age
X_2 = Number of spouses by household head
X_3 = Number of female household member above 15 years
X_4 = Number of male household member above 15 years
X_5 = Household size
X_6 = Number of household member with minimum of primary education
X_7 = Job type of household head (Self-employed=1, employee=0)
X_8 = Supplementary source of income (Yes=1, No=0)
X_9 = Household monthly income from productive members.
X_{10} = Household monthly saving in formal and informal institutions
X_{11} = Experience of job loss within the research year (Yes=1, No=0)
X_{12} = Experience of hospitalised illness within the research year (Yes=1, No=0)
X_{13} = Eviction notice(s) served within the research year (Yes=1, No=0)

III. Result and Discussion

Table 1 shows that in Lagos metropolis, in all the three areas, majority of the households were male headed with as much as over 70% of the respondents in two of the areas (76.7% and 76% respectively for the low income Agege and high income Ikoyi settlements). It also showed that among the household heads none was above 60 years of age in the low income Agege, while a very minute portion of the medium income Surulere and high income Ikoyi population (1.7% and 3% respectively) had household heads above the age of 60. Interestingly, majority of the interviewed household heads were between the ages of 31 and 40 years (51.7%, 40.7% and 36.7% respectively for low income Agege, medium income Surulere and high income Ikoyi

areas). The implication of having majority of the household head being within this young age group is that most of them are still economically active and productive, capable of pursuing multiple livelihood strategies and ensuring household food security through various streams of income. On the down side however, as it has been argued, wealth tends to be accumulated over a life cycle and it is thus expected that households with older household head tend to have broader wealth base acquired over the years (Wolff, 1979). This wealth base could serve as household insurance against food consumption shocks/risks if the need arises, lacking which, the households suffer. It was observed that none of the respondents from the high income Ikoyi settlement had household sizes above 8 members while households in medium income Surulere

and low income Agege settlements had (5.1% and 1.7% respectively) had. Majority of the households in all three settlement areas had household sizes ranging from 4 to 8 members (68.3%, 74.9% and 61.7% respectively for low income Agege, medium income Surulere and high income Ikoyi settlements). This is a testament to the fact that higher income households tend to have smaller household sizes which ultimately enhances their food security since they have fewer mouths to feed with their relatively better income. In terms of educational diversity, household members with a minimum of primary education varied across the settlement areas.

Table 1 : Socio-economic characteristics of households in Lagos metropolis

	LI (Agege)		MI (Surulere)		HI(Ikoyi)		Total	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
Sex of household head								
Male	46	76.7	40	67.8	50	83.3	136	76.0
Female	14	23.3	19	32.2	10	16.7	43	24.0
Total	60	100.0	59*	100.0	60	100.0	179	100.0
Age of household head								
Below 30 yrs	1	1.7	3	5.1	4	6.7	8	4.5
31-40 yrs	31	51.7	24	40.7	22	36.7	77	43.1
41-50 yrs	18	30.0	23	39.0	19	31.7	60	33.2
51-60 yrs	10	16.7	8	13.6	13	21.7	31	17.4
Above 60 yrs	0	0.0	1	1.7	2	3.3	3	1.8
Total	60	100.0	59*	100.0	60	100.0	179	100.0
Household size								
<4 members	18	30.0	13	22.0	23	38.2	54	30.2
4- 8 members	41	68.3	43	74.9	37	61.7	121	67.6
>8 members	1	1.7	3	5.1	0	0.0	4	2.2
Total	60	100.0	59*	100.0	60	100.0	179	100.0
Household members with minimum of pry sch education								
0	4	6.7	3	5.1	2	3.3	9	5.1
1-3 members	24	40.0	29	49.1	38	63.3	91	50.8
4-8 members	31	41.6	26	44.1	20	33.4	77	43.0
>8 members	1	1.7	1	1.7	0	0.0	2	1.1
Total	60	100.0	59*	100.0	60	100.0	179	100.0
Occupation type of household head								
Self employed	25	41.7	22	37.3	23	38.3	70	39.1
Employee	35	58.3	37	62.7	37	61.7	109	60.9
Total	60	100.0	59*	100.0	60	100.0	179	100.0
Secondary income sources by household heads								
Yes	17	28.7	24	40.7	20	33.3	61	34.1
No	43	71.7	35	59.3	40	66.7	118	65.9
Ratio of household members above 15 yrs								
0.1 to 0.25	20	33.33	12	20.30	10	16.67	42	23.5
0.26 to 0.50	1	7.67	21	35.60	23	38.33	45	25.1
0.50 to 0.75	39	65.00	26	44.10	27	45.00	92	51.4
Total	60	100.0	59*	100.0	60	100.0	179	100.0
Ratio of working household members								
0.1 to 0.25	2	36.67	23	39.0	26	43.33	51	28.5
0.26 to 0.50	24	10.00	30	50.8	23	38.33	77	43.0
0.50 to 0.75	32	46.67	1	1.7	10	16.67	43	24.0
0.76 to 0.99	2	6.67	5	8.5	1	1.67	8	4.5
Total	60	100.0	59*	100.0	60	100.0	179	100.0

Source : Field survey, 2011

Of the 1.7% who had above 8 household members in low income Agege, all had a minimum of primary education, while 1.7% of the 5.1% who had more than 8 household members in the medium income Surulere had a minimum of primary education. Again, even though all three settlements had about a third of interviewed household heads with alternative/secondary sources of income, majority were without secondary sources of income (71.7%, 59.3% and 66.7% respectively for the low income Agege, medium income Surulere and high income Ikoyi settlements). Having an alternative source of income would serve as an insurance for the household against income shocks or income loss arising from any form of eventuality that could be unforeseen especially for households with heads being self employed and whose livelihood are seriously subject to the vicissitude of economic environment in which they are found.

Table 2 shows the level of food access among households in Lagos metropolis. Combining settlements, it shows that all settlements had better food access during the harvest period than in the hunger period as indicated by the lower mean score of the HFIAS during the harvest period. By implication, the seasonality of food in terms of food scarcity during off-season as well as the attendant high prices of food with season change has serious impact on an average household in the metropolis as they were unable to secure an adequate food access for their household in the hunger period. Another possible reason for an average household being unable to secure adequate food access for itself could be as a result of the high standard of living within the metropolis which could also make it difficult for households to smooth out consumption and hence maintain the adequate food access of the harvest season (Fourchard, 2003). On the average, households in the metropolis had adequate food access since the score ranged between 5.63 and 7.27, all less than 11 the cut off point for adequate food access. In the hunger period, on the average, households had relatively moderate food access but did not have adequate food access, since the score ranged from 11.55 to 13.22 at 95% confidence interval. Using Z-test to test for difference in means for households in different settlements between the two rounds of survey and comparing between settlements, consistently in all the three settlements in Lagos metropolis, household members became significantly worse off in terms of food access during the hunger period than in the harvest period (p < 0.01).

Table 3 shows that in the low income Agege settlement area, the proportion of food insecure household increased by about 50% in the hunger period from the harvest period; in medium income Surulere it increased by about 30% and strangely by about 45% in high income Ikoyi settlement area. In the low income Agege settlement area less than a tenth (5%) was severely food insecure in the harvest period; this percentage increased to about a quarter of the population (25%) in the hunger period. The proportion of the moderately food insecure households in low income Agege settlement area increased to about a half of the households (48.3%) in the hunger period from about a quarter (23.3%) during the harvest period. Also, from table 3 it can be seen that among the medium income Surulere settlement, the percentage of severely food insecure went up from about less than a tenth of the population (5.1%) in the harvest period to about a third of the population (32.2%), while there was only a slight increase in the percentage of moderately food insecure household from 30.5% to 35.6%. In the high income Ikoyi settlements, during the harvest period, none was severely food insecure while just a twentieth (5%) was moderately food insecure. The proportion of severely food insecure household increased to just slightly above a tenth (13.3%) in the hunger period from nil during the harvest period. In the same vein, it went up to just slightly above a third for moderately food insecure. In all the three settlement areas, the prevalence of household food insecurity (whether moderate food insecurity or severe food insecurity) decreased as we go up the income class from 73.3% in low income agege, to 67.8% in medium income surulere and finally to 50.0% in high income ikoyi. This result buttresses the findings of Riber and Hamrick (2003) who pointed out that households transit in and out food insecurity over time, as well as the work of Obamiro *et al.* (2005) who posited that the problem of food insecurity in the hunger period is a long standing one.

Table 4 shows household dietary diversity at 2 time periods by settlements in Lagos metropolis. Combined by metropolises, there was a significant difference in the mean number of food groups consumed by households during both periods; the households in Lagos metropolis had higher mean score for dietary diversity in the harvest period than in the hunger period. In the harvest period the combined mean score of food groups consumed during the harvest period was 3.25 i.e. households in Ibadan metropolis consumed an average of 3 food groups during the harvest period. This figure decreased to an average score of 2.54 i.e. households in the settlement consumed lesser food groups in the hunger period. The difference in the mean score for food groups, using Z-test, between the 2 periods was significant at 0.01 level.

Table 2 : Assessment of Household Food Access Using HFIAS score

Combined settlements	Mean HFIAS ± standard error of the mean	95% confidence interval
September – October 2010	6.45 ± 0.41	5.63-7.27
December – January 2011	12.44± 0.45	11.55-13.32
Low Income (Agege) survey 1[a,b]	7.22 ± 0.81	5.60 - 8.84
Low Income (Agege) survey 2[c]	13.83± 0.70	12.42 - 15.24
Medium Income (Suruler) survey 1[d,e]	7.76 ± 0.78	6.21 - 9.32
Medium Income (Surulere) survey 2[f]	13.34± 0.81	11.72 - 14.90
High Income (Ikoyi) survey 1[g]	4.40 ± 0.45	3.00 - 4.80
High Income (Ikoyi) survey 2	10.15 ± 0.75	8.15 - 11.15

Source : Field survey, 2011

a. Z-stat = 2.936, significant difference in mean HFIAS between 2 time periods in Low Income Agege Settlement Area (p < 0.01)
b. Z-stat = 3.121, significant difference in mean HFIAS between Low Income Agege and High Income Ikoyi Area during harvest period (p < 0.01)
c. Z-stat = 2.714, significant difference in mean HFIAS between Low Income Agege and High Income Ikoyi Area during hunger period (p < 0.01)
d. Z-stat = 2.597, significant difference in mean HFIAS between 2 time periods in Medium Income Surulere Settlement Area (p < 0.01)
e. Z-stat = 3.943, significant difference in mean HFIAS between Medium Income Surulere and High Income Ikoyi Area during harvest period (p < 0.01)
f. Z-stat = 2.639, significant difference in mean HFIAS between Medium Income Surulere and High Income Ikoyi Area during hunger period (p < 0.01)
g. Z-stat = 4.126, significant difference in mean HFIAS between 2 time periods in High Income Ikoyi Settlement Area (p < 0.01).

Table 3 : Assessment of prevalence of varying degrees of food insecurity in Lagos metropolis

	Percentage of moderately food insecure households	Percentage of severely food insecure households	Total food insecure households
LI (Agege) survey1	23.3	5.0	28.3
LI (Agege) survey 2	48.3	25.0	73.3
Total	71.6	30.0	
MI (Surulere) survey1	30.5	5.1	35.6
MI (Surulere) survey2	35.6	32.2	67.8
Total	66.1	37.3	
HI (Ikoyi) survey1	5.0	0.0	5.0
HI (Ikoyi) survey2	36.7	13.3	50.0
Total	36.7	13.3	

Source : Field survey, 2011

Table 4 : Assessment of Household Dietary Diversity during harvest and hunger periods in Lagos metropolis

Combined settlements	Mean HDDS ± standard error of the mean	95% confidence interval
September – October 2010	3.25 ± 0.10	3.04 – 3.46
December – January 2011	2.54 ± 0.09	2.79 – 3.18
Low Income (Agege) survey 1	2.55 ± 0.07	2.40 – 2.69
Low Income (Agege) survey 2	2.37 ± 0.10	2.16 – 2.57
Medium Income (Surulere) survey 1	2.25 ± 0.10	1.55 – 1.95
Medium Income (Surulere) survey 2	2.22 ± 0.12	1.48 – 1.96
High Income (Ikoyi) survey 1[a]	4.98 ± 0.08	4.32 – 4.64
High Income (Ikoyi) survey 2	4.33 ± 0.13	3.56 – 4.10

Source : Field survey, 2011

a. Z- stat = 2.732, significant difference between HDDS for High Income Ikoyi during 2 periods (p < 0.01)

Table 4 also shows that in the low income Agege and medium income Surulere settlement the differences between mean score of food groups consumed during the harvest period and the hunger period were slight and insignificant. At the two periods, the average food groups consumed were slightly less than two but ranged between 2.37 and 2.55 as well as between 2.22 and 2.35 respectively for the low income settlements and medium income settlements in the time periods. In the high income Ikoyi settlement area, the mean number of food group was significantly different (0.01 level) than was observed for the low income and medium income settlements. The mean score of food groups consumed by the households in the high income Ikoyi settlement ranged from 4.32 to 4.64 at 95% confidence interval for the harvest period and between 3.56 and 4.10 during the hunger period.

Table 5 shows the household dietary diversity among households combined in Lagos metropolis. The households consumed fewer food groups in the hunger period than in the harvest period. However, the mean number of food groups consumed was not significantly different during the hunger period. A cursory look at the diets of the households in the metropolis gives a clear idea of the quality of food that households have access to. It is noteworthy however that, though this significantly better dietary diversity (a proxy for the quality of diet to which an average household has access) was experienced in both metropolises during the harvest period, yet the dietary status of an average household was ranked as low. It is easily appreciated that an average household in Lagos metropolis had adequate access to the desired quantity of food during both the harvest and hunger period but in terms of quality, an average household had low access to wide spectrum of food types either as a result of off-season scarcity of different types of food during hunger period.

Table 5 : Assessment of Household Dietary Diversity for Combined Settlements in Lagos metropolis

Combined settlements	Mean HDDS ± standard error of the mean	95% confidence interval
Lagos metropolis		
September – October 2010	3.25 ± 0.10	3.04 – 3.46
December – January 2011	2.54 ± 0.09	2.79 – 3.18

Source : Field survey, 2011

Table 6 shows the probit result for determinants of household food insecurity in Lagos metropolis. With respect to the goodness of fit of the model, 74.86% of the time, the estimated coefficients of the model explains variations in observations of the food insecurity index. This is shown by the value of percentage correctly explained. Also, together, the explanatory variables or the coefficients are statistically significant since the LR statistic is 20.8766 with a *p* value of 0.0754. For Lagos metropolis, households with older head (p< 0.01), larger sizes (p< 0.1) and experiencing job loss among employed members (p< 0.1) had the propensity of being food insecure. On the other hand, households with more adult male members (p< 0.05) had the propensity of being food secure.

Table 6 : Probit regression result of determinant of household food insecurity in Lagos metropolis

Dependent variable: Household food insecurity Convergence achieved after 4 iterations

Variable name	Estimated coefficient(β)	Standard error	t-ratio
Age of household head	0.28149***	0.10047	2.80170
No of spouse(s)	-0.28994	0.32228	-0.89966
No of females >15yrs	0.11051	0.10339	1.06886
No of males >15yrs	-0.23720**	0.10533	-2.2519
Household size	0.20314*	0.10424	1.9480
No of household member with pry education	-0.10634	0.10334	-1.029
Occupation of household head	0.32821	0.22658	1.4486
Supplementary source of household head income	-0.97119E-02	0.22303	-0.43545E-01
Household monthly income	-0.32160E-05	0.29427E-05	-1.0929
Household savings	-0.84576E-05	0.12230E-04	-0.69157
Job loss experience	0.42903*	0.23600	1.8179

Hospitalised illness	-0.29386	0.21985	-1.3366
Eviction notices	-0.23303	0.23991	-0.97130
Constant	-1.5768	0.60792	-2.5938

Source: Field survey, 2011

No of observations = 179, *** sig at 0.01, ** sig at 0.05, * sig at 0.10

Loglikelihood function = -95.587,

scale factor = 0.32177,

% correctly predicted = 74.86%

Chow R-squared = 0.11686

Cragg- uhler R-squared = 0.15859

F = 0.11760 at 13 d.f

Likelihood ratio statistics = 20.8766

p> chi squared = 0.07540

IV. Conclusion and Recommendation

From the study, the following can be concluded;

i. Harvest period food access was significantly better than hunger period food access for an average household in the metropolis.

ii. Seasonal nature of food commodities affects an average household access to food commodities.

iii. Access to food in the right quantity among households in the metropolis does not guarantee access to food of the right quality as situations existed where average households in Lagos metropolis had adequate food access in both harvest and hunger periods but when their dietary diversity was considered, they were ranked low.

iv. Food insecurity was prevalent transiting from harvest to hunger period, albeit the more for low income settlement areas than for the higher income areas.

v. Household's experience of job loss was significant as risks or shock variables capable of plunging households into conditions of food insecurity.

vi. Households with older heads tended to be food insecure than those with younger heads in the metropolis.

vii. Larger households were significantly more food insecure than smaller households.

Therefore, this research work recommends the following;

i. Urgent steps should be taken to stem the tide of increasing food prices to affordable levels.

ii. Agricultural policy(s) aimed at strengthening the agricultural sector of the economy to ensure sustainable food security in the country, should be formulated

iii. Encourage family planning such that households would learn to keep their household sizes within their means of reasonable sustenance.

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The Model for Decreasing the Costs in Supply Chain with Importance of Suppliers

By Oleg Dejnega

Technical University Ostrava, Czech Republic

Abstract- The article deals with a design of model for decreasing costs in the supply chain with especially importance of alternative suppliers on the base model of authors Bahareh Amirjabbari, Nadia Bhuiyan and their cost minimization model with adjustment of safety stock. Paper shows the formulation and design of cost model with outlining a model in a particular case study to supply chain with two suppliers and with their respective independent alternative suppliers, stream of material, manufacturing in plant, safety stock and two final customers and used the conclusion of case study for further research with design appropriate model for distribution of final parts to costumers. The goal of this paper is a model and its application to reduce costs in supply chains using contracted suppliers and their probability of delivery in conjunction with alternative suppliers and their performance.

THEMODELFORDECREASINGTHECOSTSINSUPPLYCHAINWITHIMPORTANCEOFSUPPLIERS

Strictly as per the compliance and regulations of:

The Model for Decreasing the Costs in Supply Chain with Importance of Suppliers

Oleg Dejnega

Abstract- The article deals with a design of model for decreasing costs in the supply chain with especially importance of alternative suppliers on the base model of authors Bahareh Amirjabbari, Nadia Bhuiyan and their cost minimization model with adjustment of safety stock. Paper shows the formulation and design of cost model with outlining a model in a particular case study to supply chain with two suppliers and with their respective independent alternative suppliers, stream of material, manufacturing in plant, safety stock and two final customers and used the conclusion of case study for further research with design appropriate model for distribution of final parts to costumers. The goal of this paper is a model and its application to reduce costs in supply chains using contracted suppliers and their probability of delivery in conjunction with alternative suppliers and their performance.

Keywords: costs, supply chain management, cost model, probability, delivery performance, equations, alternative supplier.

I. Introduction

The supply chain management became an important part of business units without respect to field of activity. The concepts of supply chain, vendor or logistics are common words of business communication in most firms. Supply chain management going like red thread throw the all business activities like for example delivery, production, sales, storage etc. and join these activities in the one complex set of lead activities. It is very hard to lead all these activities, particularly in the current economic environment, when all companies around the world are under big economic pressure to hold up or alive in the global economic environment. The aims of firms are to streamline these activities and recognized what is important and especially decreased the costs of these activities, which are parts of supply chains. In this article I try to outline the cost model on the base of authors Bahareh Amirjabbari and Nadia Bhuiyan to set save costs supply chain in chosen firm with roles of particular suppliers on the way to obtain desired materials or finished products and decreased the costs in the supply chain.

a) Literature review

According to the literature we could meet with many sorts of approaches and methods how to lead the whole supply chain in the given economic conditions and how to solve the particularly supply problems (bull whip effect, delays, disruptions, capacity constraints, optimal portfolio of families products). Consequences of supply chain disruptions might be financial losses, negative corporate image or a bad reputation eventually accompanied by a loss in demand as well as damages in security and health (Jüttner et al., 2003). These problems are especially joining with problems of different inventory drivers like level of supply chain cooperation, forecast accuracy, order pattern, the policy of safety stock, visibility, external and internal effects (Chopra, Sodhi, 2004), quality of leading, customer requirements (Yu, Gonzalez-Zugasti and Otto, 1998), product families and the relationship between suppliers and given firm. But the aims of all firms around the world are very similar. On the one hand it is an effort to maximally the level of service and availability of products, because when you are not able to deliver the desired amount of products, you will lost the customer (profit) and also the goodwill of firms and on the other hand companies want to minimalist the costs of whole supply chain and became more competitive. Any obstacles at any node and level of supply chain can result in unavailability of products to their customers (www.rhsupplies.org) and every tier and member of supply chain can influenced the whole performance of supply chain and others members (Amirjabbari, Bhuiyan, 2011).

Moreover we can not to ignore the role of risk in the supply chains. For example (Atkinson, 2006) deals with lean manufacturing and global sourcing in the context of supply chain risk management, (Kumar, DuFresne and Hahler, 2007) highlight the importance of pitfalls in outsourcing, which has led to increased dependence on interconnected supply chains that are vulnerable to associated risks. (Őkmen and Őztaş, 2010) point out an importance of analysis of the uncertainty of estimated costs in supply chain.

Safety stock plays an important role in the live of company's supply chains. His role is irreplaceable and he is joining with procurement, transport, production level, service, storage, holding and etc. It is plaster, than the supply chain is weakened or resisted some internal or external problems and thus became in the last time a subject of numerous surveys. For example (Yang and Wee, 2000) proposed an ordering policy for a vendor–buyer integrated model, (Keskin and Uster, 2007) trying to find the relationship between stocks and transport,

Author: Faculty of Economics / Technical University.
e-mail: ostrava o.dejnega@gmail.com

(Jeet, Katanoglu and Amit, 2009) proposed the model for network design and inventory stocking problem. (Cetinkaya et al., 2009) designed the multi model with relationships between the production outputs, finished product inventories at the factory warehouse, warehouse at the DCs and bins, plant to store shipment quantities to direct customers and interplant shipment quantities to the other plants, shipments quantities from the DCs and bins to customers and customer demand that can be satisfied by shipments from DCs, bins or direct from factory warehouse. Finally (Cunha, Agard and Kusiak, 2007) presented strategy assemble-to-order (ATO) production strategy considers a tradeoff between the size of a product portfolio and the assembly lead time. There are exist some others surveys that considered the transport, stock, holding costs or capacity in the traditional stock models with simultaneously flows and set up time horizon by software using. But the model of authors (Amirjabbari, Bhuiyan, 2011) focused to adjustment sizing of safety stock with minimize of costs with its optimum location in the stream.

II. Model Structure

The optimization model is described like possible value streams of each product, material or intermediate product of company to result in the adjustment sizing of safety stock for these items with focus to calculating of probability of failures for contracted suppliers and their alternative suppliers. The model contains two parties along the supply chain: contracted supplier or alternative supplier and production plant, who is the buyer. The model has variation basis (discrete). The procurement department of the company is responsible for procuring the raw materials or semi-finished parts, finished products through suppliers to manufacturing plants or even supplying parts from one manufacturing plant to other business units. The final products are sold to final customers.

The model is developed on the basis of the following assumptions. (1) The stream of material or finished products is different for every type of final product. It means, that every product has own deliver way. (2) The every contracted supplier has own probability of deliver, which is given by historical data from database of suppliers. In our case we take the alternative approach from cost minimizing model of (Amirjabbari, Bhuiyan, 2011) and their First Filled Rate (FFR) of their case study from aerospace company. We used historical data from database of corporate information. (3) Every alternative supplier has own probability of delivery performance and the role of alternative supplier occurs when the contracted supplier is not able to arrange the required items. (4) The safety stock is adjustment on the historical data of suppliers from the last time period, forecast of demand from last period, the requirements of particular business units and new factor is add in the form of probability delivery performance of both sorts of suppliers. (5) The last assumptions is fixed amount of delivery agreed between the supplier and plant on the basis of historical data.

It should be noted that procurement's location can be different from manufacturing ones. This availability should be guaranteed through safety stock, but the optimum safety stock level and location should also minimize logistics costs. Moreover, the aim of this article is designs and describes the model of cost minimization with probability failures of suppliers and possibility to use alternative suppliers. In the model we can use many different sets of semi finished products, materials or finished goods with combination of unlimited numbers of suppliers and end customers, shortage and overage costs, delivery performance of particular suppliers (S) with their probability of failure, the amount of alternative suppliers (W) are the inputs of the model. The model is in generally form describes on Fig.1 and mathematically expresses by equation (1). List of regarding parameters used in general model are included in appendix A.
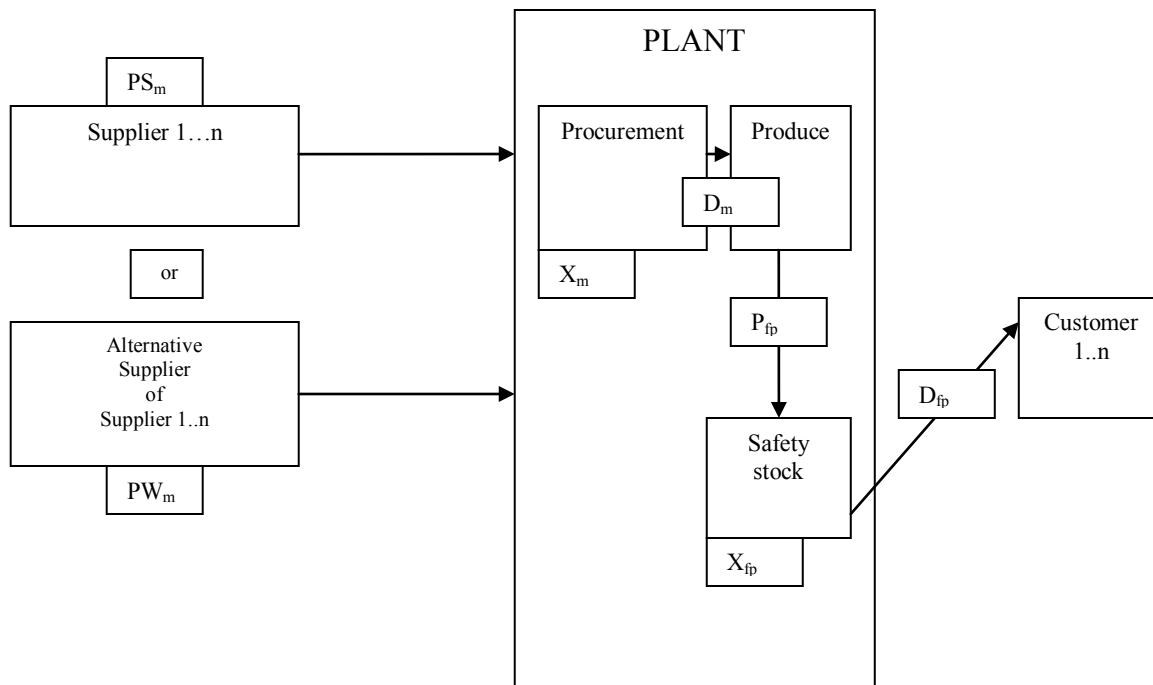
Figure 1 : General stream in cost model

The model serves the choice of the best supply chain system. It is possible to write as follow

$$C_i = \sum_{S}^{a_i} \sum_{W}^{b_i} \sum_{m}^{c_i} \left[CS_{SWm} q_{SWm}(1 - P_{SWm}) + CO_{SWm} q_{SWm}(D_m - P_{SWm}) \right] + \sum_{fp}^{d_i} \sum_{c}^{e_i} \left[CS_{fp,c} q_{fp,c}(1 - D_{fp,c}) \right] +$$

$$+ \sum_{fp}^{d_i} \sum_{c}^{e_i} \left[CO_{fp,c} q_{fp,c}(D_{fp,c} - (P_{fp,c} \square D_m)) \right]. \tag{1}$$

The cost of any variant is calculated as follows.

$C_i = a_i + b_i + c_i + d_i + e_i$

a_i is sum of contracted supplier

b_i is sum of alternative supplier

c_i is sum of material

d_i is sum of finished products

e_i is sum of customers

$$i_{op} = \arg \min C_i$$

$$i \in S$$

Here i_{op} is the best variant, S is set of variants, C_i is cost of the ith variant.

The equation (1) contains basic parameters. CS_{SWm} is the costs of shortages of material, which should be deliver by contracted supplier (S) and by alternative supplier (W). The parameter q_{SWm} is on time delivered material by contracted supplier (S) and alternative supplier (W). Expression *(1-P_{SWm})* is difference between the highest delivery performance and supplier delivery performance to procurement of material. The constant 1 means that delivery performance is set to 100% percent. It means that every delivery from both type of supplier will be in required time in company. CO_{SWm} are the costs of overage of material, D_m is delivery performance of procurement to manufacturing, $CS_{fp,c}$ are shortage costs of finished products for customers, and $q_{fp,c}$ is on time

delivered finished products for customer. Expression $(1 - P_{fp,c})$ is difference between highest delivery performance of finished products to customers and manufacturing performance. The constant 1 means, that boundary is set on the 100%. In the last part of equation we can find the parameter $D_{fp,c}$, which is the delivery performance of manufacturing or procurement to costumers. The product between manufacturing performance for finished part and delivery performance of procurement to manufacturing of material we must deduct, because, material is input to finished products. In the next section, these above parameters will be developed by mathematical substantiation.

III. Model Development

The purpose of model is to provide minimum costs in supply chain with consequence adjustment of safety stock. In the design of model are needs to by analyzed particular parameters to identify the important elements of costs model. List of regarding parameters used in development of model are included in appendix A.

Important part of minimize model is determination of costs. In our model are cost shortage and cost of overage. Shortage costs (costs of safety stock violation) have different definitions for materials and finished parts as they are located in different stages within the supply chain and their shortages have different effects on firm. The shortage cost of material is the summation of the expediting cost on the supplier, transportation and overtime of the manufacturing section. On the other hand, shortage cause disruptions and stock not pulled for all the other parts related to that finished part and also its finished product in different locations of the supply chain. In addition, shortage of the finished part causes the finished assembled product to be held up unreleased. In addition, the unreleased production is the loss of profit and visibility, goodwill by customers, which is very hard to calculate, because it is qualitative elements. Therefore, the shortage cost is defined as follows:

CS_{fp} – [(standard costs of final product · the average number of days, in which the product stand like product in the form of non-final product · interest rate or the unselected best opportunity for interest of money) / (365 days per one year)] + (lost profit).

The cost of overage (CO) is defined as the interest that the company is losing by holding inventory instead of having it in cash. Hence, it is the multiplication of standard cost of the part and the annual interest rate or unselected best opportunity for interest of money.

The model for decreasing the costs in supply chain model in our article is based outside the supplier delivery performance to procurement, manufacturing performance for finished part, shortages costs, overage costs, delivery performance of procurement to manufacture, delivery performance of manufacturing or procurement to costumers also the two types of probability. The first is the probability of delivery performance for contracted supplier and the second is probability of delivery performance for alternative supplier, when the contracted supplier failed to calculate the parameter P_{SWm}.

P_{SWm} is supplier delivery performance to procurement and contains both delivery performance of the contracted supplier (S) as well as the performance of alternative supplier (W). The parameter P_{SWm} is sum of on time probability of the contracted supplier and alternative supplier. When we use, the concept of "odds", which is defined as the ratio of probabilities defined in the usual way to the probability that an event occurs the opposite: odds = $a / (1 - a)$, where (a) is then we calculate P_{SWm} like:

$$PR_{SWm} = \sum_{S=1}^{M} PRqit_{Sm} + \left(\frac{PRF_{Sm}}{\sum_{W=1}^{M} PRqit_{wm}} \right), \qquad (2)$$

where, $PRqit_{Sm}$ is probability of in time delivery of contracted supplier for material, PRF_{Sm} is failure of supplier in deliveries and $PRqit_{Wm}$ is probability on time delivery of alternative supplier.

The same procedure can also be used in the calculation of performance in the supply chain of finished products, when the index (m) is replace by (fp).

Later, PRq_{itSWm} is the sum of right time deliver of contractual supplier (S) and delivery performance in right time by alternative suppliers (W) of material. The number of alternative supplier and their delivery performance is the wage, which play an important role in the case of minimum costs in the whole supply chain and adjustment of safety stock. The equation (3) presented the sum of probability.

$$PRqit_{SWm} = \sum_{S=1}^{M} PRqit_{Sm} + \sum_{W=1}^{M} PRqit_{Wm}, \qquad (3)$$

where PRq_{itSm} is probability of the in time delivery by contracted supplier, PRq_{itWm} is probability of the in time delivery by alternative supplier.

Then, the probability of failure of alternative suppliers for finished products and material or intermediate products (PRF_{Wfpm}) is sum:

$$PRF_{Wfpm} = \sum_{W=1}^{M} PRF_{Wfp} + \sum_{W=1}^{M} PRF_{Wm}. \qquad (4)$$

Subject to, PRF_{Wfp} and PRF_{Wm} are probabilities of failures of alternative supplier for material and finished products.

In the equation number (5) is describe the probability of the all alternative suppliers to deliver the material or finished products qit_{Wmfp} is on-time delivery of

alternative supplier. The alternative supplier (W) is defined like supplier, who fills the role of supplier, if the agreed supplier is not able to deliver the goods.

$$PRit_W = \sum_{W=1}^{M} PRqit_{wmfp} \qquad (5)$$

In the equation number (6) the probability of failure for supplier of material or semi-finished product is described and the same approach is also in the equation number (7) with the difference for probability failure for supplier of the finished products. The parameters F_{Sm} and FS_{fp} are failures of contracted supplier for material, respective for finished products.

$$PRF_{Sm} = \sum_{S=1}^{M} PRF_{Sm} , \qquad (6)$$

$$PRF_{Sfp} = \sum_{S=1}^{M} PRF_{Sfp} . \qquad (7)$$

The whole derivation process is completed of parameter P_{SWm} is based on the probability for successful deliveries to the amount of all deliveries during the time period for one supplier of material or finished products. F_S is failure of contracted supplier, q_{itsm} is number of in time delivered material of contracted supplier and n is the number of deliveries during the researched time period.

$$PRF_s = \frac{qit_{Sm}}{n} \qquad (8)$$

The next important parameter to derive a model of decreasing costs is delivery performance of procurement to manufacturing (D_m). D_m is the sum of the availability percentage of material, semi-finished part for manufacturing through procurement based on the absolute performance of contractual or alternative contractual suppliers (P_{SWm}) and the availability of safety stock for these above items (Xi/Qi). Indeed, procurement can deliver whatever quantities they received on time through suppliers plus their safety stock to the manufacturing. The same situation is also in the case of D_{fp}, which is the sum of percentage availability of finished part, which is dependent on the own manufacturing performance P_{fp} and also on the D_m, because the material and semi-finished products are inputs for final products and their performance are important for manufacturing and we must also calculate the availability of safety stock for finished products (X_{fp}/Q_{fp}).

Moreover, manufacturing can deliver whatever quantities of final products they can produce on time which is also dependent on the deliveries of their previous stages in the chain plus their own safety stock quantities to their customers.

The related formulas of D_m and D_{fp} are as (9) and (10):

$$D_m = P_{SWm} + (X_m/Q_m) \qquad m = 1,2.....n \qquad (9)$$

$$D_{fp} = P_{fp} \cdot D_m + (X_{fp}/Q_{fp}). \quad fp =1,2.....n \qquad (10)$$

$D_m \leq 1$

$D_m \geq P_{SW_m}$

$D_{fp} \leq 1,$

$D_{fp} \geq P_{fp} \cdot D_m.$

We must also emphasized, that P_{SWm} and P_{fp} are average numbers based on the historical firm's data from the last reviewed period. A report called the First Filled Rate (FFR) and it is used for calculation of these parameters (Amirjabbari, Bhuiyan, 2011). In our case study we use the historical data from corporate database, which has the same explanatory power like FFR. The FFR obtain the results the total on hand stock in its calculation, which does include safety stock. It means the presentation of availability of right part in the right time. It should be noted that P_{SWm} and P_{fp} should be the absolute delivery performance of supplier and manufacturing without the contribution of the safety stock that may be used during the last period. Therefore, the safety stock has been excluded from the FFR report for this purpose. Indeed, P_{fp} is the manufacturing performance without taking into account the stock out of raw materials (Aleotti, Qassim, 1998). Hence, with refer to (Amirjabbari, Bhuiyan, 2011) to calculate the required absolute value of P_{fp} from FFR, three other parameters should be defined. First one is K'_{fp} which is the exact number extracted through FFR, the other one is P'_{fp} which is the FFR's result excluding safety stock contribution. And the third one is D'_m which is the historical previous stage's delivery performance; by dividing this by P'_{fp} the absolute manufacturing performance is measured $(P_{fp}=P'_{fp}/D'_m)$.

IV. Computational Results of Model
Bahareh Amirjabbari and Nadia Bhuiyan

The case study of these authors was performed in one aerospace industry company. Company is characterized by high demand variability and long lead time and it is multi-stage manufacturer. Company has two different manufacturing plants. The procurement of the company is responsible for materials and semi-finished product or even final products. Finished parts from manufacturing are sell to final costumers. The availability of parts in right time and right parts can be assured for the internal customers; on-time delivery performance to end customers will be assured as well. The availability should be guaranteed through safety stock, but optimal safety stock saves the costs not only in the firm, but also in the whole supply chain. Results of the model were applied in some chosen value streams. In our case study, we focused on the base value stream, which will be denoted by "A". The stream A contains

supplier, procurement, manufacture, two customers and one material. The all inputs are characterized in the Tab.1. such as delivery performance, parts quantities, costs along the parameters required to calculate them (exact number from FFR - $D'f_p$, P'_{fp} – FFR results without safety stock and historical delivery data of performance - D'_m). The table also shows the level of new and old safety stock and total costs to compare previous situation with new one. Authors mentioned that due to confidentiality the data were masked.

Shortage costs of two main customers are the first highest costs, so the model focused to this problem. Recommend to increased delivery performance to 100% be keeping safety stock for finished parts. These two main customers must compensate 39% and 70% of unavailability of parts by asking manufacturing to keep safety stock. Then the third and fourth are overage costs of same entities. Hence, the model suggests keeping some level of safety stock in the raw material as well to lover the level of finished parts, because how we mentioned above, the delivery performance of procurement to manufacturing is part of or conditionality the delivery performance of manufacturing finished parts to other departments of firm or to final customers. It is shown that procurement can count on-time delivery performance about 57% and they have to reimburse 43% by having safety stock. Safety stock has been increased in both levels of supplier and manufacturing, of course before applying the recommend and capacity will be set up due to new demand and input respectively.

Table 1 : Results of value stream "A" in model of authors Amirjabbari and Bhuiyan

Value stream	A	A	A
Part	B	AB	AB
Entity	MF	C1	C2
D'_m	0,65	-	-
P_m	0,57	-	-
Q_m	1400	-	-
P'_{fp}	-	0,4	0,2
P_{fp}	-	0,61	0,3
Q_{fp}	-	1100	900
D'_{fp}	-	0,53	0,46
Costs	40$	120$	120$
CS	2$	500$	480$
CO	4$	12$	12$
Old X_m	0&500	-	-
New X_m	602$	-	-
Old X_{fp}	-	1&8	300
New X_{fp}	-	429	630
Total old cost	497 732$		
Total new cost	15 116$		

V. Final Minimize Cost Model – Case Study

The case study was undertaken in one food company on the middle Moravia in Czech Republic. The company produces a wide array of food products like snacks, cookies, cereals etc. In our case we use simplifying value stream *(j)* of two suppliers with product (material) of corn flour. This case is so little limited, because it is very hard to capture for example shortage costs in upstream stages of supply chain, but for our necessities is important the existence of suppliers in the supply chain with existing some products and end customers. This value stream is described on the Fig.2 and mathematical express by equation (11). The average order of corn flour is 7.8 tons and these delivering cycles are eight times per month. In year 2010 the firm used 750 tons of corn flour and safety stock is set up on the 20% of one month delivering amounts, it means 13 tons. The costs are 8020 CZK per one ton.

Sale price of product is 16 CZK per one piece. All necessary inputs of equation are illustrated in the Tab.2. Furthermore, the aim of the model is cost minimization and the upstream stages' contributions towards cost are significantly less than the downstream stages, thus this simplifying assumption should have a negligible effect on overall results (Amirjabbari, Bhuiyan, 2011).
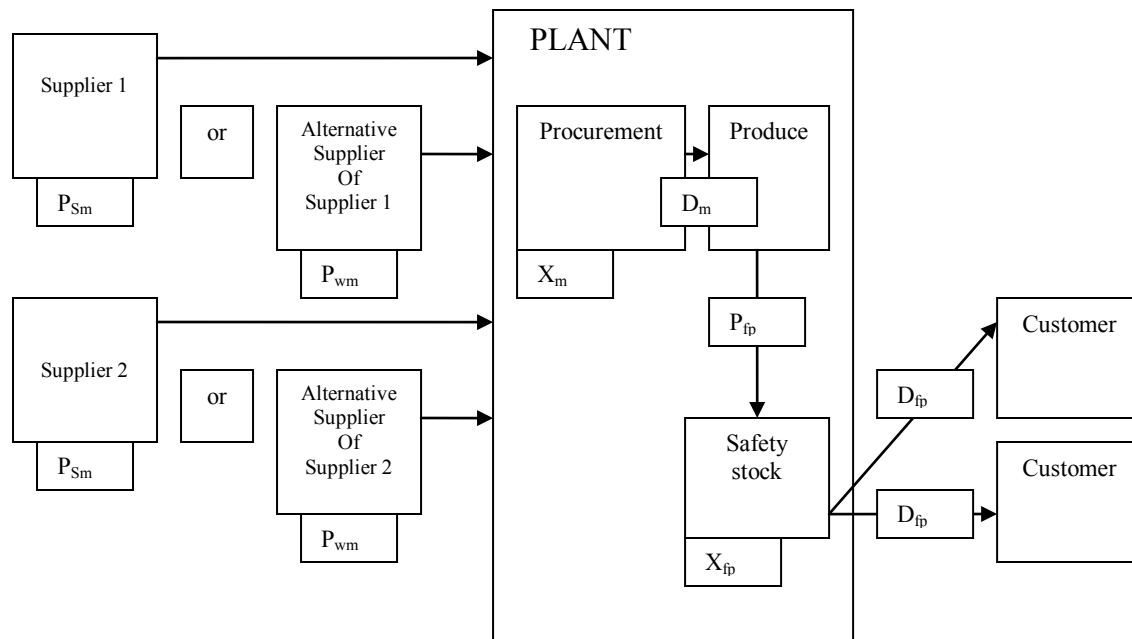
Figure 2 : Stream of material and finished products in supply chain

Table 2 : Inputs of model for case study

Probability of delivery contracted supplier	98%
Probability of delivery alternative supplier	90%
Price per one ton – contracted deliver	8.000 CZK/ton
Price per one ton – alternative supplier	9.000 CZK/ton
Consumption	750 tons/year
Wage costs	1 CZK/kg
Sale price	16 CZK/pcs.
Safety stock 20% from 1 order	13 tons (0,2 · 62.4)
Amounts per one month	62,4 tons
Costs stock of finished products	1,2 CZK/kg
Profit	5,65 CZK/pcs.
Interest rate	1,5%

The equation (11) contains the sum of two suppliers (contracted + alternative) with their costs of shortages. It is very important, because, when supplier is not able to deliver the desired amount of material or finished products, company lost the potential customers. Parameter q_{SWm} means on-time delivered material in number of pieces. Expression *(1 - P_{SWm})* is

difference between supplier delivery performance to procurement and boundary of delivery level, which is adjustment to 100%. This parameter setting limits the level of service can take values in the interval 0 to 1. Parameter CO_{SWm} are the costs of overage of material, D_m is delivery performance of procurement to manufacturing, $CS_{fp,c}$ are shortage costs of finished products for customers, and $q_{fp,c}$ is on time delivered finished products for customer. The sum is product of on time delivered amounts of material with difference between delivery performance of procurement to manufacturing and supplier delivery performance to procurement. The second part of equation deals with the problem of finished products. In our case we have sum of two customers, which are join with also shortages and overages costs. Expression *(1 – $D_{fp,c}$)* is difference between level of deliveries to customers, which is adjust on 100% and identified real fact. The last part of equation $D_{fp,c} - (P_{fp,c} D_m)$ is difference between delivery performances of manufacturing or procurement to costumers and product of manufacturing perfor-mance for finished part with delivery performance of procurement to manufacturing for material, because the finished products are depend on the material flows.

$$C_j = \sum_{S}^{3} \sum_{W}^{3} \sum_{m}^{3} \left[CS_{SWm} q_{SWm} (1 - P_{SWm}) + CO_{SWm} q_{SWm} (D_m - P_{SWm}) \right] + \sum_{fp=1}^{1} \sum_{c=1}^{2} \left[CS_{fp,c} q_{fp,c} (1 - D_{fp,c}) \right] +$$

$$+ \sum_{fp=1}^{1} \sum_{c=1}^{2} \left[CO_{fp,c} q_{fp,c} (D_{fp,c} - (P_{fp,c} D_m)) \right] \tag{11}$$

The first part of given above equation is determining the cost of shortage (CS_{SWm}) of contracted and alternative supplier. This calculation comes from price of one ton corn flour. The one ton of corn flour costs 8.020 CZK. From data of firm, one ton corn flour by contracted supplier cost 8.000 CZK and by alternative supplier 9.000 CZK. The result price is product of probability of delivery with particular given price.

Price of corn flour per one ton = [(0,98 · 8.000) + (0,02 · 9.000)] = 8.020 CZK. It means that 98% of all corn flour is delivered by contracted supplier and 2% of alternative supplier with given prices. The price 8.020 CZK is also potential lost, because company lacks this material for next treatment. In reality we have cash, but we do not have material, so we can not calculate with some interest rate in this case.

Expression *(1 - P_{SWm})* is difference between supplier delivery performance to procurement and boundary of delivery level, which is adjustment to 100%, from this reason constant 1. Delivery performance is product of delivery performance of contracted supplier and alternative.

$P_{SWm} = 0,98 · 0,9 = 0,882$; so difference will be equal *0,118 like (1 – 0,882)*.

CO_{SWm} are costs overage of material and it is sum average amount of corn flour in tons in the safety stock + wage costs + interest rate. The average amount inventory in safety stock of corn flour from firm's historical data is 21,4 tons per month. Because the average price is 8.020 and average inventories are 21,4 so it is multiple of *21,4 · 8.020 = 171.628 CZK*. It means that average sum represents 171.628 CZK. The numbers of deliveries per month are 8 and it means that 21.454 CZK could be add to one delivery *(171.628/8 = 21.454)*. To this amount it is needs to tack the amount 21.400 CZK, which represents the wage costs (21.400 kg · wage 1CZK/kg) + interest rate, which is 1,5%, that is multiple *[(21.454 + 21.400) · 0,015] = 642,81 CZK*. The final result of CO_{SWm} is 43.496 CZK.

D_m is delivery performance of procurement to manufacturing and in our case is set up on the 100%, so it means constant 1. It is from the reason, that procurement are able to delivered the desired amount and the also firm has average inventory of 21.4 tons in safety stock From historical data firm had consumption in last period of 750 tons and one order quantity is 7,8

tons on the base of optimal cost of order quantity, so it means that this order quantity cover the demand of costumers.

The second part of equation is focused to final products. Again we can meet with costs of shortage and overage, but in the case of final products.

CS_{fpc} are shortage costs of finished products for customers, and $q_{fp,c}$ is on time delivered finished products for customer. The sale price of product is set up on the 16 CZK per one piece. From one order quantity of 7,8 tons, the company is able to produced 7.500 pieces of product. The parameter $D_{fp,c}$ is 1, because it is delivery performance of procurement or manufacturing to customers. It is logical, because, then parameter D_m is set up on the 100%, the $D_{fp,c}$ is also 100%, because it is parameter, which is derived from parameter D_m. In our case the costs of shortage is multiple of *(16 · 7500 · (1 – 1))*, so it means 0. In this case, the company has enough material to produce the desired amount of products and in addition the company has 21.4 tons of material on the safety stock, so the threat of shortage should be not happen.

The second part of product costs is link up with overage costs. The expression

[($CO_{fp,c}$ · $q_{fp,c}$) · ($D_{fp,c}$ – ($P_{fp,c}$ · D_m))] is sum of above mentioned costs. The sum of overage costs per one product will be purchase price per one kilogram of material + wage costs in safety stock of material + production and labor costs + interest rate. In our case it is sum *[(8,02 + 1 + 1,2) + 1,5%]* interest rate. The costs are 10,353 CZK per one piece of product.

The last parameter in our model is defined *(P_{fp})* that is manufacturing performance for finished part (ratio between on time manufactured and planned manufactured of finished part). From historical data of firm was found the value 0,98. So it means that 98% of all products were delivered in time.

The expression *[$CO_{fp,c}$ · $q_{fp,c}$ · ($D_{fp,c}$ – ($P_{fp,c}$ · D_m))]* is equal *[10,353 · 7.500 · (1 – (0,98 · 1))]* so it is value 1.552,95 CZK.

VI. Final Result of Model in Case Study

For better clarity of results we remind the prescription of equation in given case study.

$$C_j = \sum_{S}^{3} \sum_{W}^{3} \sum_{m}^{3} \left[CS_{SWm} q_{SWm} (1 - P_{SWm}) + CO_{SWm} q_{SWm} (D_m - P_{SWm}) \right] + \sum_{fp=1}^{1} \sum_{c=1}^{2} \left[CS_{fp,c} q_{fp,c} (1 - D_{fp,c}) \right] +$$

$$+ \sum_{fp=1}^{1} \sum_{c=1}^{2} \left[CO_{fp,c} q_{fp,c} (D_{fp,c} - (P_{fp,c} D_m)) \right].$$

After the derivation of all parameters in the model, the resulting equation of value stream (C_j) will have the following form.

$C_j = [8.020 \cdot 7,8 \cdot (1 - 0,822) + (21\ 454 + 21\ 400 + 643) \cdot (1 - 0,822)] + [16 \cdot 7.500 \cdot (1 - 1)] + [(10,353 \cdot 7.500 \cdot (1 - (0,98 \cdot 1))] = [(62.556 \cdot 0,118) + (43.496 \cdot 0,118)] + [0] + [10,353 \cdot 7.500 \cdot 0,02] = 7.381,61 + 5.132,53 + 1.552,95 = 14.067,09\ CZK.$

The cost of one order quantity of corn flour is 14.067 CZK. When we multiply this amount of costs of value stream with number of deliveries per month, we final result will be 112.537 CZK. From result costs of value stream in the given products of corn flour, we can observe some interesting conclusion. At first, the level of safety stock is unnecessarily high. The order quantity is set up on the minimal order costs, but from this optimization model influenced, that the minimal order costs should not be the main requirement for order system in company. The level of 20% from month order quantity is so high a bind the financial resources for others activities, in addition also wage costs will decrease with smaller amount of material. Second the parameter $P_{fp,c}$ trying to increase to more than 98%, it could has it better impact on the loyalty of customers and firm could improve company name itself on the competitive market. Third, trying to redesign the probability of delivery of given supplier to achieve better results and decreased costs, which are linked up with supply chain like (monitoring of contracts, search of new suppliers, administration). In the end of this section, it should be mentioned, that everything should be set up by way of new data of demand and forecast of customers and take account all relationships in the internal and external environment of company.

VII. Conclusion

The article deals with the cost model for minimum costs in supply chain and improves by suitable way to adjustment of safety stock. It should be mentioned, that this model is not versatile for all cases, which could happen in the firm, but this model reveals the importance of suppliers in the supply chain management, particularly the role of alternative suppliers and try to compensate the weakness of the supply chain. The ability of deliver the right goods or material in the right time is now evaluate like very good competitive advantage (Mentzer, 2001). If the supplier does not deliver the desired amount and quality, the plant must expend the finances to find new alternative suppliers. This process brings the higher costs of transportation, administrative function, overtime etc. Failure of non-delivery is then reflected in the company itself. Plants are not able to deliver the finished products to their customers, and firm lost the potential profit, but also the trust of these customers and goodwill of firm, which is very hard to quantify the costs of losing reputation. We can talk about domino effect.

The set up of safety stock is then based on the combination of suppliers and alternative suppliers and their delivery performance with combination of better demand forecast, trust between customer and supplier, communication or relative new approach of vendor managed inventory, precise and unambiguous require-ments of individual business units and these important facts actually help to reduce the costs in whole supply chain. In case study of authors Amirjabbari and Bhuiyan in their base value stream, pointed out the importance of shortage and overage costs by two main customers. They trying to find some optimal level of safety stock not only in the area of procurement material, but also in safety stock of finished products in the line with increased delivery performances. In this case value stream the role of increasing delivery performance is particularly important, because the delivery of performance also influenced the performance of manufacture. Depending on these facts, the level of safety stock in manufacture could not be so high and company saves the cash and on the other hand the high level of material safety stock improves the situation in manufacture. Through this procedure, the company can improve its profitability more than 480.000 dollars, become more competitive in the market and can for example make resourcing of theirs suppliers, improving quality, increasing capacity, etc.

In the case study of Czech firm we can meet also with some interesting results. At first the role of safety stock is so high oversized and binds financial resources, reveal the opportunity to redesign of suppliers and manufacture performance. In addition with combination of implementing seasonal logistics tactics for finished goods distribution (Tardiff, Tayur, Reardon, Stines and Zimmerman, 2010), this model could be very helpful for firms with seasonal demand, because the Czech firms also deals with seasonal demand.

In addition, it should be mentioned, that every firm used its own delivery system (lot for lot, fixed amount of delivery) and management of stocks (kanban, manufacturing resource planning) and these facts also influence the safety stock of given firm and relationship between firm and suppliers and their performances, but also the level and location in the supply chain of safety stock is important. Accurate definitions of the inputs in the model such like costs, quantities of the parts are critical to find the appropriate level and location of safety stock with setting limits on the ability of a delivery that may not be strictly 100%.

In the next research it will be appropriate to used simulations programs to compare the useful of model in the various approaches of stock management. Also the enhancing of visibility and control of the upstream stage will be more helpful to set up the level

and location of safety stock in supply chain and research with sufficient temporal data may show trend and thus the development costs over time based on various economic fluctuations.

APPENDIX A

Sets and Indices

m   -   raw material/semi-finished part
fp   -   finished part
c   -   customer (internal plant, end customer)
S   -   contracted supplier in given supply chain
W   -   alternative supplier

Parameters

P_{SWm}	- supplier delivery performance to procurement (if supplier is a manufacturing plant, then P_{SWm} would be manufacturing performance for semi-finished part)
P_{fp}	- manufacturing performance for finished part (ratio between on time manufactured and planned manufactured of finished part)
CS	- costs of shortage [currency unit per unit]
CS_m	- costs shortage of material, semi-finished products [currency unit per unit]
$CS_{fp,c}$	- costs shortage of finished products of customer [currency unit per customers]
CO	- costs of overage [currency unit per unit]
CO_{SWm}	- costs overage of material of contracted supplier and alternative supplier [currency unit per unit]
$CO_{fp,c}$	- costs overage of finished products for customers [currency unit per customers]
D_m	- delivery performance of procurement to manufacturing [%]
D_{fp}	- delivery performance of manufacturing or procurement to costumers [%]
$D_{fp,c}$	- delivery performance of manufacturing or procurement to costumers [%]
$P_{fp,c}$	- manufacturing performance for finished part to customers [%]
P_{Sm}	- supplier delivery performance to procurement of material [%]
P_{Wm}	- alternative supplier delivery performance to procurement of material [%]
P_{SWm}	- delivery performance of contracted supplier + alternative supplier [%]
X_m	- raw material/semi-finished part safety stock [unit]
X_{fp}	- finished part safety stock [unit]
Q_m	- raw material/semi-finished part quantity ordered [unit]
Q_{fp}	- finished part quantity ordered [unit]
PR	- probability [%]
PRF_{Wm}	- probability of failure for alternative supplier of material [%]
PRF_{Wfp}	- probability of failure for alternative supplier of finished products [%]
PRF_{Wfpm}	- probability of failure for alternative supplier of finished products and material [%]
PR_{SWm}	- probability of deliver for contracted supplier + alternative supplier [%]
$PRqit_{SWm}$	- probability of deliver in right time of supplier + alternative supplier of material [%]
$PRqit_W$	- probability of in-time delivered of alternative supplier [%]
$PRqit_{Wm}$	- probability of in-time delivered of alternative supplier of material [%]
$PRqit_{Sm}$	- probability of in-time delivered of contracted supplier of material [%]
PRF_{Sfp}	- probability failure for supplier of final products [%]
PRF_{Sm}	- probability failure for supplier of material or semi-finished products [%]
$PRF_{W,fp,m}$	- probability of failure for alternative supplier of material and finished products
F	- failure of delivery [%]
F_{Sm}	- the percentage of failures in delivery of material or semi-finished products by supplier during the last reviewed period [%]
F_{Sfp}	- the percentage of failures in delivery of finished products by supplier during the last reviewed period [%]
F_{Wm}	- the percentage of failure of delivery for alternative supplier for material, semi-finished products [%]

F_{Wfp} - the percentage failure of delivery for alternative supplier for finished products [%]

q_m - delivered material [unit]

$q_{fp,c}$ - delivered finished products for customer [unit]

q_{SWm} - delivered material by contracted supplier + alternative supplier [unit]

qit - in-time delivered quantity of material, finished products [unit]

qit_{Sm} - in-time delivered quantity of material, intermediate product of supplier [unit]

qit_W - in-time delivered quantity of alternative supplier [unit]

qit_{Wm} - in-time delivered quantity of material, intermediate product of alternative supplier [unit]

n - the number of deliveries per reviewed period [number of orders]

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An Assessment of Irrigated Tomato Farming on Resource Productivity of Farmers in Vandeikya Local Government Area of Benue State: Application of Technical Efficiency Model

By Cyprian Clement Abur

Nigerian Institute of Social and Economic Research (NISER) Ibadan, Nigeria

Abstract- The study assesses Irrigated Tomato Farming on Resource Productivity of Farmers in Vandeikya, Local Government Area of Benue state. To achieve this, primary and secondary data were used. The analytical tools include descriptive statistics and stochastic frontier production function applied on a cross-sectional data of 120 irrigated tomato farmers during 2013 farming season. The results from the simple percentage show that good number of respondents were within the productive age bracket of 18 - 55 years which account for 90% of the respondents. While the results from Maximum Likelihood Estimation indicate positive sign which implies that efficient use of inputs would result in increased output of Tomato. Also the results obtained from the technical efficiency model, shows that irrigated tomato farming was not fully utilized although farmers were generally relatively efficient, they still have room to increase their efficiency of farming activities to 41% to close the efficiency gap from the optimum (100%).

Keywords: *efficiency of resource-use, elasticity of production, maximum likelihood estimates, return to scale, stochastic frontier production function, inefficiency, irrigation.*

GJHSS-E Classification : *FOR Code: 140201*

ANASSESSMENTOFIRRIGATEDTOMATOFARMINGONRESOURCEPRODUCTIVITYOFFARMERSINVANDEIKYALOCALGOVERNMENTAREAOFBENUESTATEAPPLICATIONOFTECHNICALEFFICIENCYMODEL

Strictly as per the compliance and regulations of:

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Keywords: efficiency of resource-use, elasticity of production, maximum likelihood estimates, return to scale, stochastic frontier production function, inefficiency, irrigation.

I. Introduction

Tomato (*Lycopersiconlycopersicum*) is perhaps the most important popular vegetable crop grown all over the country. Tomato production in Nigeria is seasonal and consequently, its supply for home and industrial use is seasonal with a peak during harmattan season. The seasonality of supply affects price. About 90% of the country's food is produced by small-scale farmers cultivating tiny plots of land who depend on rainfall rather than irrigation systems (Maurice, 2007).

The benefit of irrigation (which is the artificial supply of water for agricultural crop growth) in Nigeria is not limited to food supply alone but it also serves as a source of income and employment during the slack period of rainfed agriculture. There are two distinct seasons in Nigeria. These are the rainy (April to October) and the dry (November to March) season. Farmers are usually less busy on the farm during the dry season; therefore, irrigation farming serves as an alternative employment and additional source of income during the period. Irrigation farming practice has increased tremendously because of increasing demand for tomatoes and other food items during off farming season. This has placed tremendous pressure on tomato production to meet up with the increasing demand, as limited foreign reserves have to be allocated to tomato importation in order to meet consumption requirements.

Resources used in any production activity are regarded as the inputs that drive the production process. In tomato farming, the resources required include the seeds, land, labour, capital and fertilizer. The main technology applied is the traditional cutlass, hoe, water can and bucket technology which has been blamed for the low output levels of tomato. In order to stem the decline in the number of farmers participating in irrigated tomatoes farming in the study area and at the same time increase production of tomatoes, the federal and state government introduced a number of agricultural development programmes/projects, yet tomato production has persistently remained below market demand (Maurice, 2007).

To cope with the predominant menace of low productivity of irrigated tomato farmers in Benue state, resource use efficiency is a prerequisite for optimum farm production since inefficiency in production, can distort food availability and security. It is against this background that this research is set out to empirically investigate the role of irrigated tomato which is becoming more prevalent within the farmers in Vandeikya local government area. The objective of this study is to ascertain the socio economic characteristics of irrigated tomato farmers in the study area, investigate whether the resource use in irrigated tomato are efficiently utilized among irrigated tomato farmers and also identify any gaps that may exist in the current level of resources employed by irrigated tomato farmers in the study area, as well as encouraging them to beef up

Author: Economics Policy Research Department, Nigerian Institute of Social and Economic Research (NISER) Ibadan.
e-mail: aburcyprian@yahoo.com

their output level. This work is, therefore, organized under the following headings: the introduction; theoretical framework and literature review; methodology; result and discussion; conclusion and recommendation.

II. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

The study has it theoretical underpinning from the production theory. That is, production function is the technical relationship between inputs and outputs; a function that summarizes the process of conversion of factors into a particular commodity. It shows the maximum amount of the good that can be produced using alternative combinations of the various inputs. Three types of efficiency are identified in the literature. These are technical efficiency, allocative efficiency and overall or economic efficiency (Farrell, 1957; Olayide& Heady, 1982). Technical efficiency is the ability of a farm to produce a given level of output with minimum quantity of inputs under a given technology. Allocative efficiency is a measure of the degree of success in achieving the best combination of different inputs in producing a specific level of output considering the relative prices of these inputs. Economic efficiency is a product of technical and allocative efficiency (Olayide& Heady, 1982).

This literature emphasizes two broad approaches to production frontier model (a) the non-parametric programming approach, and (b) the statistical approach. The non-parametric programming approach requires the construction of a free disposal convex hull in the input – output space from a given sample of observations of inputs and outputs (Farrel, 1957). The convex hull (generated from a subset of the given sample) serves as an estimate of the production frontier, depicting the maximum possible output. Production efficiency of an economic unit is thus measured as the ratio of the actual output to the maximum output possible on the convex hull corresponding to the given set of inputs, which is illustrated in figure 1. First take the case when the farm is producing all the good outputs that have positive prices. Suppose V is one such observation where a farm is operating, the technical efficiency of this farm is **TE = OV/OD.** The overall efficiency is defined as **OE = ry/R(x, r),** and is equal to **OV/OE.** It is the ratio of observed revenue to maximum revenue. Where **R(x, r)** is the maximum revenue, **ry** is the observed revenue of a farm, x and y is the input and good output vectors, and r is the output price vector. Allocative output efficiency is defined as: **AE = {ry/TE} / R (x, r),** and it equal to **OD/OE** in figure 1.

Thus from figure 1, it follows that, **OE = TE * AE.** In extending the case in a situation where a farm is producing one marketable product, **y** along with an undesirable output, **Z** (pollution). The desire output has positive market prices but the undesirable has either zero or negative price. Its price is negative when a tax is imposed on its production. Assume that in the production possibility set there are no points on the left of the line **OB,** due to technical or biological restrictions or in other words the production of good and bad outputs are null-joint.

The assumption of null-joint ness implies that some positive amount of bad output is necessarily produced when the farmers are producing some positive amount of good outputs. Therefore, point **B** in figure 1 is the single point where all of the resources, are conventional as well as naturally utilized efficiently. Because (i), point **B** is on the frontier, so the conventional resources (inputs) are used in a technically efficient manner, and (ii) in point **B** the natural resources are used optimally, since it is located on the radial with the lowest production of undesirable outputs per unit of desirable output.
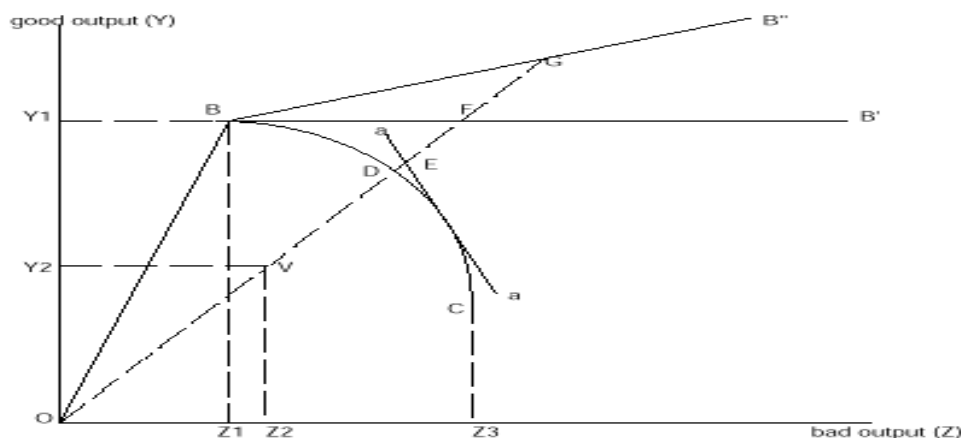
Figure : output Based Resource Use Efficiency Measure

In figure 1, the technical output-orientated efficiency measure (TE) at output bundle V is $TE_v (Y_v, Z_v, X) = Do (Y_v, Z_v, X)$ and is equal to OV/OD. A farm is environmentally efficient if it is producing the lowest amount of undesirable output per unit of desirable output, i.e. point B in the figure. The measure of environmental efficiency (EE) has to relate the ratio of good and bad output at point D (equal to the ratio at V) to the maximum ratio at point B. Farrell (1995), recall that point B in the figure is 'resource use efficient' point.

$$Y = f (X_{a_i};\beta) e^E \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(1)$$

Where Y = output; X = vector of input, β = vector of parameter, e = error term; E is stochastic

$$\text{Hence, } E = U + V \dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (2)}$$

The symmetric element V account for random variation in output quantity attributed to factors outside the farmer's control (such as disease, weather). A one – sided component U < O reflects technical inefficiency relative to the stochastic frontier. Thus U = O for farm

$$Y = f (X_{a_i};\beta) e^{u+v}\dots\dots\dots\dots\dots\dots\dots\dots. \text{ (3)}$$

Several empirical applications have followed the stochastic frontier specification. The first application of the frontier model to farm level data was by Battese and Coelli (1995) who estimated deterministic and stochastic Cobb-Douglas production frontier for the economics of scale in sheep production in Australia. The variance of the farm effects was found to be in a highly significant proportion of the value of sheep production in Australia. Their study did not, however, directly address the technical efficiency of farms.Similarly, Bagi (2004) employed the stochastic frontier Cobb-Douglas production function model to investigate differences in technical efficiencies of sole and mixed enterprise farm in west Tennessee. The study found that the variability of farm effects was highly significant. The mean technical efficiency of mixed enterprise farms was found to be smaller (0.76) than for sole crop farms (0.85). The study show that, mixed enterprise farms were inefficient as compare to the sole crop farms as demonstrated by their various efficiency ratios.

The use of the stochastic frontier analysis in the study of agriculture in Nigeria is a recent development. Such studies include that of Udoh (2003), Okike (2006) and Amaza (2000). Udoh used the maximum Likelihood Estimation of the stochastic production function to examine the land management and resource use efficiency in south–Eastern Nigeria. The study found a mean output –oriented technical efficiency of 77% for the farmers, this indicates that farmers can still expand production by 23%. The 0.98 indicates 98% for the most efficient farmers and 0.11 indicating 11% for the least efficient farmers. Okike's study investigated irrigated

They compare point V to point B. Resource use efficiency for the output bundle V is equal to B: Therefore, resource efficiency can be decomposed into **TE** and **EE**, i.e. $RE_V = TE_V$. EEv. They concluded that resource efficiency is analogous to **OE** and EE is analogous to AE.

The study adopts the second approach that has it theoretical underpinning with Farrell's production frontier function with a multiplicative disturbance term of the farm:

disturbance term consisting two independent element "V" and "U".

output that lie on the frontier (i.e. 100% technical efficiency in resource use) and U < O for farm output below the frontier as $N \sim (o, \sigma_u^2 \ v)$. Thus equation (1) becomes:

vegetable production and technical efficiency of farmers in the savanna zones of Nigeria. The study found average technical efficiency of farmers arehigher in the zones. Also Amaza's work on small scale farm size and resource use efficiency in Kwara state, opined that, one of the means of proper utilization of farm inputs for greater efficiency is through farm size adjustment. The result was collaborated by the mean cost efficiency of 1.161 obtained from the data analysis which shows that an average farm in the sample area is about 16% above the frontier cost, indicating that they are relatively efficient in allocating their scarce resources.

III. Methodology

The study employed both primary and secondary.The study uses random sampling technique to analyze data. Samples were drawn from five wards in Vandeikya Local Government Area. The wards include: Mbakaange, Mbagbera, Ningev, Mbanyimagbah and Mbatyough council wards. In each ward, twenty four (24) questionnaires were randomly distributed to irrigated tomato farmers. Thus making a total of 120 questionnaires distributed in the study area. However, the questionnaires were given to educated irrigated tomato farmers to fill while uneducated ones were interviewed orally.Two analytical techniques were used to analyze the data collected. These are: Firstly, simple percentage analysis. Secondly, the Stochastic Frontier Production Function (SFPF) was used to estimate the resource use efficiency in irrigated tomato production. It is given by:

$$\ln Y_i = \ln\beta_o + \sum\beta j \ln Xij + Vi - Ui; \dots\dots\dots\dots\dots\dots\dots.4$$

Empirical formulation of equation 4 requires functional specification process in the presence of inefficiency. Base on the theoretical underpinnings, Cobb- Douglas production functional form is therefore used. Hence the empirical model is as follow:

$$Ln\ Y = \beta_o + \beta_1 \ln(x_1) + \beta_2 \ln(x_2) + \beta_3 \ln(x_3) + \beta_4 \ln(x_4) + \beta_5 \ln(x_5) + Vi - Ui \ldots\ldots 5$$

Where, Y_i = farm output from family; X_i = vector of farm inputs used; X_1 = labour (in man days); X_2 = farm size; X_3 = fertilization (dummy: 1 = use fertilizer, 0 = not use fertilizer); X4 = planting materials (in kg); X5 = pesticide; V = random variability in the production that cannot be influenced by the farmer; μi = deviation from maximum potential output attributable to technical inefficiency. βo = intercept; β = Vector of production function parameters to be estimated; i = 1, 2, 3, n farmers; j = 1, 2, 3, m farmers inputs.

The inefficiency model is: $\mu_i = \delta_o + \delta_1 z_1 + \delta_2 z_2 + + \delta_4 z_4$ …………………………..6

Where, μ_i = technical inefficiency effect of the ith farm; Z_1 = educational level of farmers in years of formal education completed; Z_2 = household size; Z_3 = farm experience. Z_4 = age of farmer in years; δ = Parameters to be estimated. The parameters of the models will be obtained by the maximum likelihood estimation method using the computer programme, FRONTIER VERSION 4.1c (Coelli, 1994). The a priori expectation is that the estimated coefficients of the inefficiency function provide some explanation for the relative efficiency levels among individual farms. Since the dependent variable of the efficiency function represents the mode of the inefficiency, a positive sign of an estimated parameter implies that the associated variable has a negative effect on efficiency and a negative sign indicate the reverse. Also the estimated coefficient for inputs implies that the associated variable has positive effect on efficiency and a negative sign indicates the reverse.

IV. Result and Discussion

Efforts were made to understand the socio-economic characteristics of tomato farmers in the study area. This was done with the hope of identifying those characteristics that may explain the farming activities of the area. The characteristics considered were age, sex, educational attainments, classification of farmers based on farm size, source of income as well as farmers income level. Table 1 show that good number of respondents was within the productive age bracket of 18 - 55 years which account for 90% of the respondents.

Table 2 : Farm Size

Farm size Farmers	No of of land	Total Hecters Hecters size	Range in farm	Average
Small scale	52	88.22	0.4 - 1.8	1.1
Medium scale	50	237.06	2.0 - 4.0 3.0	
Large scale	18	435.6	5 – 7.2	5.9
Total	120	760.34	7.4 –13.6	100

Source : field survey, 2013

With respect tomarital status, 42% of the respondents were married, 29% were single, 8% were widows while 21% of the respondents had cases of divorce in the study area. while 42% had secondary education, while 25%, 21%, 8% and 4% had primary education, NCE/HND/Degree, postgraduate education and no formal education respectively. 53% of the population under study comprises of women and 50% of the respondents are farmers while 40% combines farmers and trading. 10% were civil servants and farming. This is an indication that the study area constitute of a farming population.Also 37.5% of the farmers are of the high – income bracket [arrived at, based on the mean income of twenty three thousand naira (23,000) in the study area] while 35% belong to the low-income group and 27.5% are of the middle income group. This shows that the farming population straddles both the high as well as low-income households. This implies that tomato farming in the study area may be driven by other factors more than subsistence needs. Table 2 indicates that, the total hectares of land cultivated by farmers in the study area were 44.22, 237.06 and 435.6 hectares and their averages are 1.1, 3 and 5.9 ha for small, medium and large scale respectively. This indicates that, the size of land owned and cultivated by a farmer is determines to a large extent the farmers' level of output (ceteris paribus).

Table 1: Socio-economic Characteristics of Tomato Farmers

Distribution of Responses	Number of Respondents	Percentage %
Age bracket(years)		
18	2	2
19 - 30	30	25
31 - 45	42	35
46 - 55	34	28
56 and above	12	10
Total	**120**	**100**
Marital status		
Single	35	29
Married	50	42
Divorced	25	21
Window	10	8
Total	**120**	**100**
Educational Attainment		
No formal education	5	4
Primary education	30	25
Secondary education	50	42
NCE/HND/Degree	25	21
Postgraduate	10	8
Total	**120**	**100**
Sex		
Male	56	47
Female	64	53
Total	**120**	**100**
Occupation		
Farming only	60	50
Farming & Trading	48	40
Civil Servant and farming	12	10
Total	**120**	**100**
Income level		
Low income (<₦23000)	42	35
Middle income (₦23,000)	33	27.5
High income (>₦23000)	45	37.5
Total	**120**	**100**

Source : Field Survey, 2013

a) *Stochastic Frontier and the Inefficiency Model Analysis*

The stochastic frontier and the inefficiency model are presented in the summary form in table 3. The variance parameters for δ^2 and γ are 0.4913 and 0.5634 for irrigated farmsrespectively. They are significant at the 1 percent level. The sigma squared $\delta 2$ indicate the goodness of fit and correctness of the distributional form assumed for the composite error term while the gamma γ indicates that the systematic influences that are un- explained by the production function are dominant sources of random errors. This means that the inefficiency effects make significant contribution to the technical inefficiencies for irrigated farms, thus, the hypothesis that the coefficient of $\delta = o$ is rejected. The result shows that inefficiency effects were present and significant. The results from the table shows that labour (β_1) appears to be the most important factor of production showing the labour intensive nature of farming in the study area. While Farm size (β_2), quantity of fertilizer (β_3), Planting materials (β_4) and pesticides (β_5) coefficient were all positive which conform to a priori expectation, and significant. The positive coefficient of these variables implies that efficient use of these inputs would result in increased output of Tomato.

The sources of inefficiency are examined by using the estimated δ coefficients in table 4. The contribution of farmers' personal characteristics-level of education, age, years of farming experience and household size to farm inefficiency was also studied. If the dependent variables of the inefficiency model have a

negative sign on an estimated parameter, it implies that the associated variable has a positive effect on efficiency, and a positive sign indicate that the reverse is true. The (z_1) coefficient of education variable in small scale farm is estimated to be negative, that is (-0.4558) and statistically significant at the 1- percent level. The implication is that farmers with more years of formal schooling tend to be more efficient in tomato production. Presumably due to their enhanced ability to acquire technical knowledge, which makes them move close to the frontier output. This finding agrees with comparable findings by Seyoum, Battese and Fleming (2007).

Household size coefficients indicates negative sign z_2 (-0.2990) this implies that household sizes of

tomato farmers are more technically efficient since they do not make use of hired labour as such they save the cost of hiring labour, The positive coefficient for age z_3 (0.6667) variable in tomato farmers implies that the older farmers are more technically inefficient than the younger ones. The (z_4) coefficient of farming experienceirrigated tomato farmers is estimated to be negative, that is (-0.6912) and statistically significant at the 1 percent level. This implies that irrigatedtomato farmers with more years of farming experience tend to be more efficient in irrigated tomato production. This conforms to the findings of Battese and Coelli (1995).

Table 3 : Maximum Likelihood Estimates of the Stochastic Frontier Function and Technical Inefficiency

Parameter Coefficient SET - statistic			
Constant(β_o)	0.1219**	0.1005	0.1027
LB(βx_1)	0.8406*	0.1077	0.1051
FS(βx_2)	0.5485**	0.1079	0.1077
Fert(βx_3)	0.1796**	0.1081	0.1045
PM(βx_4)	0.5209**	0.1087	0.1016
Pest(βx_5)	0.1219**	0.1005	0.1001
Inefficiency Model			
Constant(δ_O)	0.2237	0.1011	0.1421
ED(δz_1)	-0.45580.1225	0.1811	
HS(δz_2)	-0.2990	0.1312	0.1031
AGE(δz_3)	0.6667	0.1621	0.1011
FE(δz_4)	-0.6912	0.1011	0.1231
Variance Parameters of Farms			
Sigma Squared δ^2	0.4913		
Gamma γ	0.5634		
Log Likelihood Function	-0.5331		
LR test	0.4569		

Source : Author's computation. = significant at 5% level, ** = significant at 1% level.*

b) *Technical Efficiency Ratings*

Alongside with the parameters already presented and discussed above, the technical efficiency rating of farmers was also estimated and presented in table 4. More than 50% of the respondents were fund to be more than 60% technically efficient. The most efficient farmer operated at 79%, while the least efficient farmer was fund to operate at 19% efficiency level. Tomato farmers performed at an average technical efficiency 59%. From the results obtained, although farmers were generally relatively efficient, they still have room to increase the efficiency of their farming activities to 41% to close the efficiency gap from the optimum (100%). The technical return to scales measured by the sum of the elasticity of all significant factors showed that farms depict constant return to scale.

Table 4 : Distribution of Technical Efficiency

Class Interval of Efficiency Indices	Farms Frequency	Farms Percentage
0.10 - 0.19	4	3
0.20 - 0.29	16	13
0.30 - 0.39	10	8
0.40 - 0.49	19	16
0.50 - 0.59	20	17
0.60 - 0.6925	21	
0.70 - 0.79	26	22
0.80 - 0.89-		
0.90 - 1.00-		
120	**100**	
Efficiency Rating		
Mean Efficiency	0.59	
Minimum Efficiency	0.19	
Maximum Efficiency	0.79	

Source : Field survey, 2011

V. Conclusion and Recommendation

The study concludes that irrigation was not fully utilized althoughtheywere relatively efficient, but still have room to increase the efficiency of their farming activities to close the efficiency gap from the optimum (100%). This will increased output and income, and reduce poverty among the irrigated tomato farmers. Based on this study, it is therefore recommended that both government and individual should institute more maintenance mechanism to ensure efficiency in irrigation through public private partnership;also, there is the need for improve quantities of pesticide and fertilizer in order to boost production and moreso,extension agents need to be deployed to guide farmers on irrigation technique to enhance efficiency in tomatoproduction.

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Social and Psychological Effects of the Removal of Fuel Subsidy on the Nigerian Family

By George Tayo, Elegbeleye, Ayotunde, Chukwuedozie, Onyeka & Idowu Esther, A.

Covenant University, Nigeria

Introduction- Nigeria is the largest in Africa and the sixth largest oil producing country in the world. The country's economic strength is derived largely from its oil and gas wealth, which contribute 99 per-cent of government revenues and 38.8 per of GDP (National Budget, 2010). Despite these positive developments, successive Nigerian governments have been unable to use the oil wealth to significantly reduce poverty, provide basic social and economic services her citizens need (Ering and Akpan, 2012).

Despite, the huge resources the country has realized from crude oil, Nigeria ranks 156 out of 187 countries on the Global Human Development Index (HDI) in the 2011 Human Development Report released by the United Nation Development Programme. The HDI is a comparative measure of life expectancy, literacy, education and standards of living for countries worldwide.

GJHSS-E Classification : *FOR Code: 149999*

SOCIAL AND PSYCHOLOGICAL EFFECTS OF THE REMOVAL OF FUEL SUBSIDY ON THE NIGERIAN FAMILY

Strictly as per the compliance and regulations of:

Social and Psychological Effects of the Removal of Fuel Subsidy on the Nigerian Family

George Tayo [α], Elegbeleye, Ayotunde, Chukwuedozie, Onyeka [σ] & Idowu Esther, A. [ρ]

I. Introduction

Nigeria is the largest in Africa and the sixth largest oil producing country in the world. The country's economic strength is derived largely from its oil and gas wealth, which contribute 99 per-cent of government revenues and 38.8 per of GDP (National Budget, 2010). Despite these positive developments, successive Nigerian governments have been unable to use the oil wealth to significantly reduce poverty, provide basic social and economic services her citizens need (Ering and Akpan, 2012).

Despite, the huge resources the country has realized from crude oil, Nigeria ranks 156 out of 187 countries on the Global Human Development Index (HDI) in the 2011 Human Development Report released by the United Nation Development Programme. The HDI is a comparative measure of life expectancy, literacy, education and standards of living for countries worldwide. The HDI further reveals that non-oil producing countries like Tunisia, Gabon, Egypt, Namibia, South Africa and Togo ranked better than Nigeria on all HDI indicators. It is against this background that Nigerians are opposed to any policy that would further increase their misery index such as the removal of fuel subsidy (Ering and Akpan, 2012). The history of fuel subsidy removal in Nigeria has been a complex subject and oftentimes an emotional debate. This study therefore examines critically the social and psychological effects of fuel subsidy removal on the Nigerian family.

II. Fuel Subsidy

The subsidy is a form of price manipulation whereby the government fixes the pump price for sale to consumers and pays the retailer the difference between the actual market price and the regulated or official price per litre. Through fuel subsidy, millions of Nigerians have access to cheap refined petroleum products (Iyobhebhe, 2012).

Fuel subsidy is one of the critical issues that dominate public debate in oil exporting developing nations and among the G-20. In Nigeria, larger proportion of the citizens are seriously resisting the government-planned policy to remove fuel subsidy which according to them is against the Millennium Development Goals (MDGs) of the government which aim to reduce the number of people living in poverty to less than 50% by 2015. Some public analysts believed that the pressure to remove subsidy is designed by experts with insufficient understanding of the Nigerian economy or who choose to ignore the inability of client governments to effectively implement anti-poverty programmes (Akinwale et al., 2013).

However, the proponents of fuel subsidy removal continue to show low efficiency in energy use, wastage of huge sum of resources on subsidies which are needed to transform national development, reduction of CO_2 emissions, higher benefits for the rich with little or no benefits for the poor, and poor technology management of the refinery among others as part of the problems of oil subsidy (Akinwale et al., 2013).

a) Why Removal of Fuel Subsidy

The Nigerian government states that its Medium Term Fiscal Framework won't work unless the fuel subsidy is scrapped or to put it another way: that the scrapping of the subsidy is an integral part of its MTFF. That it needs the US$6B savings for critical infrastructural development projects. This is the view of the Finance Minister & Coordinating Minister for the Economy, Dr. Okonjo Iweala. The government is effectively arguing that the country can no longer afford it and that due to structural inefficiencies in the Nigerian downstream industry the ordinary man that was intended to benefit from fuel subsidy does not really get the benefit as retailers refuse to pass on the subsidy to consumers at petrol stations. Government say they inherited the scheme. They are simply trying to get rid of a policy that various governments have attempted to reform but failed (Iyobhebhe, 2012).

Advantages of Subsidy Removal

- Government hopes that the removal will: Save government about US$6B per annum
- Help address the great imbalance between recurrent and capital expenditure in Nigeria.
- Encourage foreign investment in downstream infrastructure
- Free more funds for local investment in the oil sector
- Increase local refinery production
- Reduce importation of refined products in the medium to long term

Author α σ ρ: Department of Sociology College of Development Studies, Covenant University.
e-mail: tayo.george@covenantuniversity.edu.ng

- Eventually stabilise market prices as completion increases

III. History of Fuel Subsidy Removal in Nigeria

The executive arm of the Federal Government has taken the view that subsidy removal is an important element in the larger scheme to accelerate Nigeria economic development (Centre for Public Policy Alternatives, 2011). The history of fuel subsidy removal in Nigeria is rather a long one particularly with the negative effects it has on the polity. Specifically the story of subsidy removal dates back to 1978 when the then military government of Gen. Olusegun Obasanjo reviewed upward the pump price of fuel which was at 8.4 kobo to 15.37 kobo. The concern was for government to generate enough money to run the administration particularly when it was preparing for the 1979 democratic elections and also to carter for the social needs of Nigerians (Ering and Akpan, 2012).

Moreover, Gen. Olusegun Obasanjo second coming as a civilian president did not help matters as he unleashed a reign of terror on Nigerians. In his eight years reign, the nation witnessed several rounds of fuel price increases. The first started on June 1st, 2000, where the petrol price per litre was raised to N30.00 but only to be reduced to N25 one week after due to massive protests by organized labour, civil society organizations and the ordinary Nigerians. Five days later, on June 13, 2000, the pump price was further adjusted to N22.00 per litre. On January 1st, 2002, Obasanjo regime increased the price from N22.00 to N26.00 and to N40.00on June 23, 2003 just one year after. In June, 2007, also the same regime raised the price of fuel per litre to N70, but the Yardua's regime later reviewed it downward to N65 on assumption of office in May 2007 (Ering and Akpan, 2012).

This was how it remained until President Goodluck Jonathan regime's decision at an outright removal of fuel subsidy. Interestingly the then Nigeria Labour Congress, President, Comrade Adams Oshiomole who had led several fights against fuel subsidy removal including fighting Olusegun Obasanjo, and as a sitting governor of Edo State, joined his fellow governors and the Federal Government to argue strongly for the complete removal of fuel subsidy. The issue was that, while the nation-wide consultations and discussion on fuel subsidy removal was still going on, the Petroleum Product Pricing Regulatory Agency (PPPRA) on January 1st, 2012, announced the outright removal of fuel subsidy (Ering and Akpan, 2012).

This decision by the Goodluck Jonathan administration did not go down well with the masses of Nigerians. It resulted in massive strike actions and protests by the Nigerian Labour Congress (NLC), Trade Union Congress of Nigeria, PENGASAN, Civil Society Organisations, Academic Staff Union of Universities (ASUU) and the generality of Nigerians. The mass protests almost transformed into the "Nigerian spring" which would have brought down the regime. The regime quickly entered into a negotiation with the organized labour and rescinded its decision of an outright removal to a partial removal and reduced the pump price to N97 (Ering and Akpan, 2012).

Table 1 : provide a clearer picture of the different pump prices by the different administrations from 1978 to Jan. 2012 (Ering & Akpan, 2012).

S/N	Date	Administration	Price	Percentage Change
1	1978	Gen. Olusegun Obasanjo (as Military	15.37k	
2.	1982	Alh. Shehu Shagari	20k	
3	1990	Gen. Ibrahim Babaginda	60k	300%
4.	1992	Gen. Ibrahim Babaginda	70k	17%
5.	1992	Gen. Ibrahim Babaginda	₦3.25k	364%
6.	1993	Gen. Ibrahim Babaginda	₦5.00	54%
7.	1994	Chief Ernest Shonekan	₦11.00	120%
8.	1994/98	Gen. Sani Abacha	₦11.00	_
9.	2000	Olusegun Obasanjo (as Civilian Ruler)	₦20.00	82%
10.	2000	Olusegun Obasanjo (as Civilian Ruler)	₦22.00	10%
11.	2001	Olusegun Obasanjo (as Civilian Ruler)	₦26.00	18%
12.	2003	Olusegun Obasanjo (as Civilian Ruler)	₦40.00	54%
13.	2004	Olusegun Obasanjo (as Civilian Ruler)	₦45.00	13%
14.	2007	Olusegun Obasanjo (as Civilian Ruler)	₦70.00	56%
15.	2007-	Alh. Umaru Shehu Yardua	₦65.00	0.07%
16.	2012	Dr. Goodluck Jonathan	₦141.00	117%

Source: Communique by South-South Elders & Leaders, 2012.

IV. Implications of the Fuel Subsidy Removal on the Nigerian Family

The abolishment of fuel subsidy creates local winners and losers on the short to medium term. Losers include the state/welfare services sector, education, health, standard of living for the poor will suffer, state security, the poor and vulnerable groups, elderly, students, women and lower middle class (Centre for Public Policy Alternatives, 2011).

There are contending arguments on the merits and demerits of fuel subsidy increases or removal. The protagonists argue that fuel subsidy removal is a step in the right direction and in the interest of Nigerians. They maintained that it will help eliminate incentives for corruption and excess profiteering by an unpatriotic cabal in the petroleum sub sector. It will minimize borrowing and save money for investing into job creation, power and transport infrastructure and others. It will eliminate capital flight and build Nigeria's foreign reserve in order to position the economy for speedy growth and global competiveness (Ering and Akpan, 2012).

Fuel subsidy removal Jonathan and his cohorts argue that it will trigger private sector investment in a deregulated downstream petroleum sector and enthrone efficiency and catapult the development of the nation's productive sector such as agriculture and industries. And according to the 2012 – 2012 Medium Term Fiscal Framework (MTFF) and the Fiscal Strategy Paper (FSP) which President Jonathan sent to the national assembly, he stated among other things, that fuel subsidy will free up to about N1.3 trillion, that is, about $8 billion dollars in savings. This money he added will be deployed into providing safety nets for segment of the society which will help to ameliorate the effects of subsidy removal (Ering and Akpan, 2012).

Furthermore, subsidy removal and the money generated would guarantee the success of the (MTFF). Money realized will be used to build more refineries and buy buses that will help cushion the effect of the subsidy removal. The point however that is since the protests were called-off the strategies that were initially rushed have suddenly disappeared. The antagonists of the fuel subsidy removal present a contrary view. They argue that the total amount that will be generated and the actual sharing have not been revealed by the federal government. In other words what will actually go to the states and local governments and what will be left for the federal government has not been worked out. The effect this will have on the infrastructural development as being put by the president and his economic advisers has not really been clear (Ering and Akpan, 2012).

Therefore, it was premature to speak of the benefits of the removal of subsidy. Fuel subsidy removal automatically leads to increases in the pump price of fuel. This was shown by the difference pump prices witnessed across the country when the subsidy removal was announced and these ranged from N141 to N200 naira per litre. In some other states especially eastern states of the country, a litre of petrol was sold for as much as N250 naira. Other marketers created artificial scarcity in order to raise the pump price. Therefore, certain sectors of the economy were adversely affected.

a) Social Effects

i. Transportation

Fuel subsidy removal affected transport fares and motorist doubled transport charges. And since this happened during the Christmas period when many Nigerians and their families had travelled to celebrate the Christmas with their families including extended families, many were stranded. Those who could afford it did so by abandoning their families in their villages. For many Nigerian these were indeed interesting times requiring interesting approach to life. Although the pump price of petrol has been reduced to N97 naira the costs of transport as well as other products and services are yet to reflect the reduction thereby forcing people to rethink on their life style and mode of transportation as a strategy for surviving the hard times (Ering and Akpan, 2012).

For instance, people now ride on horse-powered taxis, some choose cow-powered land cruisers and even do motorcycle powered tourist wagon, all in an attempt to avoid the use of petrol and its cost. Increases in transportation always have ripple effects on other social issues. The prices of food stuff also went up. The logic here was that food sellers use transportation to bring in food items and cars and vehicles have to struggle to get fuel at very exorbitant prices. The result was that the food sellers had to factor in the increment in order to make marginal gain (Ering and Akpan, 2012).

ii. Education

Fuel subsidy removal has negative effect on every aspect of the economy including the education sector. The rate of dropouts increase, while school enrolment have reduced because most parents find it difficult to send their children to school as a result of the high cost of living and fee increment. Owing to the rate of school drop-out, more children are engaged in child labour. School fees and charges were not spared, as school fees have increased. Most parents were left with no choice than to withdraw their children and wards from schools (Ering and Akpan, 2012).

iii. Housing

Furthermore, house rents across the country increased dramatically and the argument is that fuel price increase had affected the prices of cement astronomically. Before the fuel subsidy removal there were indications that cement price may crash following

the take-off of Dangote, Lafarge Cement Company in Ogun State. But the withdrawal of subsidy on January 1st, 2012, catapulted the price of cement to over N2000 naira per bag thus affecting the prices of house rent. According to Iroegbu-Chikezie (2012), a cement dealer retorted that he had to raise the price of the product because he was made to pay double the cost of transporting cement to his shop. Fuel subsidy removal also affected the cost of haulage of basic building materials such as iron rods, roofing sheets, flouring materials and others (Ering and Akpan, 2012).

iv. *Industry*

Agboola (2012) maintained that the Organised Private Sector (OPS) were not happy with the removal of fuel subsidy. It described the policy as a deliberate move by the federal government to worsen the decaying industrial sector with high cost of generating plants.

Similarly, the Small and Medium Enterprises (SMEs) are also affected since most of them use petrol for their relatively smaller power generating plants (Ering and Akpan, 2012).

The Nigerian Employers Consultative Association (NECA) have argued that government should have fixed or put in place a number of measures and infrastructures before going ahead to remove fuel subsidy. That is, the problem of power should have been fixed so that Nigerians would have to contend only with the fuelling of their cars instead of also looking for ways to power offices, industrial generation's plants and other things. New refineries should have been built and the older ones put into functioning so that the availability of the product locally will impact on the economy and play a role in bringing down the price of the pump price (Ering and Akpan, 2012).

Table 2 : shows the fuel prices per litre and the minimum wage for both Oil Producing and Exporting Countries (OPEC) and non OPEC countries.

S/N	Countries	Fuel Price Per Litre	Minimum Wage N
1	Venezuela	3.61	95,639
2	Kuwait	34.54	161,461
3	Saudi Arabia	25.12	99,237
4	Iran	102.05	86,585
5	Qatar	34.54	101,250
6	UAE	70.18	103,112
7	Algeria	63.55	55,937
8	Libya	26.69	23,813
9	Iraq	59.66	25,813
10	Nigeria	141.00	18,000

S/N	Countries	Fuel Price Per Litre	Minimum Wage N
1	USA	157.00	197,296
2	UK	334.41	295,644
3	Oman	48.67	91,583

Source: Ering & Akpan, 2012.

Going further, a comparative analysis of the pump price shows that Nigeria has the highest fuel pump price and the lowest minimum wage. Moreover, the basis for Nigeria's political elite to compare the pump price of fuel to other countries was not there. The reason is not far-fetched, in most of the countries listed; there is stability of basic utilities like stable power, availability of portable water, good roads and other factors. More so, and as seen on table 2, the minimum wage of N18, 000 and even at this, a number of states are yet to implement it.

The minimum wage of a country to a large extent defines the purchasing power of individuals. In the case of Nigeria, available statistics show there are among the lowest paid in the world (Ering & Akpan, 2012).

b) *Psychological Effects*

Soremekun (2012) has argued that the issue of fuel subsidy essentially originated from government's inability to process the crude oil within the country. Oil subsidy simply means import-inspired deregulation in an oil-producing country. It is a clear indication of governments' failure and bankruptcy, in terms of running the industry. The psychological effect of fuel subsidy increases and removal could lead to cases of depression and suicide. The Central Bank of Nigeria (CBN) official statistics show that over 70 per cent of Nigerians live below the poverty line (CBN, 2011).

Poverty line refers to the value of income or consumption necessary for a minimum standard of nutrition and other necessities of life. It is normally computed as those living below one US dollar per day. The implication here is that fuel subsidy removal will

further cause emotional trauma and torture on the psyche of those who are struggling to feed and to some extent may commit suicide. This fact is corroborated by the report of International Labour Organisation (ILO) a UN agency which maintains that 900 million workers are living below $2 a day, worldwide. Similarly, the removal of subsidy and its attendant consequences could result in broken homes and increase cases of divorce (Todaro and Stephen, 2005).

When people cannot fend for themselves and their families, there is the likelihood that husbands and wives would separate. This may consequently lead to discomfort, anger and even death. There is also the serious dimension that the removal of fuel subsidy may result to. It could lead to rebellion against government and anarchy. This was exampled by the massive protests that took place across Nigeria, after Jan, 1st, 2012 announcement by Petroleum Product Pricing Regulatory Authority (PPPRA). The fear was that it was evolving into the "Nigerian Spring" to borrow from the "Arab Spring" that is the massive social protests that engulfed the Arab nations of Tunisia, Egypt, Yemen, Libya, Qatar and Syria to mention but these few (Ering and Akpan, 2012).

The fact remains that, the removal of fuel subside have had a number of negative socio-economic consequences on the Nigerian populace. Even when the federal government has promised and taken a number of rushed and un-sustained remedial measures (palliative) to cushion the effects of the fuel subsidy removal on Nigerians, there are not far reaching enough. The effects of the palliatives are not being felt; the argument is that these so called palliatives should have been put in place before the removal of the subsidy (Ering and Akpan, 2012).

V.   Recommendations

The family unit whether good or bad is at the receiving end of government actions and policies, therefore, efforts should be made to ameliorate the hardship they already experience. Hence, the following recommendations are given;

a)   Grass-root Development

Decision making must be participatory. Government must sufficiently involve the citizenry in the process of decision and policy making particularly on issues and policies that affect their lives. This could be through town hall meetings with all segments of society and making the necessary contacts with members of the grass-root and civil society organizations. To do this, government could employ the services of Non-Governmental Organizations (NGOs) and National Orientation agencies across the country (Ering and Akpan, 2012).

Social services must be put in place and seen to be working. Such social services are power supply, portable water supply, roads, health services, housing and enabling policies put in place to ensure adequate food supply for local consumptions and for export. Government must also tackle the problem of security of lives of people in the country. Peace and progress of any society is not just the absent of a shooting war and political insurgents but is a function of the availability and functioning of such social services for the benefit of the people (Ering and Akpan, 2012).

b)   Local Refineries

The Nigerian government should firstly focus on various ways to improve the performance of the local refineries since none of them is working at optimum. The private sectors should be allowed to invest in the refineries' operation so that the necessary technology management can be harnessed. Also, government should provide a conducive environment and policies that will motivate the development of various renewable energies (Akinwale et al., 2013).

c)   Transparent and Realistic Policies

Furthermore, there should be an effective publicity campaign that lasts for a long period sensitising the citizens about the benefits of removing petrol subsidy and the cost of leaving subsidy. The campaign should cut across the Academic Staff Union of Universities, polytechnics, all the labour unions and the entire ministries. This should then be followed by the transparent policy on how the government will spend the money saved from subsidy on infrastructure such as good roads, on targeted education, on health care, on job creation, on electricity provision among others that will benefit the no/low income earners. Afterwards, the subsidy can then be removed gradually before it is finally phased out.

Nigerian government should engage independent consultant who will audit the activities surrounding the price of fuel and also how the money saved is spent. The consultant will then publish its reports regularly for public accessibility (Akinwale et al., 2013).

It is imperative also, that the estimated US$6B savings per annum is used judiciously. The government must show real improvement in local refinery output; transport, road and communications infrastructure must feel the benefit; electricity generation and distribution must improve. If Nigerians can see where, how and when the US$6B savings is utilised then Nigerians may bear the pain. But if the roads are worse than ever or refined petroleum products and power supply does not improve and hyperinflation ensues, then Nigerians may find it difficult to accept. It would simply be a case of short term pain for no long term benefit (Iyobhebhe, 2012).

d) *Eradicating Corruption*

In summary, the issue is not choosing between removal or retaining fuel subsidy. The real issue is transparent and honest leadership that will rid the nation of corruption. It is only in Nigeria that thieves are celebrated and given honorary awards. It is here you see corrupt men and women wasting our resources and inflicting hardship on the masses. The removal of corruption in the Nigerian government is the solution to the controversial fuel subsidy.

VII. Conclusion

This paper has critically reviewed the social and psychological effects of fuel subsidy removal on the Nigerian family. The result shows that phasing out fuel subsidy will reduce indiscriminate fuel consumption which will lead to reduction in carbon emission, and money saved could be channelled towards infrastructural development, revitalising the local refineries among other factors that will transform Nigerian economy.

However, the strong and transparent institutional framework that could transform the money saved from subsidy removal to economic growth is very weak in Nigeria. Nigeria government should ensure that policies that will improve the welfare of the low income citizens, strong institutional framework and improved refinery technology are enforced before fuel subsidy is totally phased out. There is the need to meet the short term plan before the long term plan can be actualized.

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Resource Conflict, Security and Crisis of Socio-Economic Development in the Gulf of Guinea, 1990 - 2010

By Enor, Frank N., Ellah, Timothy O. & Otora, Osmond Agbor

University of Calabar, Nigeria

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I. Introduction

The Gulf of Guinea is a geographical area that conveys different meanings to different scholars, indeed whatever meaning or definition that is ascribed depend largely on the perspective from which the geographic entity is being looked at as well as the people attempting to define it. For instance, Ogwu (2005:4) defines the Gulf of Guinea as strategic area of interest from earliest times. The area was a passage route for trans-Atlantic slave trade and since then the region has continued to contribute meaningfully to economic and strategic relations between Africa and wider world; as foreign ships anchor in the Gulf of Guinea for months before transporting items like cocoa, rubber and palm produce to Europe. Today the region is blessed with abundant fisheries, oil and gas minerals. This is evident as the mineral resources have attracted the attention of super powers to the region as an alternative of energy to the hitherto attraction in the Persian Gulf, amidst its volatile nature. For Ate (1994:12), the Gulf of Guinea is a large area that has an open arm to the Atlantic Ocean and bends towards the coast of West Africa. The region extends from the coast of Cote d'Ivoire to the Gabon estuary and bounded on the south by the equator.

To Mary Vogt (1988: 36-37), the Gulf of Guinea is that zone of the south Atlantic, southwest of Africa considered as the geographical centre of the earth, because it is at zero degrees longitude and latitude. Vogt believes that the region derived its name from the former names of the coast of Africa, the south coast of Africa, north of the Gulf of Guinea was historically called Upper Guinea; whereas, the west coast of southern Africa to the east, was described as Lower Guinea, and names of countries like Guinea Bissau, Equatorial Guinea and Papau New Guinea in Southeast Asia all derived their names from the region.

In Encyclopedia Britannica (2011), the Gulf of Guinea is seen as that part of the eastern tropical Atlantic Ocean, off the West African Coast, extending westward from Cape Lopez near the equator, to Cape Palmas at longitude 70 West. Its major tributaries include the Volta and Niger rivers. While the International Hydrographic Organization (2011) defines south western extent of the Gulf of Guinea as a line running south-eastward from Cape Palmas at 00 38'S 80 42'E in Liberia to Cape Lopez at 0.6330 S 8.70 E.

The coastline of the Gulf of Guinea forms part of the western edge of the African tectonic plate and corresponds remarkably to the continental margin of South America running from Brazil to the Guianas. Encyclopedia Britannica (2011) indicates that the coincidence between the geology and geomorphology of these two coastlines constitutes one of the clearest confirmations of the theory of continental drift.

The continental shelf of the Gulf of Guinea is almost uniformly narrow and widens to as much as 160km (100mi) only from Sierra Leone to the Bijagos archipelago, Guinea Bissau and in the Bight of Biafra. The only active volcanic regions in the Gulf of Guinea are the islands arc aligned with Mount Cameroon on the coast of the Republic of Cameroon. The islands of this arc are Bioko (Fernando Po), Principe, Sao Tome and

Authors α ρ σ: Department of History and International Studies, University of Calabar, Nigeria. e-mail: timwork4real@yahoo.co.uk

Annobon offshore to the southwest (Otora 2012:45). The entire northern coast of the Gulf is washed by the eastward flow of the Guinea current, which extends for about 400 – 480km offshore from Senegal to the Bight of Biafra. Its tropical water is separated from the equator and flows off to cool the Benguela and Canary currents by a sharp frontal region off the Congo and Senegal rivers respectively. The warm tropical water of the Gulf of Guinea is of relatively low salinity because of river effluents and high rainfall along the coasts. According to Oluwafemi Ajayi, the warm water is separated from deeper, more saline, and colder water by a shallow thermoline. Coastal upwelling contributes to a rich production of plant and animal life, which occurs seasonally and locally off the central gulf coast of Ghana and Cote d'Ivoire (Ajayi 2003:176-180).

The variety of the marine flora and fauna of the Gulf of Guinea is limited when compared with that of the western tropical Atlantic and, especially with the Indo-Pacific bio-geographic realm. This relative biological poverty according to Encyclopedia Britannica (2011), results from geological and environmental factors. Geologically, it is due to lack of coral-reef ecosystems because of low salinity and the high turbidity of Guinea current water. On the environmental front, that, the climatic regression to cool conditions during the Miocene Epoch (some 23 to 5.3 million years ago), during which far fewer refuges for tropical species of plants and animals were available in the Atlantic than in the Indo-Pacific region.

The ecosystem of the region is a source of global interest. In addition to openness to the Atlantic Ocean, Ondo Mane submits that, countries of the Gulf of guinea enjoy a rich bionetwork, made of diverse flora and fauna. He indicates that natural riches in the region include among other endowments, rain forest (which accounts for much of the oxygen-generating sources of the world) and water courses with access to the sea such as the Congo and Niger rivers (Mane 2004:6). For instance, the Congo possesses the second strongest streams of the world after the Amazon River in Latin America, and represents the main commercial artery of equatorial Africa on one hand. On the other hand, River Niger which takes its source from Guinea and crosses nine other countries is essential to the life of over 110 million people in West Africa. Interestingly, the Congo and Niger River and its tributaries remain preferred vectors for local trade. This is because access to the sea and other rivers from the River Niger provides the neighbouring countries with a remarkable pool for fishing.

The Gulf of Guinea is endowed with abundant human and natural resources which, if carefully and properly managed can contribute to global prosperity. The region has large reserves of mineral resources such as diamond and gold, including forest for timber, fibre and pharmaceutical products as well as oxygen generating source (Mane 2004:6) The Gulf of Guinea encompasses a large number of countries from West and Central Africa. They range from English to French, Portuguese and Spanish speaking nations.

In analyzing intra-state conflicts in Africa, scholars tend to focus on the historical perspective and most times failing to emphasize the deep links between resources and conflicts in global history. The nexus between natural resources and conflict has been a security challenge in the Gulf of Guinea. Arguments on the abundance of or otherwise, the lack of natural resources in the region is being advanced as a major cause of intra-state conflicts. One strand of this argument according to Oshita (2007:245) attributes intra-state conflicts arguably described as "new wars" to the contest by internal and external actors, for resources; while a second strand of the argument points to conflicts triggered by scarcity, which causes actors to fight over control of scarce resources. Both dimensions of the argument (resource abundance and scarcity), serve herein as a confirmation for economic linkage between resources and conflict. However, the idea that natural resources might be more an economic curse than a blessing began to emerge in the 1980s. In this light, the term resource curse thesis was first used by Auty Richard in 1993 to describe how countries rich in natural resources were unable to use that wealth to boost their economies and how, counter-intuitively, these countries had lower economic growth than countries without an abundance of natural resources. Current thinking about conflict suggest that competition over natural resources has historically been seen as a legitimate justification for going to war; while the redistribution of resources especially territories in favour of the victors was frequently integral to the settlement of conflicts (Melvin and De Konning, 2010:40).

However, with the rise of political wars, conflicts with competing political ideologies apparently provided the fundamental motivation for war, as illustrated by the Second World War and the Cold War whereby resources were relegated as a minor consideration in conflict discourse. Melvin and De Konning (2010) further indicated that, the post-Cold War era witnessed a decline of inter-state conflicts as well as major armed conflicts. From the 1990s, the dominant form of conflicts shifted to complex and fluid internal struggles pitting governments against rebel groups and even by-passing state involvement altogether. In explaining this phenomenon, analysts shifted emphasis to grievances linked to ethnic or religious hatred or social inequality. Resources at least were still considered as a secondary issue.

Resources have gradually re-emerged as a broadly held concern in respect of conflicts and security risk. The recent revival of a materialistic conception of the resources of violence has been due to understanding of the trends and challenges related to

resources access, exploitation patterns, scarcity and trade flows (Jawit, 2010). Arising from this conception, the opening decade of the twenty-first century has seen a persistent rise in three different but interconnected perspectives on current thinking about conflict and security, which situate resources at the mainstream of contemporary violence in the Gulf of Guinea. These can be broadly categorized as economic, environmental and resource-geopolitical approaches to resource conflicts.

II. Resource Conflicts Approaches

Economic considerations to the understanding of conflicts in the Gulf of Guinea have been the primary factor for the renewed focus on the role of resources. Collier and Hoeffer (1998) have demonstrated that with a sharp decline in assistance from the Soviet and Western blocs from the end of the Cold War, rebel groups in the Gulf of Guinea became increasingly dependent on mobilizing alternative sources of income, including revenues from illegal exploitation and trading of natural resources, to keep fighting. As the importance of financing conflicts become an issue, the economic character of many conflicts came to the fore. For example, in the 1990s struggles for power between opposition power groups within Liberia and Sierra Leone were fueled by arms and capital obtained through the sale of rubber and "blood diamonds" which left many people fleeing as refugees (Martson et al, 2008).

Current research by Melvin and De Konning (2010:41) highlights several ways in which resources economics influences conflicts. First, are the armed movements initiating violence in order to gain access to natural resources and the wealth they can amass for themselves. Second and most important is the resource revenues providing the funding necessary to continue the armed struggle. Indeed, maintaining control over resource revenues can both become a means and a major reason for conflicts to become protracted. A less direct type of influence is seen in the role of national resource dependence in creating conditions that increase the risk of conflicts (Basedau 2008). The weight of this evidence suggests a tendency for dependence on natural resources to lead the poor government policy choices in terms of investment and over reliance on export revenues as well as imports of essential commodities, leaving their economies vulnerable to international market stocks.

Resource dependence can also become a factor in the emergence of weak and even failed states and the associated security risk of violent conflicts. In the Gulf of Guinea, the classic examples are Liberia, Sierra Leone, the Democratic Republic of Congo, Angola and Nigeria. In Angola, the Democratic Republic of Congo and Sierra Leone for instance, Harden (2000) indicated that, diamonds were mined or smuggled across national borders and became associated with corruption, violence and warfare. Being easy to transport, diamonds were increasingly used to purchase weapons, and it was suggested that these 'blood diamonds' contributed about ten percent of the global trade in diamonds. In the Catoca mines in Angola which produced about one and a half million carats of diamonds in 2001, an excess of $500,000 was paid to the Angolan army for security against the UNITA rebel group which controlled the region. The effect of this is that, money associated with diamonds mining and rubber theft has funded an increase in number and magnitude of arms proliferation on every side of the conflict in Angola, the Democratic Republic of Congo, Liberia and Sierra Leone, including the purchase of landmines that have maimed thousands of innocent civilians.

The ambitions of the people and the government often times conflict, due to the large amount of resources and money a country's government amass for their own luxuries rather than for the people. Thus natural resources serve as a curse for the people, who then have a lower relative standard of living. As different groups and factions fight for their share. Sometimes these emerge openly as separatist conflicts in regions where the resources are produced such as in Angola's oil-rich Cabinda province (Djankov, Montalvo, Reynal-Querol 2008: 172). In Nigeria, the Niger Delta situation is more worrisome because of the complex and deep-rooted causes of the problem. There are apparently strong mistrust that predates independence between and among the several communities that make up the Niger Delta region which is primarily, a result of stiff competition for resource control, land-use, farming and fishing in the past. At the moment, these communities still express the tendency to aggressively compete for greater share of the dividends and royalties from oil and gas as well as farmlands. Dennis Balogu (2009:3) submits that, the fundamental cause of the Niger Delta crisis represents a microcosm of the general problems facing Nigeria. While drilling or exploitation, environmental degradation and inadequate compensation for the indigenous groups of the region form the bone of contention, the problem assumed a very complex and violent dimension in the post-Cold War era. As a result of complaisance and inaction by the Federal Government, militancy ruled the Niger Delta; championed by the Asari Dokubo led Movement for the Emancipation of the Niger Delta (MEND). Multinational corporations became targets of bombing and kidnapping by the militants (Asuni, 2009). The corporations in turn, decided not to invest on long term basis, as oil pipelines were either destroyed and oil stolen from them or bombed. Nigeria's oil revenue plummeted and scarcity of petroleum products within the country was rife. The militants were heavily equipped to the point that they even attacked the Nigerian military positions in an attempt to poach into their activities.

Criminal and insurgent networks that control transnational trade frequently emerged and find root in the conflict-afflicted or fragile post- colonial states (UN Office on Drugs and Crime, 2010:ii-iii). Thus, combating them effectively requires balanced and integrated approaches. While the trade in certain resources can fuel conflict and attract criminality, it provides livelihoods for local communities and can allow economic development. Formalizing informal resource trade and diversifying economic activities can improve economic conditions at the local and national levels and can also reduce illicit rent seeking, trafficking, crime and corruption (Cockayne, 2010:190).

In other words, failed states situations are characterized by the rise of warlords, criminal syndicates and ethnic wars fuelled by the ready availability of small arms and natural resources like oil and diamonds, which both are the remnants of the state forces and warlords seek to control. Neighbouring states must prepare for spill-over effects of the anarchy of failed states by increasing border security or by intervention (Ibeanu, 2008:7). In a contrary postulation, it is argued that, the idea of failed states arises principally from ideological nations of the West dominant groups in Africa that the states established by colonialism is desirable. Whereas, this serves the purpose of foreclosing the legitimate rights of excluded and marginalized groups to seek the expansion and demonstration of the political, economic and cultural spaces through the reconstitution of the colonial state. The failed state argument as Okechukwu Ibeanu (2008:7) has concluded is therefore:

The finale of the colonial state-making project in Africa, not state failure. It is rather the authoritarian global environment during the Cold War which made it difficult to bring the colonial state-making project to a closure before now.

The fact is that globalization is having both decomposition and re-composition effect on the post-colonial state in Africa and the "new wars" as Mary Kaldor labels them, reflects these transformational impacts. Kaldor notes that they result from the underbelly of globalization, especially, the inequalities of free trade and the collapse of the authoritarian state system. More so, international trade interventions and policing mechanisms are confronted by an ever-globalizing and illicit trade in primary resources.

The environmental perspective has identified a number of mechanisms by which the environment serves as a common denominator of conflict, insecurity and underdevelopment in the Gulf of Guinea. Among these are increases in competition for essential resources such as water due to increase in population and famine due to environmental degradation, loss or poor management of arable and pastoral land (Humphreys, 2005). Contemporary thinking about climate change has offered perhaps the most comprehensive way to advance the environmental perspectives on natural resource conflicts. In their scheme, Melvin and De Konning (2010:41) submit that, one set linkage that has gathered wide support sees resource scarcities endangered by climate change creating competition, instability and social dislocation, which in turn leads to tension and some cases, violent conflicts in vulnerable countries. Climate change and related resource issues are also potential security risk factors at national and international levels.

For instance, in 2008, the European Union made its own assessment of the security risks emanating from climate change. The report indicated both the likelihoods of conflicts over resources and the risks associated with climate change (EU Report 2008). In September 2009, the United Nations released a report that identified five ways in which climate change could affect international security. These include creating vulnerabilities, for example, threatening food security; slowing down or reversing the process of development; increasing the risk of domestic conflict over resources and migration through increasing statelessness as a result of loss of territory; and by negatively affecting international cooperation over shared natural resources (UN Report of the Secretary General, 2009). In that report, the United Nations Environment Programme (UNEP) sought to deepen understanding of the relationship between conflict risk and climate change. The key issue that emerged from the report to date shows that the thread link between climate change and conflict risk is resource scarcity, which is seen as having several distinct elements.

In other words, the issue of scarcity is at the heart of the third strand of current thinking about resource conflict link which is resource geopolitics. In this perspective, the main propelling force of increasing conflict and security risk is seen as a historically unprecedented demand for resources. This is due to the increasing needs of major new consumer and manufacturing countries of China, India and Brazil; while industrialized nations of Western Europe and North America maintain already high levels of consumption of natural resources. However, the rise of major new consumer and manufacturing countries has aggravated concerns about how competition for access to natural resources has affected international relations (Blas, 2010). With this new development and its daunting challenges for marginalized Africa generally and the Gulf of Guinea in particular, one can say that, it is nothing but the rivalries to dominate and control the pillaging of the region, and the exploitation of its people and resources in what has described as the "new scramble for Africa" (Nwoke 2010:61). A scramble where the interests of the Asians, like those of the Europeans, are to obtain investment opportunities, markets for their products and services, and raw materials. After all, the advanced

capitalist economies have been plundering Africa and simultaneously under-developing African countries by ensuring that they consume imported goods and export raw materials. Bode Onimode captured the situation vividly well that:

This is the source of profound disarticulation and distortions and paradox of colonial and post-colonial economy to this day… it produces what it does not consume and consume what it does not produce (Onimode, 1985:74).

It was on these perverse pillars that the colonial regimes erected a global system of unequal capitalist development between the metropoles and Africa. This was how according to Walter Rodney (1972), Europe under-developed Africa, and according to Samir Amin, the development of under-development was entrenched in Latin America. The resources and surplus in the colonies were systematically plundered for the development of the metropoles and African countries remained underdeveloped; while the metropoles developed even beyond the capacity of their indigenous resources. As observed by Nwoke (2010), Africa thus, remained the poorest continent, despite being one of the most richly endowed regions' of the world, because the drive in the colonial and post-colonial periods to use the mineral and raw materials to develop manufacturing industries and highly skilled man-power to sustain growth was a lost war.

Nevertheless, the resource geopolitics approach has focused primarily on the issue of energy, specifically hydrocarbon reserves. Developments since the early 1970s have redefined the relationship between hydrocarbon consumer countries and the producer countries. The growing market power of oil producers was manifested in 1973 when their actions imposed embargo on oil shipments, coordinated through the Organization of the Petroleum Exporting Countries (OPEC) precipitated an oil crisis. Since the 1970s, policies of nationalization in many producer countries have led to the world's principal hydrocarbon reserves, for example in Libya, Saudi Arabia and Venezuela, being placed under the control of state owned energy companies rather than western-backed multinationals (Mel and De Konning, 2010:55). This has raised concerns in consumer countries that access to hydrocarbon supplies and pricing could be determined more by political than market conditions. The rise of vast new consumer countries such as China and India has put further pressure on hydrocarbon resources, helping to drive oil prices to records high above $147 a barrel in July 2008. In this sense, Michael Klare categorically concludes that these developments, along with concerns that, the world is at or approaching the peak in oil production and that hydrocarbon reserves could be exhausted perhaps as early as 2050, have raised questions about the ability of industrialized countries to ensure access to energy supplies (Klare, 2008: 210-237).

III. Resource Regimes and Security

In the aftermath of the Cold War, there have been far reaching conceptual changes in security analysis. These changes were reflected in a shift of emphasis from a discourse of national defence and security of the nation-state to a discourse of protection and security of nationals. The origins of this shift lies partly in the fact that, the end of the Cold War engendered a new thinking about nation-states, particularly their security. The Cold War was one driven by bipolar politics, domination and hegemony. According to Hyden (1999), emphasis was placed on defence against the real and imagined intentions of states to dominate one another and against the subversive activities of elements within national borders. Defence and security in this framework, were placed above everything else. The duties of national to the state were privileged over the responsibilities of the state to nationals. Assessment of external and internal threats and capabilities was the central concern of policy and security was defined in the narrow, militarist terms of the ability of the armed forces.

Whereas, the post- Cold War period has spawned changes in thinking about security, which emphasized not national security but the security of nationals; not duties of nationals to the state, but the responsibilities of the state to nationals (Ibeanu, 2008). Here, the concern is not just securing state boundaries and people in power, but about human security and the responsibility of both state and the international community to protect people, vulnerabilities of nationals creating opportunities for overcoming those vulnerabilities. Thus, issues of poverty, environmental protection, equity and freedom are being elevated over military issues in what Ken Booth (1991), has described as the emancipation of the individual in human security conception. Human security in the scheme of Klare and Thomas (1994) is aligned to modern thought about global security, with emphasis on human safety and survival. They strongly emphasize that the referent object should be the individual, where the integrity of mankind is upheld. Its main focus is diseases, poverty, natural disasters, violence, conflicts and landmines, rehabilitation of war victims, gender and human rights.

In the context of the distinction between the environment and security, we locate our understanding of the interface between resources and security. National security discourse, unlike the security of nationals, constructs the environment as a natural category separate from the society and existing to be exploited in the service of national security (Ibeanu, 2008:8). This construction of the environment coheres with a very competitive view of natural resource

governance anchored in individualistic, non-profit oriented and non-communally controlled. Consequently, its application in many parts of the Gulf of Guinea has conduced rivalries and conflicts over resource flows and livelihoods. The many conflicts that have bedeviled the sub-region (in Angola, Democratic Republic of Congo, Central African Republic, Nigeria, Sierra Leone, Liberia, Cote D'Ivoire and Mali), are directly or indirectly been at the very root of resource mismanagement and underdevelopment in the Gulf of Guinea. Crucial in this respect, especially amongst rural peoples, according to Otite and Olawole (2001), is the desire to achieve subsistence in the economic order and the sphere of raw material and physical resources.

Contrariwise, the security of nationals' discourse to which this study subscribes to, sees the environment as integral to the society, and exists principally to support all members of the society in both the present and the future. The perspective sees the environment to involve values, expectations, structures and institutions that organize human existence within a specific biophysical structure. In other words, such a biophysical structure exists in unity with social, economic and political processes and none should in any case be treated in isolation. Okechukwu Ibeanu concludes that:

this unity is expressed in resource regimes (local and international), which defines access, exploitation and management, with the politico-juridical regime (the state and international regime) holding these intricate linkages together by playing intervening roles in each, as well as solidarity role for all. Collectively, these regimes congeal the character of governance of natural resources.... It is their failure in specific socio-historical circumstances that generate conflicts and underdevelopment (Ibeanu, 2008:10).

Based on the above ideas, we identify three resource regimes. The first is resource access regime, which today is defined principally by the market. In spite of claims of freedom, equity, opportunities and choices, proponents of this regime put forward market forces as the most dominant contemporary definer of resource access. The market is patently the most regimenting and exploitative regime (Mahmood, 1996). It is this tendency that portends grave consequences for local communities, minority groups, the poor and others living at the margins of the society. The attempts sometimes by these groups to seek redress for their plights have easily led to conflicts and insecurity in the Gulf of Guinea (Ibeanu, 2008).

The second is the resource exploitative regime, which is expressed in technology. That is, the level of understanding of the laws of nature and application of the knowledge in the exploitation of natural resources. This argument is anchored on developing and improving on tools, reducing over consumption by

devising better ways of using natural resources in creating goods, including recycling as well as better waste management that is not harmful to both man and the environment. Thomas Homer-Dixon (1995), has argued that, existing global structures controlling the distribution of technology, particularly research and development (R and D), has created a world of technological inequalities and dependence. Indeed, this is primarily responsible for the gaps between African States and the developed economies that own and control technology. However, the wider the gaps, the more likely that conflict would arise as groups seek to maximize control of resources in the face of technologically induced scarcity.

The third resource regime is resource management which is enshrined in the culture of the people. This has to do with the stock of knowledge that a community has accumulated over time for the use and preservation of the environment, and the mode of transmitting the said knowledge from one generation to another. However, if within a political community, different resource management regimes exist and come into contradiction with one another, such a community is bound to degenerate into chaos and conflict (Ibeanu, 2010: 12). In other words, the state holds together these complex interlocking chains of regimes, but when the state fails to express the collective interests of all segments of the political community, the resource regimes are likely to fail, giving rise to conflicts insecurities and underdevelopment.

IV. Conclusion

The Gulf of Guinea is undoubtedly emerging as an important element in the global economy. Natural resource conflicts and geopolitical parameters remain the main challenge to the region. Its enormous potentials are constantly beings undermined by unreasonable policy choices, weak institutions as well as persistent exposure to adverse factors of wars, natural disasters, commodity and exchange rate fragility. Since the region cannot be able to wish away the pull of globalization in the age of technological advances, there is the need therefore for the Gulf's States and by extension Africa, to participate in the bargain of its terms and as active participants and not as objects or victims of globalization. Africa's resources should be overwhelmingly used by Africans to redeem themselves from induced poverty and scarcity in the face of affluence. Most importantly, as an interest group and a negotiating bloc in the global market, the Gulf of Guinea should start making their rules of engagement in the global economy, including conditions of external participation in the region. For the region to become a development zone, the Gulf of Guinea must strive to be a haven of stability, and should be regarded as a global common.

With regards to the natural wealth of the region, it is critical to prevent the symptoms of natural resource curse so as to ensure that the benefits that accrue from these resources are maintained and distributed for posterity. This would however, require genuine public participation whereby resources rather than being a source of conflict and underdevelopment; would serve as a catalyst for peace and sustainable development. Without which resource governance and better management of the environment, human security and development would remain elusive in the Gulf of Guinea.

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Structural Changes in Indian Economy: An Empirical Analysis using Input-Output Structural Decomposition Analysis

By Mandeep Singh & Dr. Kuldip Kaur

Guru Nanak Dev University, India

Abstract- The present study is an attempt to decompose the changes in output growth in India since 1983-84. For analysis purpose, study has bifurcated the whole period into two parts i.e. pre (1983-84 to 1993-94) and post (1993-94 to 2006-07) reforms period. Input-Output tables for the year 1983-84, 1993-94 and 2006-07 have been utilized for this purpose. Due to non-availability of recent Input-Output table, the analysis of the recent years (2007-08 to 2012-13) has been done using the data from different Economic Surveys provided by the Ministry of Finance, Government of India. The study utilized structural decomposition analysis to categorize the different sources of output growth.

Keywords: structural changes, input-output analysis, structural decomposition analysis, output growth.

GJHSS-E Classification : FOR Code: 140299

STRUCTURALCHANGESININDIANECONOMYANEMPIRICALANALYSISUSINGINPUTOUTPUTSTRUCTURALDECOMPOSITIONANALYSIS

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Structural Changes in Indian Economy: An Empirical Analysis using Input-Output Structural Decomposition Analysis

Mandeep Singh [α] & Dr. Kuldip Kaur [σ]

Abstract- The present study is an attempt to decompose the changes in output growth in India since 1983-84. For analysis purpose, study has bifurcated the whole period into two parts i.e. pre (1983-84 to 1993-94) and post (1993-94 to 2006-07) reforms period. Input-Output tables for the year 1983-84, 1993-94 and 2006-07 have been utilized for this purpose. Due to non-availability of recent Input-Output table, the analysis of the recent years (2007-08 to 2012-13) has been done using the data from different Economic Surveys provided by the Ministry of Finance, Government of India. The study utilized structural decomposition analysis to categorize the different sources of output growth.

While comparing the two study periods, results show that for the primary sector (1 to 11) there is rise in private consumption and government consumption expenditure. However, percentage share of exports and investment expenditure in primary sector have declined over two periods. In secondary sector (12 to 44), there is a sharp increase in percentage share of all demand categories. For tertiary sector (45 to 58), the increase has been shown in investment expenditure, imports and exports only. Further, it is the average growth of final demand which holds the largest share in change of output growth over the study period. Among the five categories of final demand, domestic demand (sum of private consumption, government consumption and investment expenditure) is the dominant source of output growth in both the periods. It shows that Indian economy has a very strong domestic market.

Keywords: structural changes, input-output analysis, structural decomposition analysis, output growth.

I. Introduction

Economic development and structural changes are highly associated with each other. Economic development is defined as a process of combining economic growth with changing share of different sectors in the national product and labor force. Structural changes do not only characterize economic development, these are also necessary for sustaining the economic growth. The common structural changes in most of the developing economies are observed by changing structure from agriculture sector to manufa-

cturing sector and then followed by services sector. Structural changes in an economy can be studied in respect of different outcomes like changes in output, employment, capital investment and consumption among others. The underdeveloped countries have dominant share of agricultural sector with rising share of manufacturing and services sectors. Due to rise in levels of income, the demand for agricultural products declines and that for industrial goods increases and after reaching a reasonably high level of income, demand for services increases sharply. It is found that the growing demand for services has contributed the largest share in GDP from the last two decades. Larger population have shifted to the urban areas from rural areas which raised the demand for transport and trade services to provide food to the urban people from rural areas. Construction activities are expanding day by day due to demand of housing related services which are generally not common in villages (Papola, 2005). Over the last six decades, the share of agriculture has continuously declined from 57 percent in 1950-51 to 40 percent in 1980-81 to 24 percent in 1995-96, to about 16 percent in 2009-10. Industry and services have both increased their share, but at different pace and in different periods.

In the present paper, structure of changing output since 1983-84 till 2012-13 has been analyzed by using Indian input/output tables. On the basis of economic reforms, which took place in 1991, the study divided the economy into two phases viz, the pre-reforms phase and the post reforms phase. The paper tried to explain the different sources of output growth over the study period. For this purpose, Input-Output structural decomposition analysis has been utilized. Dhawan (1993) and Saxena et al. (2013) have also used the same approach to evaluate the sources of output growth in post-liberalized era in Indian economy. It is the modified version of Forssell (1988) methodology of calculating the sources of output growth by adding the interaction term (in between final demand change and technology change).

To present the complete analysis, whole study has been divided into five sections including the present introductory one. In Section 2, changing production structure of the Indian economy, has been presented and discussed. By using the same sector aggregation

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Author α: Senior Research Fellow, Punjab School of Economics, Guru Nanak Dev University, Amritsar – India.
e-mail: mandeepsinghjrf@gmail.com
Author σ: Professor in Economics, Punjab School of Economics, Guru Nanak Dev University, Amritsar – India.
e-mail: kuldeepgarcha@yahoo.com.

(see Appendix Table A1 for details), changing structure of Indian economy has been explained by calculating sector-wise average annual growth rates. Section 3 explains about the sources of database utilized and applied methodology used for the empirical analysis. In Section 4, empirical results have been presented and Section 5 concludes the whole study and provides some policy implications inherited from the analysis.

II. Production Structure of Indian Economy

Production structure of the Indian economy has been explained by using the percentage share of each sector's output in total output of the economy. Table 1 reports the production structure of the Indian economy over the study period. It also presents the average annual growth rate of output over two periods. The following two subsections explains in detail the changing production structure of Indian economy for pre- and post- reforms period.

a) From 1983-84 to 1993-94

It directly depict from Table 1 that the share of Food Crops (1) fell from 9.86 % to 6.80 %. The agricultural output for the year 1992-93, has declined due to erratic behavior of south-west monsoon. That is why the share of agriculture in GDP declines. In the next year, 1993-94, monsoon showed its normal behavior and it tried to compensate for the last year, so the difference is not much large in production and stability maintained in most of the other farm products. Further, the share of Cash Crops (2), Plantation Crops (3), Other Crops (4), Animal Husbandry (5) and Forestry & Logging (6) also show a decline in their shares in total output over the study period. In contrast, the share of Fishing (7) and Coal & Lignite (8) have gone up, there is no change in Iron Ore (10) and Other Minerals (11) with a little difference which is no significant except Crude Petroleum & Natural Gas (9) which showed decline. On account of the fall in the shares of most of the sectors, the share of primary sector (sector 1 to 11) to GDP has declined from 28.44 percent to 23.34 percent.

There is some deceleration in industrial sector growth in the year 1983-84, it reflects sluggishness in output in several industries. Power situation in some parts of the country has been adversely affected by the droughts in 1982-83. If we compare the figures of output structure of manufacturing sector in 1993-94 with that of 1983-84 then it shows the signs of resurgence. According to the estimates of Economic Survey 1993-94, industrial growth was below expectations due to the Ayodhaya incidents which disrupted industrial activity and had upset business plans and investment decisions since December 1993. Even increase some shares of different industrial sectors, the share of secondary sector (sector 12 to 44) has reduced from 31.89 to 30.53 percent in total output of the economy.

On the other hand, of the service sector (sectors 45 to 58) the share of Electricity (46), Transport Services (49), Communication (51), Trade (52), Banking (54), Education & Research (56) and Other Services (58) has increased over the period of time. And there are some sectors move downward from their share in total output are Construction (45), Gas & Water Supply (47), Railway Transport Services (48), Storage & Warehousing (50), Hotels and Restaurant (53), Insurance (55) and Medical & Health (57). The share of services sector (sector 45 to 58) has increased from 39.68 to 46.13 percent in total output of the Indian economy. As per the Economic Survey 1993-94, subsectors of services i.e. Banking, Trade, Hotels, Transport and Communication Services has continued to rise.

b) From 1993-94 to 2006-07

For the years, 1993-94 to 2006-07, the results show that the share of Food Crops (1) fell from 6.8 % to 4.1%. The agricultural output for the year 2006-07, has declined due to deficiency/variability in rainfall during that year. Due to this deficiency of rainfall, the share of agriculture in GDP declines. It also creates inflationary pressure in the economy and dampens the other sectors' growth via demand reduction (Economic Survey, 2006-07). The share of Cash Crops (2), Other Crops (4), Animal Husbandry (5), Forestry & Logging (6), Fishing (7), Coal & Lignite (8) are showing a decline in their shares in total output over the study period. In contrast, the share of Plantation Crops (3), Crude Petroleum & Natural Gas (9), Iron Ore (10) and Other Minerals (11) which show a rise in the total output of the Indian Economy. So, fall in the shares of most of the sectors, the share of primary sector (sector 1 to 11) to GDP has declined from 23.34 percent to 14.46 percent. There is some boost in industrial sector growth in the year 2006-07, it shows the impressive growth of the industrial sector, propelled by robust growth in manufacturing has continued unabated, but there is some deceleration of growth in consumer goods industries (Economic Survey, 2006-07). If we compare the figures of output structure of manufacturing sector in 1993-94 with that of 2006-07 then it shows the signs of progress. With increase in shares of some of the industrial sectors; the share of secondary sector (sector 12 to 44) has increased from 30.53 to 35.50 percent in total output of the economy.

However, for service sector (sectors 45 to 58) the share of Construction (45), Other Transport Services (49), Communication (51), Hotels & Restaurants (53), Insurance (55), and Medical & Health has increased over the period of time. And there are some sectors move downward from their share in total output are Electricity (46), Gas & Water Supply (47), Railway Transport Services (48), Storage & Warehousing (50), Trade (52), Banking (54), Education & Research and Other Services. As per the Economic Survey 2006-07,

Hotels & Restaurants, Communication and Insurance Services have continued to boost the economy. The impressive progress in information technology (IT) and IT-enabled services, both rail and road traffic, and fast addition to existing stock of telephone connections, particularly mobiles which played a key role in such growth.

Sector	Production Structure			Average Annual Growth Rate	
Primary	1983-84	1993-94	2006-07	1983-84 to 1993-94	1993-94 to 2006-07
1	9.86	6.80	4.10	8.46	18.72
2	2.66	2.14	1.38	15.27	21.73
3	0.62	0.48	1.05	13.40	75.08
4	6.10	5.60	2.37	20.86	3.45
5	5.64	5.03	2.91	19.63	16.96
6	1.25	0.76	0.38	2.71	10.50
7	0.44	0.71	0.51	44.93	26.44
8	0.72	0.95	0.59	36.45	19.79
9	0.84	0.57	0.69	8.00	48.76
10	0.06	0.06	0.15	29.47	77.53
11	0.25	0.24	0.33	23.55	54.36
Secondary	1983-84	1993-94	2006-07	1983-84 to 1993-94	1993-94 to 2006-07
12	0.95	0.76	0.52	15.24	24.00
13	3.62	2.62	2.94	10.56	45.77
14	0.19	0.25	0.62	36.16	79.61
15	0.59	0.53	0.28	19.95	12.72
16	2.85	1.87	0.98	6.29	12.63
17	1.70	1.26	0.65	11.67	11.68
18	0.25	0.12	0.08	-6.19	20.30
19	1.16	0.93	1.42	14.82	59.41
20	0.56	0.48	0.14	17.28	-12.41
21	0.08	0.15	0.14	49.12	38.65
22	0.54	0.61	0.40	29.66	22.77
23	0.47	0.44	0.35	22.54	30.02
24	0.40	0.48	0.28	33.14	17.06
25	0.87	1.18	1.21	37.81	41.62
26	2.24	1.21	3.54	-2.08	87.16
27	0.20	0.20	0.17	24.37	34.42
28	0.28	0.31	0.56	29.17	66.67
29	0.29	0.31	0.47	28.38	58.46
30	0.83	0.71	0.60	17.58	33.87
31	0.29	0.34	0.34	31.47	40.08
32	2.32	3.02	2.74	36.08	36.44
33	0.44	0.48	0.39	28.61	32.34
34	0.88	0.67	0.84	12.62	50.36
35	2.50	2.78	3.28	29.11	47.97
36	0.40	0.76	0.71	52.10	37.89
37	1.05	1.22	1.38	31.06	46.18
38	0.24	0.24	0.25	24.78	42.22
39	0.24	0.18	0.20	13.22	43.58
40	1.19	1.17	1.84	24.02	60.28
41	1.47	1.87	4.73	35.21	81.04
42	0.51	0.41	0.17	15.15	2.12
43	1.29	1.58	1.75	33.39	45.05
44	1.00	1.39	1.53	38.77	44.82
Tertiary	1983-84	1993-94	2006-07	1983-84 to 1993-94	1993-94 to 2006-07
45	7.23	7.15	11.46	24.16	61.18
46	2.25	3.42	2.30	42.70	23.45
47	0.24	0.23	0.14	23.10	19.04
48	1.43	1.20	1.04	16.95	34.75
49	4.08	6.62	6.83	45.58	42.11
50	0.08	0.06	0.05	15.24	35.82
51	0.44	0.75	1.23	48.23	62.09

Table 1 : Production Structure of Indian Economy   In (%)

52	8.57	9.62	8.66	29.61	36.16
53	1.39	1.12	2.29	15.16	71.64
54	1.57	2.84	2.78	50.27	39.83
55	0.47	0.45	0.73	22.98	61.97
56	1.79	1.93	1.82	27.81	38.16
57	1.24	1.17	1.50	22.30	51.37
58	8.90	9.57	9.23	27.72	39.16
Total	100.00	100.00	100.00	24.60	40.72

Note: Average Annual Growth rate has been calculated by using the formula :
[Log(current)-Log(Previous)]*100

Source : Authors' Calculations

III. Database and Methodology

a) Database

Input-Output tables of Indian economy have been utilized for calculating the sources of output growth for pre and post reforms period provided by the Central Statistical Organization (CSO), New Delhi. Following Saxena et al. (2013), Absorption matrix (commodity by industry matrix) representing input flows of an economy has been utilized. Further, for analysis purpose, the whole economy is aggregated into 58 sectors (see Appendix Tables A1). Due to the latest available Input-Output table for the year 2006-07, further analysis i.e., from 2007-08 to 2012-13, has used data from various Economic Surveys, provided by Ministry of Finance, Government of India, to analyze the demand pattern during these years.

b) Methodology Used

The methodology applied in this paper is just an extension of the standard Leontief Input-Output formula given as:. According to this formula, the change in output (X) over the period may be due to change in final demand (F) or due to the change in technological relations or due to change in both (the interaction component in this study takes care of this change). Where X is the output vector, A is the technological coefficient matrix and F is the final demand vector. In the present study, following Forssell (1988), final demand vector has been further bifurcated into five demand categories viz, private consumption expenditure (P), government consumption expenditure (G), gross investment (I), exports (X) and imports (I). In addition to this, following Saxena et al. (2013), the same methodology of calculating the sources of output growth has been further modified by adding the interaction term effect. Following subsections will explain all four components in detail.

c) 1 Sources of Output Growth

By using Leontief's formula, the value of output in the given year can be written as follows:

$$X = (I-A)^{-1}[P+G+I+E-M] \qquad ...(1)$$

As per the structural decomposition analysis, the total growth in output has been divided into four major components and each component is composed of five more components, such as the growth of private consumption; the growth of government consumption; the growth of gross investment; the growth of exports and the growth of imports. The first four of these effects have positive sign and the last effect has a negative sign because imports are a substitute for domestic output as another source of supply. Any growth of imports is evaluated as if it had been a loss to the domestic production. If the growth effect of imports is large enough or the initial amount of imported products is greater than output, the total growth effect may even be negative (Forssell, 1988).

The first component i.e., effect of average growth of final demand are analyzed in order to reveal how much output in each industry would have changed if all elements of a particular final demand category were growing at the same rate. One can use this component for comparison purpose only in case of aggregate change in final demand (i.e., not suitable for comparison in case of further disaggregation of final demand category). Guill (1979) explains that this component is equivalent to the difference of final expenditure in period t and period zero. One can calculate the extent of this component by estimating the following equation:

$$dX(L) = (I-A)_0^{-1}(g_L.L_0) \qquad ...(2)$$

where dX represents the change in output; L shows the different demand categories such as private consumption expenditure, government expenditure, gross Investment, exports and imports; Subscript 0 represents the values pertaining to the initial year and gL is the average growth rate of different demand categories between the initial and the final year respectively, and can be calculated as:

$$g_p = \frac{\sum_{i=1}^{58} P_{ti} - \sum_{i=1}^{58} P_{0i}}{\sum_{i=1}^{58} P_{0i}}$$

where i refers to sector number and stands for the average rate of private consumption expenditure between the initial year and the terminal year (t). The above formula represents the average growth rate of private consumption expenditure over the years. One can also calculate the average growth rates for other demand categories as well by using the same formula.

The second component of change in final demand i.e., changes in the composition of final demand refer to the difference between the actual sectoral final demand element and the sectoral final demand element calculated according to the average growth rate of the related final demand category. Guill (1979) measures this component by subtracting that vector of final demand of year t which is constructed by distributing total final demand of year t according to the industrial composition of final demand in year zero from the actual final demand vector of year t. The effects of change in the composition of final demand category is analyzed in order to find out how much deviations of actual growth of sectors from average growth of a particular final demand category have caused structural changes in industrial output. These changes are exogenous to the production system under consideration. Thus, the first effect tells us what would have happened to industrial output if all final demand elements were growing at the average growth rate whereas the second component explains what actually happened since in actuality all final demand elements do not grow at the average growth rate. Both effects assumed that technology remains constant. Following is the formula to calculate the proportion of this component in total change in final demand over the study period.

$$dX(L) = (I-A)_0^{-1}\left[L_t - (L_0 + g_L.L_0)\right] \qquad (3)$$

Further, the third component of output change measures the effect of change in technology on output keeping final demand as constant. In other words, the estimation of this effect reveals how much output in each industry has changed due to change in the input-output coefficients. It can be estimated by subtracting Leontief inverse matrix of initial period from inverse of terminal year and then multiplied with final demand vector of initial period. Mathematically, it can be written as follows:

$$dX(L) = \left((I-A)_t^{-1} - (I-A)_0^{-1}\right)L_0 \qquad (4)$$

The last component of output change measures the differential effect of final demand change due to technological change, on industrial output. This component emerges as a residual when the same year weights are used for both the final demand change and technological change components of total output change and shows the interaction effect of final demand change and technology change on output change. Venkatramaiah et. al. (1984) defined this component as the measuring rod of differential effect of technological change due to change in the final demand, on industrial output.

$$dX(L) = \left((I-A)_t^{-1} - (I-A)_0^{-1}\right)(L_t - L_0) \qquad (5)$$

d) 2 Contribution of Different Final Demand Categories

One can also measure the contribution of separate demand factors like private consumption, government consumption, gross investment, exports and imports to output growth between the initial and the final year. Following expression is used to calculate the contribution of private consumption expenditure in output change between two periods:

$$dX(P) = dX(P_1) + dX(P_2) + dX(P_3) + dX(P_4) \qquad (6)$$

where subscripts 1 to 4 shows the proportion of its changes from all four sources of output growth mentioned in previous sub-section.

These identities will be used to measure the total individual effect of a final demand category on the total output change. It separates certain components and in this way it helps us to understand better that what has happened in the economy. Thus, the change in output is the result of four different effects and the sum total of values of all the effects should be equal to the total change in output.

IV. EMPIRICAL ANALYSIS

This section presents the empirical results pertaining to the percentage share of each category in the total change in output during the pre reform period (i.e. 1983-84 to 1993-94) and post reform period (i.e. 1993-94 to 2006-07). In addition to this, percentage share of each demand category has also been calculated in the same section.

a) Sources of Output Growth

Table 2 presents the percentage contribution of four sources of output growth mentioned in the previous section. For analyzing pre-reforms period, 1983-84 has taken as initial year and 1993-94 as final year and for post-reforms period, 1993-94 becomes the initial year and 2006-07 taken as terminal year. During pre-reforms period, the first component, i.e. the average growth of final demand contributes 120.15 percent. In other words, if the distribution of final demand had not changed between 1983-84 to 1993-94 and neither the inter-industry relations; total output on an average, would have increased by 120.15 percent from its initial level of 1983-84 period.

Moreover, for the post-reforms period, the average growth of final demand component contributes 114.37 percent. In other words, if the distribution of final demand had not changed between 1993-94 to 2006-07 and neither the inter-industry relations; total output would have increased by 114.37 percent of its initial level of 1993-94 period. On an aggregate, the results show that changes in final demand for both the periods are more significant in its effect on production levels in comparison to the effect of other components.

In the first component, we have assumed the constant average growth rate of each sector over the

study period with same inter-industry relations. The second component of output change are analyzed in order to find out the deviations of actual growth rate of particular sector from the average growth of that sector which we have assumed in the first component. This component shows the structural change in industrial output. The sum of these two components of output growth shows the net impact of actual final demand change on output change over the study period. For both the periods, the contribution of this factor into the change in final demand is negative. Negative effect indicates that changes in composition reduce the production in these sectors. In addition, negative sign also reduces the net effect of final demand change on output change.

Sector-wise analysis show that during pre-reforms period, among the 58 sectors, 22 sectors have negative effect on total output change which shows that these sectors are growing at less rate than average growth rate assumed constant for all the sectors. The sectors with negative effect are Food Crops (1), Cash Crops (2), Animal Husbandry (5), Forestry & Logging (6), Coal & Lignite (8), Iron Ore (10), Sugar (12), Food Products excludes Sugar (13), Cotton Textile (16), Wool, Silk & Synthetic Fiber Textiles (17), Textiles Products including Wearing (19), Inorganic Heavy Chemicals (28), Fertilizers (30), Iron and Steel Industries & Foundries (35), Other Basic Metal Industry (36), Miscellaneous Manufacturing Industries (44), Construction (45), Electricity (46), Gas & Water Supply (47), Railway Transport Services (48), Hotels & Restaurants (53) and Medical & Health (57).

Moreover, sectors with growth more than average growth are Plantation Crops (3), Other Crops (4), Fishing (7), Crude Petroleum & Natural Gas (9), Other Minerals (11), Beverages (14), Tobacco Products (15), Jute, Hemp & Mesta Textiles (18), Wood & Wood Products except Furniture (20), Furniture & Fixture (21), Paper & Paper Products (22), Printing Publishing & Allied Activities (23), Leather & Leather Products (24), Plastic & Rubber Products (25), Petroleum Products (26), Coal Tar Products (27), Organic Heavy Chemicals (29), Paints Varnishes & Lacquers (31), Pesticides, Drugs & Other Chemicals (32), Cement (33), Non Metallic Minerals (34), Metal Products except Machinery and Transport Equipment (37), Agricultural Machinery (38), Industrial Machinery for Food & Textiles (39), Other Machinery (40), Electrical, Electronic Machinery and Appliances (41), Railway Transport Equipment (42), Other Transport Equipment (43), Other Transport Services (49), Storage & Warehousing (50), Commu-nication (51), Trade (52), Banking (54), Insurance (55), Education & Research (56) and Other Services (58). The positive effect of all these sectors depicts that the actual growth rate of these sectors is higher than the average growth rate shows the structural change in

these sectors. These sectors show the significant increase in production during pre-reforms period due to compositional change.

Similarly, during post-reforms period, The sectors with negative effect (total 28) are Other Crops (4), Fishing (7), Iron Ore (10), Other Minerals (11), Sugar (12), Jute, Hemp & Mesta Textiles (18), Wood & Wood Products except Furniture (20), Furniture & Fixture (21), Leather & Leather Products (24), Cement (33), Non Metallic Minerals (34), Iron & Steel Industries and Foundries (35), Metal Products except Machinery and Transport Equipment (37), Agricultural Machinery (38), Industrial Machinery for Food & Textiles (39), Other Machinery (40), Electrical Electronic Machinery & Appliances (41), Railway Transport Equipment (42), Other Transport Equipment (43), Miscellaneous Manufacturing Industries (45), Electricity (46), Gas & Water Supply (47), Railway Transport Services (48), Storage & Warehousing (50), Communication (51), Trade (52), Banking (54) and Insurance (55). And the sectors with growth more than average growth rate are Food Crops (1), Cash Crops (2), Plantation Crops (3), Animal Husbandry (5), Forestry & Fishing (6), Coal & Lignite (8), Crude Petroleum & Natural Gas (9), Food Products excluding Sugar (13), Beverages (14), Tobacco Products (15), Cotton Textiles (16), Wool, Silk & Synthetic Fibre Textiles (17), Textile Products including Wearing (19), Paper & Paper Products (22), Printing Publishing & Allied Activities (23), Plastic & Rubber Products (25), Petroleum Products (26), Coal Tar Products (27), Inorganic Heavy Chemicals (28), Organic Heavy Chemicals (29), Fertilizers (30), Paints Varnishes and Lacquers (31), Pesticides Drugs & Other Chemicals (32), Other Basic Metal Industry (36), Miscellaneous Manufacturing Industries (44), Other Transport Services (49), Hotels & Restaurants (53), Education & Research (56), Medical & Health (57) and Other Services (58).

Further, on an aggregate, the effects of third component i.e., technical change over the study period led to decrease in output by -5.61percent of the initial output level of 1983-84. On the contrary, during post-reforms era, the same effect leads to the positive change in output by 5.61 percent of the initial output level of 1993-94. This positive impact indicate the structural changes in the production system because here in this component we have used the actual input-output relations for both the periods by assuming final demand as constant.

Finally, the fourth component of output change which measures the differential effect of final demand change due to technological change on industrial output, contributes about -5.61 percent in total output change during pre-reforms era and 3.03 percent during post-reforms period.

Table 2 : Sources of Output Growth

In % age

Sector	Average Growth of F. D.		Composition of F. D.		Technical Change		Interaction Factor	
	Pre-Reform	Post-Reform	Pre-Reform	Post-Reform	Pre-Reform	Post-Reform	Pre-Reform	Post-Reform
1	369.50	53.97	-240.58	13.96	-14.47	24.49	-14.46	7.57
2	108.15	-284.42	-18.09	383.77	9.01	-3.53	0.94	4.18
3	-926.63	-93.73	165.82	164.34	580.60	10.93	280.22	18.45
4	93.20	906.75	27.92	-75.25	-14.20	-363.03	-6.92	-368.46
5	96.71	-16.37	-2.08	150.08	2.54	-12.10	2.83	-21.61
6	176.11	18.33	-99.20	538.93	9.82	-166.42	13.28	-290.85
7	43.89	183.23	47.84	-94.99	4.60	5.23	3.67	6.53
8	75.01	-248.76	-27.41	253.36	29.14	36.87	23.26	58.53
9	16.02	-671.55	91.51	1127.48	-52.46	-191.78	44.94	-164.16
10	577.76	300.72	-465.39	-207.65	-5.83	0.65	-6.53	6.29
11	-1.60	537.00	114.44	-447.05	-3.24	1.75	-9.60	8.30
12	421.10	212.02	-121.28	-159.40	-137.48	10.77	-62.34	36.61
13	142.70	-54.48	-38.89	143.03	-0.92	3.40	-2.89	8.05
14	43.97	-351.79	51.25	439.77	4.16	2.86	0.62	9.16
15	116.59	-16.65	3.80	87.59	-12.50	23.34	-7.89	5.72
16	459.31	-444.28	-284.36	607.39	-59.99	-21.45	-14.96	-41.65
17	150.14	-162.55	-78.45	371.51	20.02	-35.45	8.29	-73.50
18	-594.13	353.54	368.96	-44.64	227.15	-63.25	98.01	-145.66
19	275.76	89.34	-125.18	8.06	-33.33	0.64	-17.25	1.95
20	102.11	652.92	26.02	-588.24	-15.21	13.05	-12.92	22.26
21	41.07	132.56	78.97	-6.75	-11.72	-17.95	-8.32	-7.86
22	50.96	-1864.59	38.93	2113.64	8.32	-66.87	1.79	-82.18
23	99.80	-1238.40	52.86	1317.80	-27.35	7.97	-25.32	12.62
24	83.66	676.55	6.76	-574.96	4.52	-6.20	5.07	4.61
25	28.84	-85.13	53.23	170.85	15.11	9.91	2.82	4.36
26	-378.24	-40.79	114.94	81.21	207.05	29.24	156.25	30.33
27	-16.40	-471.40	115.53	573.94	5.38	-0.96	-4.51	-1.58
28	62.32	-240.01	-25.36	287.02	38.60	35.87	24.44	17.11
29	-88.13	-306.85	26.12	318.95	123.62	37.82	38.38	50.09
30	192.14	-1.67	-101.25	45.69	16.07	42.97	-6.95	13.01
31	124.12	46.99	11.54	76.73	-26.23	-8.23	-9.43	-15.49
32	29.99	-1189.50	36.75	1306.75	24.65	-2.41	8.61	-14.84
33	6.01	389.78	186.87	-294.52	-44.16	0.78	-48.72	3.96
34	88.33	750.01	64.77	-638.94	-31.95	-23.39	-21.14	12.32
35	35.43	3371.87	-51.68	-3313.46	78.58	5.93	37.67	35.67
36	97.18	45.66	-26.14	66.24	-57.61	4.39	86.57	-16.30
37	67.19	2364.69	71.04	-2269.43	-23.93	-13.11	-14.30	17.85
38	-67.65	104.73	20.25	-13.85	107.11	14.84	40.29	-5.72
39	-15.85	90.26	105.88	-47.98	-11.25	29.94	21.22	27.78
40	78.66	3290.52	21.99	-3266.46	-2.49	27.25	1.84	48.70
41	-12.06	776.98	127.52	-703.95	-9.13	6.84	-6.33	20.13
42	-350.91	189.85	154.23	-105.02	225.59	14.51	71.09	0.66
43	-57.85	1063.02	120.90	-960.94	9.95	0.35	27.01	-2.44
44	199.59	-611.17	-157.87	693.01	27.00	-10.93	31.28	29.09
45	363.40	65.79	-138.42	-0.88	-83.45	20.54	-41.53	14.56
46	46.38	365.69	-1.71	-89.76	35.45	-77.88	19.88	-98.05
47	132.39	281.93	-36.45	-96.18	-0.98	-12.86	5.04	-72.89
48	430.73	428.06	-251.72	-308.76	-48.12	-1.62	-30.89	-17.68
49	42.53	61.65	38.53	38.91	19.45	1.56	-0.50	-2.11
50	188.35	117.16	66.90	-23.66	-78.35	3.97	-76.89	2.52
51	165.20	101.35	20.43	-40.90	-59.82	13.46	-25.82	26.08
52	70.90	116.52	25.15	-24.29	4.51	5.31	-0.57	2.46
53	198.80	34.21	-108.29	53.40	3.78	4.46	5.72	7.94
54	40.69	214.54	18.89	-102.79	24.68	1.51	15.74	-13.26
55	329.41	123.64	18.12	-39.92	-94.76	10.16	-152.77	6.13

56	89.00	75.51	10.55	23.28	0.27	0.49	0.18	0.72
57	124.15	47.70	-41.61	59.87	12.22	-2.92	5.23	-4.66
58	182.02	94.40	19.29	3.40	-68.86	0.66	-32.45	1.53
Total	120.15	114.37	-8.92	-23.00	-5.61	5.61	-5.61	3.03
Note : The sum total of all four sources is equal to 100.								
Source : Authors' Calculations								

b) Contribution of Final Demand Categories

Table 3 presents the percentage contribution of different final demand categories in output growth over the study period. The results depict that in both the periods, the major portion of the output growth comes from the private consumption (91.32 and 92.63 percent) followed by imports (32.40 and 78.13 percent) and exports (32.08 and 61.77 percent). While the contribution of government expenditure (17.89 and 13.48 percent) and investment expenditure (-8.88 and 10.25 percent) are far less. During pre-reforms period, the contribution of investment expenditure was negative but after 1993-94, it played a major role to shape the economy from its indigenous look to the modern look. It may be due to the policy of de-licensing and attractive foreign investment policy environment in the country.

Sector-wise analysis shows that during pre-reforms period, sectors in which output grew mostly because of increases in final consumption expenditure by private households are Food Crops (1), Cash Crops (2), Plantation Crops (3), Other Crops (4), Animal Husbandry (5), Forestry & Logging (6), Fishing (7), Coal & Lignite (8), Iron Ore (10), Sugar (12), Food Products excluding Sugar (13), Beverages (14), Tobacco Products (15), Wool, Silk and Synthetic Fibre Textiles (17), Jute, Hemp & Mesta Textiles (18), Wood & Wood Products except Furniture (20), Furniture & Fixture (21), Paper & Paper Products (22), Printing Publishing and allied Activities (23), Plastic & Rubber Products (25), Inorganic Heavy Chemicals (28), Organic Heavy Chemicals (29), Fertilizers (30), Pesticides Drugs and Other Chemicals (32), Metal Products except Machinery and Transport Equipment (37), Agricultural Machinery (38), Railway Transport Equipment (42), Miscellaneous Manufacturing Industries (44), Construction (45), Electricity (46), Gas & Water Supply (47), Railway Transport Services (48), Other Transport Services (49), Storage & Warehousing (50), Communication (51), Trade (52), Hotels & Restaurants (53), Banking (54), Insurance (55), Education & Research (56), Medical & Health (57) and Other Services (58) whereas the sectors in which change in output is mostly attributable to the investment expenditure are Crude Petroleum & Natural Gas (9), Iron & Steel Industries and Foundries (35), Other Basic Metal Industry (36), Other Machinery (40) and Electrical Electronic Machinery & Appliances (41).

During post-reforms period, sectors in which output grew mostly because of increases in final consumption expenditure by private households are Food Crops (1), Cash Crops (2), Plantation Crops (3), Animal Husbandry (5), Forestry & Logging (6), Fishing (7), Sugar (12), Food Products excluding Sugar (13), Beverages (14), Tobacco Products (15), Wool, Silk and Synthetic Fibre Textiles (17), Jute, Hemp & Mesta Textiles (18), Paper & Paper Products (22), Leather & Leather Products (24), Plastic & Rubber Products (25), Petroleum Products (26), Inorganic Heavy Chemicals (28), Organic Heavy Chemicals (29), Fertilizers (30), Paints Varnishes & Lacquers (31), Pesticides Drugs and Other Chemicals (32), Iron & Steel Industries and Foundries (35), Metal Products except Machinery and Transport Equipment (37), Industrial Machinery for Food & Textiles (39), Other Machinery (40), Electrical Electronics Machinery & Appliances (41), Construction (45), Electricity (46), Railway Transport Services (48), Other Transport Services (49), Storage & Warehousing (50), Communication (51), Trade (52), Hotels & Restaurants (53), Banking (54), Insurance (55), Education & Research (56) and Medical & Health (57) whereas the sectors in which change in output is mostly attributable to the investment expenditure are Other Crops (4), Crude Petroleum & Natural Gas (9), Wood & Wood Products except Furniture (20), Furniture & Fixture (21), Inorganic Heavy Chemicals (28), Paints Varnishes and Lacquers (31), Iron & Steel Industries and Foundries (35), Metal Products except Machinery and Transport Equipment (37) and Other Machinery (40). Sectors with positive value of imports growth shows that a part of/largest part of the domestic demand has been met by the imports during that period.

Table 3 : Contributions of Different Demand Categories

(In % age)

Sector	Private Consumption Expenditure		Government Consumption Expenditure		Investment Expenditure		Exports		Imports	
	Pre-Reform	Post-Reform	Pre-Reform	Post-Reform	Pre-Reform	Post-Reform	Pre-Reform	Post-Reform	Pre-Reform	Post-Reform
1	106.46	80.54	0.73	4.02	-31.52	1.75	8.97	17.73	-15.36	4.04
2	83.76	79.04	0.42	2.75	4.61	26.32	12.41	18.38	1.20	26.49
3	153.86	98.39	-8.42	1.14	-13.59	1.92	12.04	12.26	43.89	13.71
4	96.72	3.00	3.19	26.48	-2.30	68.85	6.59	97.81	4.20	96.14
5	92.27	87.12	4.77	3.47	-1.24	4.38	4.47	14.02	0.27	8.99
6	110.57	937.18	1.67	12.66	-2.21	-261.44	18.75	341.17	28.78	929.57
7	82.76	80.68	0.59	0.21	-0.16	1.82	18.00	20.05	1.19	2.75
8	123.03	-25.31	19.40	-3.49	-14.68	-7.05	61.21	-67.80	88.96	-203.66
9	-396.61	-802.30	-39.78	-46.79	73.80	70.61	29.40	-339.34	-433.20	-1217.82
10	68.23	12.34	21.30	1.32	-34.91	6.49	203.31	123.98	157.93	44.12
11	-14.86	-25.82	-9.46	-2.12	-2.24	-0.65	-36.38	-171.10	-162.93	-299.69
12	134.30	87.57	0.50	3.48	-18.00	38.02	-25.28	20.41	-8.49	49.49
13	72.75	92.48	0.72	3.54	-2.95	5.45	23.58	13.73	-5.90	15.20
14	72.81	95.90	0.18	1.99	23.52	1.90	3.77	4.13	0.28	3.92
15	93.43	129.58	-0.02	0.01	1.61	-28.62	4.85	0.28	-0.12	1.24
16	13.98	40.13	1.39	1.74	-16.77	2.75	114.42	69.92	13.02	14.54
17	116.43	58.01	1.43	1.63	-47.29	15.33	60.57	68.04	31.14	43.01
18	93.62	113.54	10.36	0.01	30.42	40.93	-46.24	6.53	-11.83	61.01
19	-18.26	41.66	1.69	4.11	-12.31	4.74	148.53	53.96	19.65	4.46
20	86.95	-34.88	6.01	1.40	11.90	106.14	44.63	-36.11	49.49	-63.45
21	95.18	-13.03	13.56	9.33	-8.80	86.44	8.90	29.30	8.84	12.04
22	120.48	145.49	8.00	17.69	0.51	47.76	36.92	110.64	65.91	221.59
23	109.38	43.41	-15.94	32.19	16.70	35.27	8.11	27.23	18.26	38.10
24	37.49	109.70	0.19	1.37	-6.58	3.58	80.55	27.77	11.65	42.42
25	78.80	78.15	21.17	1.32	-17.49	25.09	49.25	74.05	31.73	78.60
26	-30.47	100.94	1.00	6.04	17.38	-10.97	-57.07	39.50	-169.16	35.51
27	-16.83	-19.11	-11.12	-0.45	18.28	43.55	-22.90	-22.02	-132.56	-98.03
28	121.68	110.36	21.98	6.26	15.31	75.95	94.02	79.78	152.99	172.35
29	304.43	122.32	87.01	7.26	-78.39	15.94	360.02	176.44	573.07	221.96
30	103.57	86.47	0.98	2.83	37.97	1.59	10.75	13.15	53.27	4.03
31	34.70	66.43	14.86	2.25	-19.92	100.17	135.61	33.41	65.25	102.28
32	70.59	93.29	24.24	2.29	2.41	30.57	34.15	63.30	31.40	89.44
33	0.17	-34.23	33.26	0.47	-58.99	42.48	35.71	-10.72	-89.85	-102.00
34	-23.58	-52.66	-5.85	-9.76	5.40	-4.11	94.60	26.85	-29.43	-139.69
35	-99.88	87.17	-37.35	1.71	155.25	63.45	-172.91	210.08	-254.89	262.40
36	-733.60	-33.16	-251.85	-2.36	108.83	-18.28	-826.08	-79.01	-1802.70	-232.81
37	113.54	151.97	6.86	27.06	-35.86	55.03	50.80	349.67	35.35	483.72
38	82.23	29.63	5.80	1.33	18.29	19.83	4.23	57.14	10.55	7.93
39	-81.65	56.21	3.06	2.64	9.23	11.60	-73.49	60.72	-242.85	31.17
40	-34.95	188.80	-38.11	-2.03	61.96	106.55	-21.91	220.88	-133.00	414.21
41	-81.16	64.49	-18.37	9.71	128.36	53.13	-84.04	70.61	-155.20	97.94
42	76.40	-6.41	31.93	-0.76	1.03	44.18	-36.75	-28.87	-27.38	-91.87
43	-78.71	41.58	-14.02	5.10	45.69	21.46	-39.32	67.48	-186.36	35.62
44	122.12	-57.10	83.91	-0.39	-45.90	-31.97	164.20	-362.29	224.34	-551.74
45	52.27	105.47	56.20	8.34	-11.01	4.57	29.38	42.38	26.84	60.76
46	95.86	112.65	10.68	25.25	-4.43	22.18	29.12	95.29	31.22	155.36
47	64.93	-48.86	34.69	142.94	-1.67	3.80	12.69	14.25	10.63	12.12
48	143.69	81.48	0.33	9.32	-27.09	10.09	82.67	130.93	99.61	131.82
49	78.84	89.14	6.02	4.47	-0.61	3.21	23.73	26.39	7.98	23.20
50	69.03	87.32	9.24	3.72	-6.60	4.56	41.06	28.66	12.73	24.27
51	59.26	87.96	55.68	12.28	-10.93	10.70	30.60	55.03	34.61	65.97
52	80.31	88.79	4.96	2.06	-2.46	4.66	27.23	29.11	10.04	24.61
53	53.01	77.39	6.98	9.63	-0.54	0.30	39.74	28.69	-0.81	16.01
54	79.56	107.88	23.67	11.84	-3.49	11.03	21.00	71.90	20.74	102.64
55	185.77	107.84	33.37	8.72	-35.35	7.62	120.21	52.75	204.01	76.93
56	55.51	71.55	44.51	28.14	-0.01	0.01	0.04	0.51	0.05	0.21
57	71.10	86.19	29.55	13.36	-0.35	0.06	1.98	0.58	2.27	0.20
58	51.67	22.72	58.13	43.63	-4.75	1.29	13.29	45.68	18.33	13.32
Total	91.32	92.63	17.89	13.48	-8.88	10.25	32.08	61.77	32.40	78.13

Source : Authors' Calculations

c) Changing Structure of Output during 2007-08 to 2011-12

Because of non-availability of input-output table for the year 2011-12, as it will be released by Central Statistical Organization (CSO) in the next year, our analysis is limited up to 2006-07. But the complete investigation of sources of output growth requires the further analysis of remaining six years (2007-13). During our study period, it directly depicts that the important contribution to demand had come from private consumption and followed by imports and exports. There is now no doubt that the economy has moved to a higher growth plane, with growth in GDP at market prices exceeding 8 per cent in every year since 2003-04. The projected economic growth of 8.7 per cent for 2007-08 is fully in line with this trend. There was acceleration in domestic investment and saving rates to drive growth and provide the resources for meeting the 9 per cent (average) growth target of the Eleventh Five-Year Plan. Macroeconomic fundamentals continue to inspire confidence and the investment climate is full of optimism (Economic Survey, 2007-08).

Despite the slowdown in the growth, investment remained relatively buoyant and growing at a rate higher than that of GDP. A decline in all major elements of private demand, including exports and consumption leads to deceleration of economic growth to 6.7 percent in 2008-09. The major reason behind the slowdown in Indian economy was global financial meltdown and recession in developed countries. Every developing country suffered to some extent from this global economic shock (Economic Survey, 2008-09). The contribution of private consumption to aggregate growth declined dramatically from 53.8 per cent in 2007-08 to 27 per cent in 2008-09. The reason behind was the financial crisis that began in 2007 in U.S. and spread all over the world and its negative impact remains till 2009-10. The crisis had its direct as well as indirect implications for the whole world due to economic integration. It had its impact on India through reduction in demand for exports and hence the loss of earnings to India, increased unemployment, tighter restrictions on credit by banks which reduces investment and mainly through loss of confidence of investor in the economy. Hence, the share of investment reduces with increase in share of consumption expenditure. While explaining the consumption expenditure it should be noted that due to crisis private consumption expenditure reduces, shown by decline in aggregate growth rate from 53.8 per cent in 2007-08 to 27 per cent in 2008-09 but this reduction in PFCE was compensated by increased government consumption expenditure from a level of 8 per cent in 2007-08 to a level of 32.5 per cent in 2008-09 to boost up the economy.

In 2009-10, the economy has shown the sign of recovery with increased growth in manufacturing sector, which had seen continuous decline in the growth rate since 2007-08, rate of fixed capital formation, a proxy for investment in the economy and turnaround in the merchandise exports in December 2009-10 (Economic Survey, 2009-10). The economy grew at the rate of 8.4 percent during the years 2009-10 and 2010-11 and the savings and investment rates had begun rising once again. After global meltdown, while tightening the monetary policy, in particular raising the repo rate in order to control inflation, resulted in some slowing down of investment and growth. The revisions indicate that the global crisis in 2008-09 was mainly reflected in negative growth in gross capital formation, with the slowdown in private final consumption expenditure being modest.

The growth in real terms of consumption expenditure, gross fixed capital formation, exports and imports works out to 6 percent, 5.6 percent, 14.3 percent and 17.5 percent respectively for the year 2011-12. The rate of growth of private final consumption expenditure in real terms has been fairly consistent and did not decline significantly even when the growth rate was relatively lower (Economic Survey, 2011-12).

V. CONCLUSION

The present study is an attempt to decompose the changes in output growth in India since 1983-84. For analysis purpose, study has bifurcated the whole period into two parts i.e. pre (1983-84 to 1993-94) and post (1993-94 to 2006-07) reforms period. Input-Output tables for the year 1983-84, 1993-94 and 2006-07 have been utilized for this purpose. Due to non-availability of recent Input-Output table, the analysis of the recent years (2007-08 to 2012-13) has been done using the data from different Economic Surveys provided by the Ministry of Finance, Government of India. The study utilized structural decomposition analysis to categorize the different sources of output growth.

While comparing the two study periods, results show that for the primary sector (1 to 11) there is rise in private consumption and government consumption expenditure. However, percentage share of exports and investment expenditure in primary sector have declined over two periods. In secondary sector (12 to 44), there is a sharp increase in percentage share of all demand categories. For tertiary sector (45 to 58), the increase has been shown in investment expenditure, imports and exports only. Further, it is the average growth of final demand which holds the largest share in change of output growth over the study period. Among the five categories of final demand, domestic demand (sum of private consumption, government consumption and investment expenditure) is the dominant source of output growth in both the periods. It shows that Indian economy has a very strong domestic market. Due to which, Indian economy was not much affected by global financial crisis emerged in 2007.

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Appendix Tables

Appendix A1: Detailed List of Sector Aggregation		
Sr. No.	Aggregated Sectors (Used for Empirical Analysis)	Number of Sectors [Added together to get the Aggregated Sector Value]
1	Food Crops	1 (1 to 7) *(1 to 7)*
2	Cash Crops	2 (8 to 11 &16) *(8, 9, 11, 12, 13, 17)*
3	Plantation Crops	3 (12 to 15) *(10, 14, 15, 16, 18)*
4	Other Crops	4 (17) *(19, 20)*
5	Animal Husbandry	5 (18 to 20) *(21 to 24)*
6	Forestry & Logging	6 (21) *(25)*
7	Fishing	7 (22) *(26)*
8	Coal & Lignite	8 (23) *(27)*
9	Crude Petroleum & Natural Gas	9 (24) *(28, 29)*
10	Iron Ore	10 (25) *(30)*
11	Other Minerals	11 (26 to 32) *(31 to 37)*
12	Sugar	12 (33, 34) *(38, 39)*
13	Food Products Excluding Sugar	13 (35 to 38) *(40 to 43)*
14	Beverages	14 (39) *(44)*
15	Tobacco Products	15 (40) *(45)*
16	Cotton Textiles	16 (41, 42) *(46, 47)*
17	Wool, Silk and Synthetic Fibre Textiles	17 (43 to 45) *(48 to 50)*
18	Jute, Hemp & Mesta Textiles	18 (46) *(51)*
19	Textile Products including Wearing Apparel	19 (47 to 49) *(52 to 54)*
20	Wood and Wood Products except Furniture	20 (51) *(56)*
21	Furniture & Fixture	21 (50) *(55)*
22	Paper and Paper Products	22 (52) *(57)*
23	Printing Publishing and Allied Activities	23 (53) *(58)*
24	Leather and Leather Products	24 (54, 55) *(59, 60)*
25	Plastic and Rubber Products	25 (56, 57) *(61, 62)*
26	Petroleum Products	26 (58) *(63)*
27	Coal Tar Products	27 (59) *(64)*
28	Inorganic Heavy Chemicals	28 (60) *(65)*
29	Organic Heavy Chemicals	29 (61) *(66)*

30	Fertilizers	30 (62) *(67)*
31	Paints, Varnishes and Lacquers	31 (64) *(69)*
32	Pesticides, Drugs and Other Chemicals	32 (63 to 68 except 64) *(68 to 73 except 69)*
33	Cement	33 (70) *(75)*
34	Non-Metallic Mineral Products	34 (69, 71) *(74, 76)*
35	Iron & Steel Industries and Foundries	35 (72 to 74) *(77 to 79)*
36	Other Basic Metal Industry	36 (75) *(80)*
37	Metal Products except Mach. and Transport Equipment	37 (76, 77) *(81, 82)*
38	Agricultural Machinery	38 (78) *(83)*
39	Industrial Machinery for Food and Textiles	39 (79) *(84)*
40	Other Machinery	40 (80 to 83) *(85 to 87)*
41	Electrical, Electronic Machinery and Appliances	41 (84 to 90) *(88 to 94)*
42	Rail Transport Equipments	42 (92) *(96)*
43	Other Transport Equipments	43 (91 to 96 except 92) *(95 to 100 except 96)*
44	Miscellaneous Transport Industries	44 (97, 98) *(101 to 105)*
45	Construction	45 (99) *(106)*
46	Electricity	46 (100) *(107)*
47	Gas & Watery Supply	47 (101, 102) *(108)*
48	Railway Transport Services	48 (103) *(109)*
49	Other Transport Services	49 (104) *(110 to 113)*
50	Storage & Warehousing	50 (105) *(114)*
51	Communication	51 (106) *(115)*
52	Trade	52 (107) *(116)*
53	Hotels & Restaurants	53 (108) *(117)*
54	Banking	54 (109) *(118)*
55	Insurance	55 (110) *(119)*
56	Education & Research	57 (112) *(121)*
57	Medical & Health	58 (113) *(122)*
58	Other Services	56, 59 & 60 (111, 114, 115) *(120 to 130 except 121 & 122)*

*Note : Simple, **Bold** & <u>Underline</u> numbers in parenthesis show the sectors for the year 1983-84, 1993-94 & 2006-07 respectively.*

Exploring Livelihoods of Urban Women Traders in the Context of Socio-economic and Political Crisis: Evidence from Harare, Zimbabwe

By Takunda J Chirau

Rhodes University, South Africa

Abstract- The Zimbabwean crisis has involved massive downsizing of the economy and high rate of unemployment levels particularly in urban areas. Urban life has become increasingly unbearable for many poor urban households. Consequently, informal economic activities have blossomed and are making significant contributions to household income and livelihoods. The role of women in the informal economy is particularly pronounced. This paper examines the livelihood strategies and sources of income for women traders at Magaba. The empirical findings identified and unpacked diverse livelihood activities and strategies and the resources (or assets) that women deploy in constructing urban livelihoods. Though their livelihood portfolios complement any earnings from formal employment by household members and though they contribute to their household's sustenance, there are a number of daily challenges which they face in their trading activities and which they seek to counteract through a range of often ingenious coping mechanisms. These findings were projected through a genre of qualitative and quantitative techniques. (Sustainable livelihoods, livelihoods, livelihood strategies, coping mechanisms).

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I. Introduction

Over the past two decades the economy of Zimbabwe, once one of the Sub-Saharan if not Africa's biggest agricultural producer was in a freefall. During this time, Zimbabwe failed socio-economically and politically amidst unprecedented human rights violation, rising poverty, massive unemployment, illegitimate elections and poor service delivery amongst others. Life became unbearable in urban and rural centres. The majority of the already unemployed and the employed sought to generate and supplement income through informal activities. Informal sector became the sole provider of employment and played a significant role in as far as sustaining livelihoods is concerned. To-date a large number of unemployed and employed urbanites depend on informal sector. Women and other people depended on multiple livelihood strategies. However, city fathers have reacted in a hostile manner to most of these informal activities this has posed one major constraint to the full realisation of fruitful livelihoods of urbanites. The confluence of several events including neo-liberal

Author: Teaching Assistant, Rhodes University, Department of Sociology, Zimbabwe, South Africa.
e-mails: tkchirau@yahoo.co.uk, T.Chirau@ru.ac.za

policies, economic mismanagement, payment of gratuities to war collaborators, fast truck land reform and increased isolation of Zimbabwe from the wider international community has necessitated the collapse of Zimbabwean economy hence the exten sification and over reliance of urbanites on informal sector activities. This paper therefore seeks to identify and explain the livelihood strategies, challenges faced in various informal operations and coping mechanisms of women traders at Magaba in the context of an economy performing under threshold. This is significant given the socio-economic and political crisis that Zimbabwe has undergone.

II. Zimbabwe as a Failing State

The crisis that Zimbabwe has undergone clearly demonstrates the relationship between economic and political terrain in the performance of the country's economy. The economic strength of Zimbabwe soon after the advent of independence was amazing with well established export, agro-industry and comparatively strong manufacturing and mineral sectors. However, during the early and mid 1990's economic growth became stagnant and the country saw currency devaluation, deindustrialisation, retrenchments, wage cuts and upsurge of unemployment rate [1]. Service delivery was severely under attack with cut of subsidies in education, health and other social services [2]. This general decline cannot be blamed wholly on the failures of the government but can be understood in the context beyond government control. Zimbabwe was no exemption of the ubiquitous structural adjustments in Africa. As many scholars concur now, Zimbabwe had no alternative than to adopt the structural adjustment programmes-SAPs (locally known as the Economic Structural Adjustment Programmes-ESAPs).

Many countries in the continent that adopted the SAPs experienced contracting economies instead of rejuvenation and economic growth the result was reduced standards of living be it in urban or rural areas. In that light, a 1995 Poverty Assessment revealed that 62% of the populace could not afford to provide basic needs and 46% were lacking food. This was further evidenced by increased number of street beggars and petty trading particularly by women [3]. Tamukamoyo

[4] rightfully claim that during this period (1990s) the "informal economy came into its own" because of the disastrous impact of ESAP, with backyard industries and petty trading sprouting ubiquitously as workers and families adopted a range of livelihood strategies. By the year 1996 the informal sector employed 1.56 million people compared to 1.26 million in the formal sector. Employment in the formal sector (including the civil service and manufacturing) had shown an annual drop in sheer numbers, while vending, small microenterprises and illegal trade operations have shown a consistent positive growth [5,6].

Besides the ESAP, the government in the last two years at the close of the economic restructuring decade undertook policies that seriously contributed to the economic downturn. Maclean [8] argue that the policy decisions were greatly disgraceful and disastrous including payment of gratuities to war collaborators, unpopular military involvement in DRC civil war and expropriation of land without compensation commonly known as 'Third *Chimurenga*' (or war of liberation). Consequently, these hastened economic collapse with inflation sky rocketing such that prices of commodities, when available, changed almost daily. This had serious implications on livelihoods. The informal economy increasingly became the provider of employment and income as urban residents took refuge in informal livelihood activities hence the informal sector became an "employment haven" [7, 8].

Despite the central role played by the informal sector (black market) in providing livelihoods, city fathers, under the government directive, embarked on a campaign in 2005 under the code name of 'Operation *Murambatsvina*' (or clean up the trash) to clamp down the illegal activities, illegal cultivation and illegal structures [9, 10]. This had profound effects on the informal economic activities. However, after the operation most of the activities have become more resilient and highly adaptable than before [11]. Informal activities *per se* are a continuous reminder of the decline of the formal economy and the failure to secure stable employment. Activities carried out in the informal sector are heterogeneous including small scale manufacturing, foreign money exchange, retail and vending mostly carried out by women [12, 13, 14, 15] Men in the informal sector are mainly concentrated within more complex activities for instance repair services, metal work and carpentry [7]. Generally speaking, the broader socio-economic and political situation in Zimbabwe has forced ordinary Zimbabweans (skilled, semi-skilled and unskilled) to look for other avenues of earning and supplementing income. Hence the informal sector has become an unofficial back borne of the economy. Overall, the Government National Unity is confronted with the massive task of turning around the Zimbabwean economy unemployment is still approximately 90%. The general populace are still experiencing inadequate social services, infrastructure, power cuts, retrenchments and shortages of safe and clean water supplies [15]. To date livelihoods found outside the formal sector bears a great deal of significance for household sustenance.

III. Theoretical Framework: Sustainable Livelihoods Approach

In order to conceptualise how women traders operate and diversify their operations, this paper is theoretically underpinned by the sustainable livelihoods approach (SLA). This approach was originally and explicitly used to rural working poor but it has recently been applied to urban working poor [16]. The broad aim was to ascertain actions, constraints and resources which affect livelihood sustainability with regards to specifically shocks and trends [17, 18, 19] Trends affecting urbanites can be classified as seasonality, fierce competition and health hazards. Shocks can include for instance the structural adjustment programmes (like the ones implemented in Zimbabwe), forced evacuations (like the Operation Restore Order in Zimbabwe in July 2005). In general terms the SLA stipulates that individuals, households and communities draw upon five important assets/capitals (including natural, financial, social, physical and human assets) to construct and diversify livelihoods. Each capital is significant in its own way for instance urban women traders rely on social capital for dissemination of information concerning supply and demand of goods. This depicts their ingenuity in relating laws of supply and demand in informal markets. Constructing livelihoods is not without its own problems. The SLA acknowledges the role of formal, informal, organizational and institutional factors in enhancing or limiting sustainable livelihood outcomes. In this respect, Scoones [19] argues that "an understanding of ... institutions, their underlying social relationships, and the power dynamics embedded in these, is … vital". Hence, the livelihoods framework animates this paper and is brought to bear on the lives and livelihoods of urban women traders at Magaba.

IV. The Present Study

Almost five years after the formation of the Government of National Unit (GNU) the informal sector still bears a great deal in the lives of urbanites. Livelihood strategies that developed during this Zimbabwean crisis deserve a particular attention. Decreasing state support and the decay in kinship ties coupled with the economic and political crisis meant that ordinary people had to use their own resources at disposable, and develop their own livelihood strategies to sustain households. Most of the studies [15, 2, 19] focused on the effects of structural adjustment programmes on informal sector activities. Kamete [5]

have focused on the home industries in Harare high-density suburbs. Overall, all these studies date back from 1980's and 1990's. The paper is important for a number of reasons. It fills the important empirical gap in the study of Magaba market place specifically, thereby by generating fresh and current literature. It does so by offering a gendered examination precisely looking at women traders at Magaba as not passive victims of the crisis but innovative agents seeking to secure family economic well-being. It deploys the livelihoods framework in a manner which is sensitive to both structure and agency. This study uses an explorative approach in its quest to understand the various livelihood strategies pursued by the urban women as well as the constraints.

V. Materials and Methods

The two main objectives of this study are to explore, identify, understand and analyze the current challenges or problems faced by women traders at Magaba in Harare (Zimbabwe). The overall research method of the study is qualitative. This kind of research "gives a more in-depth description and nuanced understanding of events or actions and this helps the researcher to gain insight into why and how these events or actions take place rather than just presenting a phenomenon". However, both qualitative and quantitative methods were utilised to pursue the goals of this study in order to complement each other and derive 'rich data' of livelihoods pursued by the urban women. Specifically, three techniques were utilised to guide the objectives of this study: a closed ended questionnaire was administered, in-depth interviews were conducted with women vendors and lastly participant observation was employed.

a) Sampling strategy, data collection and analysis

The Magaba market is rather fluid (with considerable inward and outward mobility) such that it was not possible to draw a random sample of a stable universe. Purposive non-random sampling was employed to identify women traders for the survey and in-depth interviews. A qualitative technique in form of in-depth interviews with twenty-four women at Magaba was conducted. In-depth interviews were better suited to explore and study meanings, experiences, and processes and provided urban women vendors with the opportunity to author their experiences in their own words. Each interview was approximately 35 minutes long. Bennett, Glatter and Le Vacic [20] rightfully claim that "spending an equal amount of interview time with each interviewee ensures consistency which leads to trustworthiness of the study". It is important for the researcher to record every detail of the interview [21]. In order to capture the important details, a digital recorder was used in order to add to the accuracy, trustworthiness and consistency of collected data. A

qualitative paradigm suits the goals of this study that are to explore livelihoods of urban women vendors, understand their constraints as well as their coping mechanisms. In that respect qualitative paradigm is consistent with the theoretical framework (sustainable livelihood approach) which is primarily concerned with elucidating the processes by which people come to describe, explain, and otherwise account for the world in which they live; hence, it becomes important to listen to the participants own voices in studying livelihoods.

To derive thick descriptions forty nine structured survey questionnaires were administered to complement the in-depth interviews. These were critical in trying to establish the fundamentals pertaining to how women traders make ends meet. In addition, simple observation at Magaba was employed during the field work. The purpose of this was to identify and understand the social behaviours of the women vendors, including their relations with each other and with customers. It also gave me the opportunity where necessary to ensure the reliability of information obtained by way of questionnaires and interviews. After the collection of data using the above mentioned instruments, data was analysed. Data collected using the survey questionnaire was analysed using the *Statistical package for Social Science* (SPSS v16). For qualitative analysis, data was transcribed and sorted according to themes that emerged.

b) Study Site

This section provides a background to the study site, namely, Magaba in Mbare, Harare. Mbare is a high-density suburb (township) in Harare Urban that was established in 1907 as an Urban Native Location located south east of the city centre. It was built as a dormitory location for domestic servants and industrial workers. Mbare is known to have the country's biggest market (known simply as *musika*) where people from the countryside and nearby farms bring their produce for sale. No map is known to the researcher that clearly shows the location of Magaba in Mbare, and there is a tendency to say that it is the furthest section of Mbare when one is approaching the city centre because it is located at the edge of town. Magaba is approximately 3.9 kilometers from Harare's central business district.

Magaba (meaning 'empty tins'), as a geographical area within Mbare, was unofficially established in the 1950s by a small group of tin smiths who produced tin cans and other steel products to generate income. These tin smiths resided in nearby Nenyere hostel. Two important informal sector sites developed in Magaba as the surrounding population increased. Firstly, there was the establishment of Mupedzanhamo market in the 1960s (a verb meaning 'ending all problems'). Mupedzanhamo is renowned for selling diverse products such as secondhand clothes, traditional medicine and plumbing materials. With the

advent of the Zimbabwean crisis in recent years, it stocked goods which were scarce within the formal market. Secondly, Siya So market was formed (again in the 1960s) selling steel products including window frames, door frames and tin cans and engaging in motor repairs. In addition to these two informal sites, Magaba Shopping Centre was opened in 1967 and there are informal vendors trading in open spaces at the shopping centre. These three sites are not contiguous and together they constitute what is referred to as the Magaba market (in the Magaba area), and our study covers all these sites.

Magaba is one of the areas that were demolished by Operation *Murambatsvina* in July 2005. Although the operation 'cleansed' Mabaga of informal economic activities, these activities have subsequently re-emerged and have even become more resilient. It seems that undercutting informal activities is a 'mission impossible' and Magaba remains as a heterogeneous hub of petty traders, both men and women.

VI.   Results and Discussion

In trying to identify the livelihood strategies of women vendors, the following themes emerged: on-market livelihood strategies (in form of vending activities) and off-market livelihood strategies including remittances, urban agriculture, renting-out rooms, cross border activity and other livelihood strategies. Following that discussion is the challenges/constraints as well as the coping mechanisms that are employed by women.

a) Vending: women trader profiles

The majority (57.1%) of women traders surveyed at Magaba are between the ages of 31-35 years, while (28.8%) are between the ages of 25-30 years. A small number of traders (6.1%) range between the ages of 36-40 years, while (8.1%) are between the ages of 41-45 years. In terms of educational levels, the majority of respondents (57.1%) completed secondary school while 22.4% attended only primary school. Only 16.3% were illiterate and a mere 4.1% attained a tertiary qualification. Very few women traders at Magaba have high levels of education and this seems to be a broad historical tendency. Hence, the survey results on education are consistent with the earlier study of Magaba by Brand [19] in the 1980s. Married women constituted the highest proportion of traders at 49.0%. Single women (28.6%) ranked second highest while the respective figures for never married, divorced and widowed were 8.2%, 8.2% and 6.1%. The number of household members (and hence the number of dependents) for the surveyed women traders varies considerably, with household sizes ranging from one to seven people. The largest number of Magaba households (65.3%) has between three to five persons, and households of either one person or two people amount to 4.1% each.

The reasoning behind specifically married women's involvement in vending at Magaba is illuminating as it focuses on a critical overarching theme which is reiterated throughout the interviews, namely, the prevalence and significance of urban poverty for vendors. This is the case even when the husband was formally employed. The majority (51.7%) of the married women indicated that their spouses were employed in the formal sector, while 24.1% spoke about their spouses as unemployed. Spouses involved in the informal sector amounted to 13.8%, and smaller percentages were recorded for house-husband (3.4%), retired (3.4%) and other (3.4%). Insofar as their husband worked, in-depth interviews with married women indicated that vending was often a way of supplementing the income of their husbands (given that formal wages, in the context of skyrocketing inflation and falling real wages could no longer sustain families for the whole month before the next pay day). Urban living standards had deteriorated dramatically such that some households were relocating to rural areas. Vending became critical therefore for household survival. One married respondent aged thirty five reported the following:

"These days it is very difficult to live on one salary because you would need to pay school fees, rentals, and electricity and water bills, there are a lot of things that need money and with salaries that people are getting...it is just a dollar but it's not enough" (In-depth interview, March 2012).

In reiterating this, another respondent aged forty declared:

"Poverty has forced us to look for other means of increasing income levels. In the past I used to know the husband's salary will be enough to cover all expenses... now not even half way through [the month] *sometimes we have to skip meals so that we get food for supper"* (In-depth Interview, March 2012).

Though married respondents talk about being 'forced' into the informal economy, this move does entail a deliberate choice based on the recognition that the formal economy is no longer, in itself, a sufficient basis for urban livelihoods in contemporary Zimbabwe. For single, divorced and widowed women, vending is their main source of income (which would also be the case for married women without a male breadwinner). Given the absence of a male breadwinner, these women assumed full financial responsibility for the households. The evidence collected during the survey shows that the majority (59.2%) of the women are not the main breadwinners of their households (or are not considered as such); while a significant minority (40.8%) of the women vendors are the main breadwinners. Although previous studies (for example, [2]) indicate that women's income is generally regarded as being supplementary to men's household income contribution,

my study shows that women are playing an increasingly crucial role in household income generation, though still secondary income earners in the main.

b) Nature of trading activities

It is first important to stress that these women are owner-operators (i.e. they operate their own business alone); there were no cases in which the vendor employed another person at times when they were absent from trading activities. However, intra-household relations were significant in that household members would if need stand-in for the vendor (without remuneration) to avoid loss of household income via vending. In the past, women traders in Harare tended to focus their vending activities on fruits and vegetables, whether in the streets, at a bus terminus or elsewhere (see for instance MacPherson [22]). However, this paper brings to the fore that the majority of wares sold at Magaba are now mainly durable commodities. This change in the nature of trading activities, namely a broadening of the product-base in informal trading, is a reflection of the emergence of a range of parallel markets during the crisis in Zimbabwe and marks informal vending as an alternative commodity-source to formal supermarkets and retail outlets (as the official sources suffered from intermittent commodity shortages).

Magaba market occupies a very spacious area and is packed with vendors of all kinds. The main types of products found at Magaba include fruits, vegetables, mobile phone credits (juice cards or airtime), cigarettes, linen cloth, pesticides for rats and cockroaches, cosmetics, fast foods and many more. Because of the heterogeneous nature of activities, vending operations were categorised as perishables, durables and services. Women traders regularly engage in more than one activity simultaneously. Out of the 49 individuals interviewed through a survey questionnaire, results indicate that 8 respondents (16.3%) were selling foodstuffs such as sandwiches, cooked rice and boiled eggs (other than fruits and vegetables). Foodstuffs were seen as important because they attract workers who pass through town on a daily basis. The traders also claimed that foodstuffs entail low investments, quick turnover and constant cash earnings compared to other commodities; this cash met consumption needs (mainly food security in the household) as well as being converted into capital for investing in the next day's vending activity. Over five percent of respondents (3 respondents or 6.1%) sold 'juice cards' (or airtime for cellular phones). This was popular as a vending activity because urban Zimbabweans are highly dependent upon mobile phones as a means of communication.

Over twenty percent of traders (11 respondents or 22.5%) reported selling second-hand clothes (commonly known as *mazitye*) and this activity has prospered because retail clothing stores are very expensive given the fall in real wages (particularly for residents living in high-density areas such as Mbare) (see figure 1 below). Foreign currency trading was another popular trading activity at Magaba (14.3%). Other activities of less significance included selling roasted mealies (or maize cobs) (2%), carrier bags (2%), books (2%), and cellular phone lines (6.1%). Mealies are not popular for vendors because of the time consumed in preparing roasted mealies for sale. Books are a low priority because of the location of Magaba (at a distance from any school). Cell phone lines at one time became very expensive (during the years from 2005 to 2008, they were sold for up to 700 South African Rand) and they are now abundantly available in telecommunication outlets and sold at less than US$5 (or about 40 South African Rand). Magaba women traders tend to be quite ingenious and astute in terms of monitoring market forces (notably supply and demand imbalances), such that they shift between specific trading activities depending on market signals.
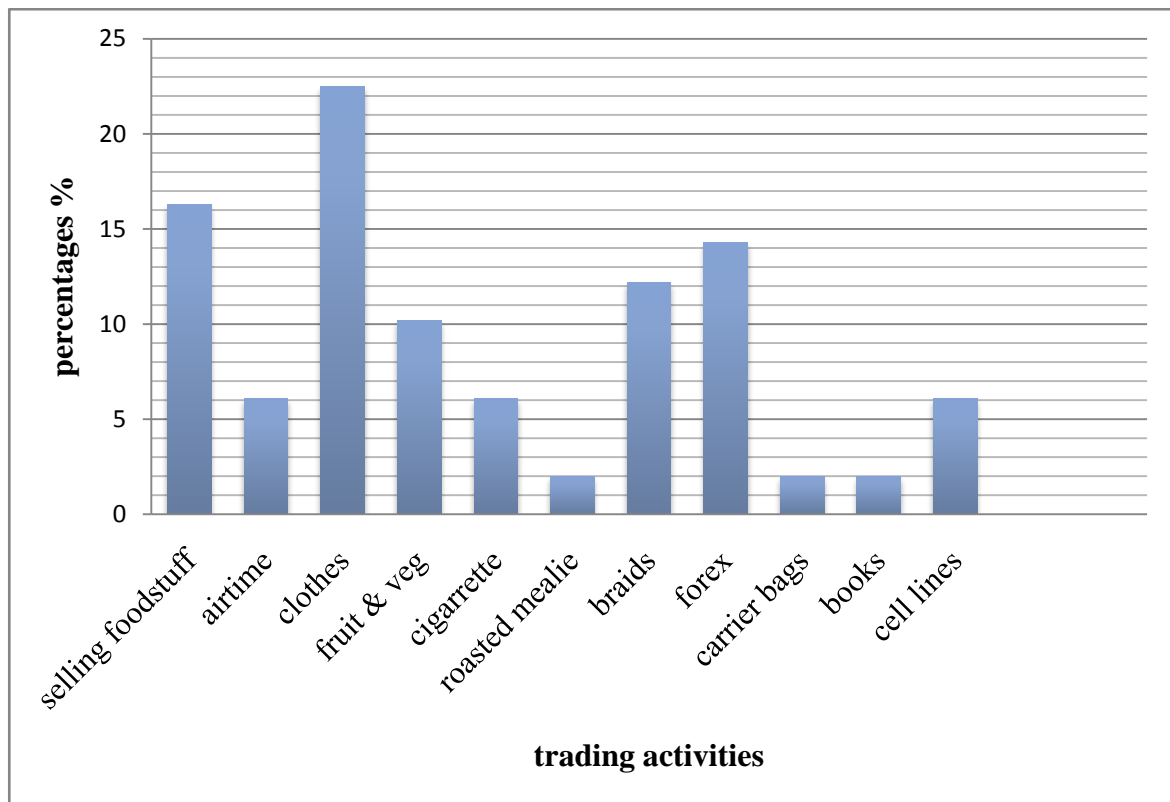
Many of the vendors claimed that selling durable goods has high returns compared to selling perishable goods. This was because the sheer amount of profit from durable products is more than the comparable amount for perishables; the amount for the latter is considered as mere petty cash or pocket money. Further they claimed that durables do not lose value or deteriorate, such that they can stock them until the demand is high (especially at the end of the month). One divorced respondent aged twenty eight reported the following:

"It's different when you are selling profitable goods, I get more dollars when I sell aluminium pots, clothes and shoes…I can get more than US$60 per day compared to selling biscuits for US$1 for two packets…that money is for transport only, you can just sell biscuits at home unlike coming here [Magaba] *"*(In-depth interview, March 2012).

The profit margin varies considerably between traders. In examining income or earnings generated, I distinguished between low, medium and high income traders. Overall, 57.1% of traders generate medium to high returns (over $150 US per month) while 42.8% generate low returns (up to $150 US per month) (see figure 2).
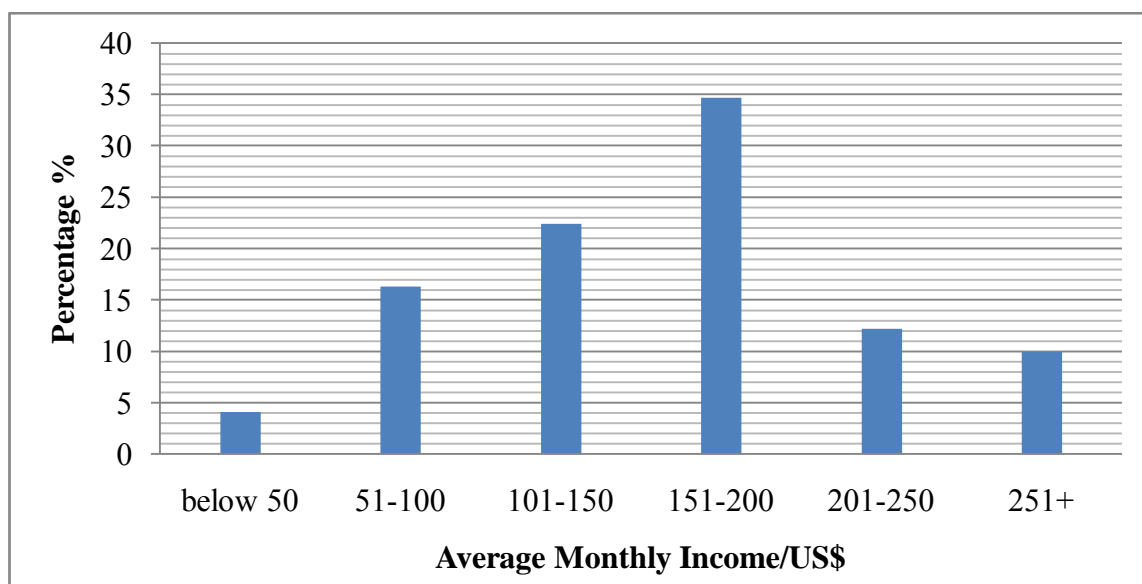
Figure 2

Note : Below 50 to 150=low returns, 151 to 250+=medium and high returns

The income earned then is prioritized by vendors and their households for daily consumption needs. Insofar as the earnings by the woman trader is the main source of household income, or the only source, then the livelihood of the household on a longer-term basis becomes hugely problematic. Magaba women traders argue that vending activities (as a livelihood strategy) is normalized compared to previous years. In part, this is because the dollarization of the economy has contributed towards stabilizing the trading environment and allowing for more regular and less erratic earnings. Criminalization of vending activities in Harare has contributed to severe suffering of many vendors under the hands of the police. Hence women have lost their goods and at times have fines without repossessing the goods. This is consistent with Muzvidziwa [12] that informal activities in Masvingo were also criminalised. In this regard, harassment by police undermines the productivity of livelihoods at best and is inhuman at worst. As a result, households continue to be trapped in vicious cycles of poverty and vulnerability which they are barely able to cope.

c)   Sources of goods to trade

My Magaba study indicates that there are clear linkages between the informal and formal sectors of the Zimbabwean economy, including in relation to the source of goods sold through informal vending. The majority (51.1%) of the women petty traders at Magaba sourced products mainly from the formal sector in Zimbabwe (Machipisa and Mohammad Mussa to name merely two). Only 10.6% sourced their products from other informal traders; for instance, those selling human hair (braids) sourced this from a nearby supplier at a wholesale price. Only 2.1% spoke about the goods as

being self-provided. A considerable number of women (36.2%) reported travelling across the Zimbabwean border to purchase goods in another country and then reselling these goods at Magaba. There were various reasons for sourcing goods from outside Zimbabwe. First of all, the charging of exorbitant prices by retail shops and companies in Zimbabwe which produced the same products sourced outside Zimbabwe. Secondly, traders sometimes sought to acquire brand- name goods which customers preferred over the many Chinese products sold in Zimbabwe (these products are locally known as 'zhingzhong', which means 'products below standard'). Lastly, the manufacturing sector in Zimbabwe has not yet regained its productive capacity such that certain products remain scarce on the local market. South Africa was the main country from which durable goods were sourced, but other countries included Zambia, Mozambique and Botswana. Two important and popular markets in Johannesburg (South Africa) were mentioned, namely, China City and Dragon City.

At the same time, it is not only market-related livelihood activities which provide income to urban women at Magaba as there are also off-market livelihood activities; the following section considers these.

VII.   OFF-MARKET LIVELIHOOD ACTIVITIES AND INCOME SOURCES

Urban women do not rely exclusively on vending as a livelihood strategy. Testimonies from the urban women refer to the importance of remittances, urban agriculture, rentals, urban-rural linkages and cross-border activities.

a) Remittances: cash and non-cash

This simply entails the movement of cash and commodities within one country, such as remittances from urban to rural areas by migrant labourers. In addition, cross-country remittances are increasingly important. Zimbabwean nationals have left the country in their hundreds of thousands over the past decade, mainly as economic refugees, and they have remitted cash and commodities to Zimbabwe through a variety of channels [23].

Urban women at Mugaba have at times been recipients of these remittances. It emerged that 14.2% of the sampled respondents received remittances from elsewhere in the country or from outside Zimbabwe, and from different people including family members. The main source of outside remittances for Magaba women traders was South Africa and primarily in the form of commodities (both perishable and durable); cash though is also remitted and used, for example, for educational expenses. Though some of the commodities remitted are currently readily available in Zimbabwe, they may be very expensive. As noted earlier, earnings by Magaba vendors may be as low as US$50 per month. In this regard, the testimony by one unmarried woman is very revealing:

"*I always come here* [Magaba] *at 9am in the morning and spend the whole day until the sunset…but sometimes it's not worth it when I get less than US$10, at times I can even go home with US$7; if I subtract transport I am left with US$6 this is not enough. With this little I cannot afford most of the basic foods had it been not for my sister who works in South Africa. I always receive groceries every month; without her I could be struggling more*" (In-depth Interview, March 2012).

Such sentiments clearly show that, despite their significance, earnings from vending activities are not necessarily able to sustain urban households. Remittances from further afield in the diaspora were reported to be mostly cash remittances, considering the expenses incurred in trying to send commodities from afar; however, goods are also sent. One Magaba respondent aged twenty six indicated the great significance of this for her standard of living:

"*I get US$335 (after bank charges) from my sister who is working in United Kingdom as a nurse after every two months and sometimes she sends clothes, cell phones etc…I can make a living through the money she sends me…it's very helpful*" (In-depth interview, March 2012).

Cash transferred from far afield normally goes through the formal channels (like Western Union) regulated by the Zimbabwe Reserve Bank, while cash coming in from South Africa is done unofficially. Usage of remittances differed significantly across the recipients focus is monthly household sustenance such as accommodation, food consumption, education, health and electricity and water bills [24]. However, some cash becomes an investment by being channelled directly into informal vending activities through the purchase of commodities for re-sale. Remittances do make a contribution to household sustainability by mitigating the effects of the crisis in Zimbabwe however, they may be an unstable form of household sustenance because their ongoing transference is beyond the control of Magaba households and thus the latter depend quite heavily on the choices made by friends and family living, studying or working elsewhere.

b) Urban agriculture

A significant number of urban households in Zimbabwe practice urban farming for food security purposes, despite the scarcity of land as natural capital in urban centres. This is done throughout the entire year but it is intensified during the rainy season from late November. The survey indicates that the vast majority (84.1%) of women vendors practice urban agriculture. The site for farming varies considerably. 23.7% of households engaged in agricultural practice alongside roads, 23.7% along railway lines, and 18.4% on unutilized residential stands, 7.9% on land allocated for urban agriculture and 5.3% on hillsides. Access to these sites varied considerably as well ranging from inherited land, allocation by friends who have left urban areas due to unbearable cost of living and invasion. Women themselves provided the labour and are sometimes helped by household members. No women reported to be hiring outside labour. Of particular significance is the staple crop of maize (73.5% of households), but also important are onions (6.2%), tomatoes (8.2%), sweet potatoes (10.2%) and sugar cane (2%). These are similar findings to the study by Kutiwa et al [25] of urban Zimbabwe. A factor that contributed to the focus on the growing of maize is the high cost of mealie meal in the supermarkets.

In addition to the crops listed above, a majority of households seemed to grow leafy vegetables (such as *covo, tsunga and rugare*) for purposes of eating with sadza (cooked mealie meal) these vegetables were treated as a substitute for meat which is far too expensive in the butcheries for Magaba vendors to afford (with one kilogram costing about US$4.50). Sweet potatoes (locally known as *mbambaira*) were also substituted for bread which costs US$1 a loaf. Urban farming is mainly for household consumption but there is also some income generation through agriculture. More than half of the women (50%) indicated that they earned US$21-40 per month especially during rainy season. The income generated was used for urgent household needs, such as school fees and the purchase of school uniforms for children in the household. Urban farming though is not without its problems (see Chirau and Chamuka [26]). Crop

slashing by local police as a deterrent measure has taken place, and interviewed women cried foul about this disheartening practice because it led to reductions in crop yields and often undercut any prospects for surplus sales. Although these and other challenges existed, the Magaba women vendors spoke out strongly about the importance of urban agriculture. One widow respondent therefore reported the following:

"*Bread is now available in shops but the price for bread is too high…Instead of wasting my money I will have mbambaira (sweet potatoes) for my breakfast which I easily grow for myself*"(In-depth interview, March 2012).

c) Renting out rooms

Aside from remittances and urban agriculture, interviewees (particularly those who owned a house) derive some income from renting extra rooms to lodgers. In Harare high-density areas, the majority of people do not own houses and they depend upon landlords for accommodation. Shortages in accommodation have in fact influenced some house owners to make extensions to their houses in order to provide rental accommodation. Interviewees who owned houses exclaimed that, prior to Operation *Murambatsvina*, backyard accommodation (known as 'boy-sky') generated significant income for them but that this was dramatically stopped because the operation entailed the destruction of all illegal dwellings. Lodging though is still pervasive in Mbare and other high-density areas in Harare.

Six vendors, based on in-depth interviews, disclosed that their main source of income was derived from renting out rooms; hence, they 'convert' physical capital into a direct source of income. One married respondent indicated:

"*I am proud to own a house, this is very important to me if I do not get anything from selling second hand clothes I always find that I get money at the end of the month. Five of my rooms are rented out and each room costs US$65 a month*" (In-depth interview, March 2012).

Another respondent exclaimed:

"*It's a blessing that I inherited a house after my husband died; without that I could be struggling to provide food to my family…each room costs US$70 per month*" (In-depth interview, March 2012).

Unlike vending, renting out rooms provides a stable and reliable income per month, and this income is used for educating children, paying monthly bills and food consumption; but it is also sometimes used to purchase goods sold by the house-owning vendor at Magaba. But most of the Magaba vendors do not own houses and they rely upon rental accommodation. With one room costing around US$70 per month (and with most households including a number of dependents)

this becomes a major monthly expense for Magaba traders.

d) Urban-rural linkages

Urban women at Magaba also utilize urban-rural linkages as a supporting mechanism for their households, and to cushion themselves against shocks and crises. This is more prevalent in the case of older women (who tend to uphold rural values) and with those who prioritize their historical and cultural roots. This result is consistent with the study by Muzvidziwa [27] who noted that "continued utilization of rural-urban networks as a survival option was a pragmatic response to scarcity of resources, including jobs". Without keeping the urban-rural linkages alive, the Magaba women openly proclaimed that decent livelihoods in Harare would be a mission impossible. Some respondents have access to land in rural areas. One woman inherited rural land and she claims that land forms a crucial basis for constructing livelihood strategies in Harare. She grew crops there, including maize and groundnuts (to make peanut butter after processing). A widow aged thirty eight had this to say:

"*I sell most of my produce. You see the peanut butter* [I was shown a carrier bag full of bottles with peanut butter]; *each goes for US$1.50 and a bucket of maize goes for US$7*". (In-depth interview, March 2012)

In this specific case, then, urban-rural linkages feed directly into vending at Magaba. Maintaining urban-rural linkages also contributed to barter trade within the village of origin. This was promoted through bringing into the rural village basic commodities such as cooking oil, bathing and washing soup, sugar and second-hand clothes. Most of these commodities were not available in rural supermarkets and retail outlets because of the bad roads and transport costs which hindered delivery. These commodities were exchanged for agricultural products (mainly maize) which were for household consumption or reselling at Magaba. In addition to bartering, Magaba vendors also used rural areas as alternative markets for their goods. In doing so, they charged exorbitant prices because of the scarcity of basic commodities in rural areas. At times they sold goods on credit and this attracted rural buyers. Vendors, despite their meagre incomes, in addition sent remittances to their rural area of origin to support parents and other family members. In return the Magaba households received agricultural products from their rural families, especially during harvesting season, and this led to a reduction in household expenditures and acted as a safety net given the many risks of urban life. The findings of this study therefore go contrary to the conclusion by Schlyter [28] that "it seemed impossible for women to maintain two places simultaneously as a survival mechanism, they were urban or they left and resided for a longer period in rural areas".

e) Cross border activities

As raised previously, the continuity (and indeed the very existence) of the informal trading activities of Magaba and indeed other vendors relies quite extensively on the ongoing importation of goods by informal cross border traders. This is because of the scarcity of many commodities within Zimbabwe, the lack of diversity within product ranges and their comparatively high local prices when available [29], compared to primarily South Africa. It is therefore important to reiterate the significance of cross border trading. This informal importation is done either by the Magaba traders themselves or by others (mainly women) who specialize in cross border trading. Cross border traders often travel on a weekly basis (over weekends) to ensure a regular supply of commodities at markets such as Magaba. Because of long border delays, new duty tariffs and corrupt officials, traders often feel compelled to bribe customs and immigration officers in order to proceed on their travels without excessive hindrance and to reduce expenses (for example, paying the duty tariffs would likely lessen profit levels on the commodities once sold).

The majority of urban women traders who traded in durable goods relied on crossing the border to stock (and sometimes hoard) commodities for re-sale at Magaba; these commodities included clothing, electrical appliances, pots and linen. One unmarried respondent aged twenty eight reported the following:

"I started going to South Africa in 2009 with my friend. In Johannesburg we have established our customers who buy seat covers and bed covers, while there we also do piece jobs within homes like doing laundry, ironing and any other domestic work to raise cash to buy stuff to resell and also food for our families" (In-depth interview, March 2012).

In feeding directly into Magaba vending, cross border trading contributes significantly to household sustenance [30]. This quotation also indicates that, in undertaking cross border trading, Magaba women sometimes use the opportunity to engage in casual domestic work (including laundry and ironing) outside the country. This is commonly referred to as piece work (or *mabasa emaoko* in Shona). While away on trading excursions (inside the country or outside the country) to purchase goods for re-sale, most women revealed that they delegated family members, relatives or friends to watch over their stall at Magaba: they received help on a voluntary basis from children (18.4%), relatives (12.2%), friends (20.4%) and husband (6.1%). Nearly 43% indicated that they do not delegate at all and that they always work alone. Delegation was done to prevent loss of sales while away from Harare. On return, a bar of soap, cooking oil or other goods are given to the assistant as a token of appreciation. Because of social reproduction and domestic work responsibilities, Magaba traders who are single mothers stressed that

their stay across the border was limited in length because of concerns about the safety and comfort of their children.

At times, some Magaba traders would organize themselves as a group based on trust and reciprocity (or social capital broadly) to engage in the collective purchasing of goods in South Africa, Mozambique, Botswana and Zambia. More specifically, one trader would go to purchase goods on behalf of the group – this was done to minimize duplication of cross border visits and thus to curb transport costs, as well as to ensure imported goods for those women who did not have legal documentation to cross country borders. For example, new clothes and shoes are sourced from South Africa, caterpillars or mopane worms (locally known as *madora*) from Botswana (this is sometimes substituted for meat or leafy vegetables) and second-hand clothes packed in large bags (locally known as *mabhero*) from Mozambique. However, this collective spirit is eroded and dissipates when it comes to the day-to-day practicalities of vending at Magaba, which is based on stiff competition even between traders who form part of the same group involved in collective purchasing.

VIII. Other Livelihood Strategies

It became apparent from the interviews that women traders who were unmarried had additional alternative sources of income specifically from boyfriends. Respondents made it clear that there was no need for having a boyfriend unless he provided financial assistance. This assistance included cash as well as groceries every month-end, and therefore this provided a reasonably stable source of income as long as the relationship continued.

Women vendors were also involved in *marounds* (rotational and savings groups) which depended on relationships of trust between group members. These savings groups however did not always include women traders at Magaba only but also other interested local women. Some women were involved in more than one group, as there are different kinds of groups – including those formed around Magaba market and those formed around place of residence or church. Each group member makes weekly or monthly contributions per week or month, either cash or in-kind (mainly groceries) contributions. Members would take turns drawing on the available cash and commodities. One respondent said they were contributing cash for the first half of the year and groceries for the second half of the year. Through group membership, women would then draw cash income in the first half of the year and groceries during the second half. Pensions were also reported amongst widowed women; though not a substantial amount, pensions did at least guarantee a limited stable source of income.

Without the pensions most widowed Magaba women claimed their situation would be miserable. Pension income was used for, amongst other expenses, accommodation rentals, school fees and groceries.

IX. Livelihood Constraints

The aggressive macroeconomic milieu which has reigned in Zimbabwe during the last decade or so has greatly limited the capacity of the urban poor in Zimbabwe to sustain their livelihoods. In this regard, the central state and local municipalities have not been particularly supportive. In this section, in examining the challenges of women traders at Magaba, I look specifically at questions pertaining to credit loans, transport, competition, employment and seasonality.

a) Credit Loans

The bulk of people in urban areas acknowledge the significance of access to credit in either cash or kind. Credit acts as a means of increasing household incomes through allowing for investments in income-generating activities and small business ventures. Despite this, the majority of poor households do not have access to credit from banks and other money lenders. Credit loan facilities are not new in Zimbabwe but, historically, most of these have been aimed at small to medium enterprises (SMEs) and not petty traders like women at Magaba. Banks and NGOs have been targeting women as a social category, but specifically poor and marginalized women have not benefited from these interventions [7]. The majority of women who participate in petty trading do not benefit because they do not meet loan requirements, such as collateral security, set by banks and other money lenders [31] Women traders at Magaba therefore face this credit obstacle due to limited or no collateral. Further, they normally lack a guarantor with long-term and sufficient income to act as security for them, and their informal activities generate low and irregular returns deemed unacceptable to money lenders. In addition, the Government of Zimbabwe, through state and statutory bodies such as the Small Enterprises Development Corporation (SEDCO), the Ministry of Youth and the Ministry of Gender and Women Affairs, provide credit facilities. However, few traders at Magaba knew anything of significance with regard to these credit opportunities, and none had in fact benefited. In any case, due to the economy performing under a necessary threshold, these bodies had exceedingly limited funds for credit disbursement.

The lack of credit facilities to finance livelihoods contributed to the limited livelihood activities of Magaba women and to their limited accumulation of assets. Hence, this greatly impacted on the day-to-day operations of their livelihoods, particularly considering their ongoing cash flow problems. As such, traders sometimes ran out of cash to purchase goods for re-sale, and even some traders failed to pay for transport fares from their area of residence to the market where most of their livelihood activities were carried out. As intimated by one unmarried women aged thirty:

"There are many problems that we face. I would say one major problem is the lack of credit loans, as several times we have heard that the government is giving out loans and these have not reached us. Without credit loans we cannot improve our businesses; we would want to open small spaza shops and attract more customers. But without loans to start that remains a dream. The money we get is difficult to save and is too little; it covers transport and food on a daily basis but to embark on such ventures [spaza shops] *is impossible"* (In-depth interview, March 2012).

Given the inadequacy of finances, livelihoods are threatened and compromised, such that on occasion trading activities come to a standstill.

The majority of traders knew of the existence of informal money lenders. But Magaba traders were afraid of borrowing money for these lenders. Interest rates on these loans are very high, and paying a loan back to these lenders was like tying a rope around one's neck. Vendors indicated that they were specifically afraid of confiscation of their trading goods after failing to pay back the money. One woman aged thirty four indicated the following:

"It's very difficult to get cash from the people who do chimbadzu [informal money lending] *because when you fail to repay them they come and collect everything. One of my friends had her house emptied and if you fail to pay back and redeem your things they will auction them to get their money back. . That was a lesson on its own and I learnt not to acquire a loan. My job does not give me much, so I do not want a loan; let those who want loans get them"* (In-depth interview, March 2012).

Clearly, loans in-of-themselves are not inherently advantageous for Magaba traders.

In as much as vendors needed credit, loans were either not available to them or they feared the consequences associated with credit. Although credit loans are sometimes romanticized as a key poverty alleviation strategy, there is often silence on the consequences to the trader when the loan is not paid on time in full. In this way, loans may rather exacerbate poverty and vulnerability. Besides the lack of credit loans, vendors at Magaba experience ongoing transport problems.

b) Transport

Both formally and informally employed urbanites are affected by the public transport inadequacies and costs. Transport problems were identified as critical by those Magaba traders who travelled on a daily basis from different low density areas

in Harare to Magaba, while those who reside at Magaba Flats, Matapi Flats, Tagarika Flats, Nenyere Flats, Matererini Flats and other places near the Magaba market were able walk to Magaba to trade their wares daily. During both the morning and evening times, public transport was scarce and this inconvenienced livelihood activities. The scarcity of transport is not attributed to the shortage of fuel (as it was in earlier years) but to the shortage of public vehicles and traffic jams as well as regular police operations to oust ramshackle transport operators from city roads. One married respondent from Highfield said the following:

"I stay in Highfield and I have to wake up very early in the morning because by 7 o'clock kombies (commuter omninbuses) will be scarce; most of them are stuck in town with no way out and operators hike the fare from R5 to US$1 [about R10] and this happens again in the evening when I want to go home … They charge as well for chichangani [carrier bag] at the same price. Sometimes you begin to see that you are just working for transport only;… everything is increasing, food, clothes and housing truly it's getting out of hand" (In-depth interview, March 2012).

Public transport, in terms of fluctuating costs even within a particular day, is therefore controlled by market forces of supply and demand.

In this respect, traders as a whole explicitly agreed that transport fares were constantly changing and being hiked, and they varied considerably between low density areas. Traders from the nearby areas of Mufakose, Glen Norah and Warren Park pay a fare of US$1 during peak hours while those traders from areas further afield (like Chitungwiza) pay a fare of US$2. To curb transport costs, the majority of traders (especially those living at some distance from Magaba market) resorted to pickup trucks (locally known as *pikidhas*) instead of public transport vehicles called *kombis* (commuter ominibus). In the mornings, cohorts of people are seen ignoring *kombis* while waiting for *pikidhas*, and the same occurs at nightfall. *Pikidhas*, according to traders, had comparatively cheap fares no matter what time of the day. Furthermore, traders were not obliged to pay for carrier bags as in the case of public transport. In addition, the respondents intimated that *kombis* are generally unsafe and are usually involved in accidents because of high speeds in rushing and competing for passengers.

Further probing into transport routes showed that, in the case of *kombis*, there was no direct link to Magaba market; therefore traders had to wait for and board two or more *kombies* to Magaba. Observable in both the morning and evening are traders walking from drop-off points to another *kombie* rank, with their carrier bags on their heads as well as *magweja* (boys who push carts) pushing scotch carts (locally known as *zvingoro*) in single file. One unmarried respondent indicated:

"That's the cheapest thing to do; we just hire a cart from Market Square (Market Square is a bus terminus approximately 2 kilometers from Magaba) *to Magaba because if you want to use a* kombie *they are expensive"* (In-depth interview, March 2012).

This sentiment is shared by the majority of women and it demonstrates women's ingenuity in response to the transport problem in seeking to minimize expenditures for their trading operations. Besides transport, shelter was a critical problem for women at Magaba.

c) *Shelter*

Given the physical set-up of the Magaba market, harsh weather conditions raise problems for the traders. Data gathered through the survey suggested that 39.6% were affected by such problems. Magaba is an outdoor market which lacks overarching shelter and, in addition, traders lack stands on which to display their goods and to keep them safe from exposure to the vagaries of weather. Vendors and their goods therefore are continuously exposed to dust, cold weather, exposure to sunlight, and rain. The available shields they have in the form of umbrellas are only appropriate for sunny weather and not for wet weather. Weather conditions had a number of specific effects on both the women and their commodities for sale.

First of all, wares were damaged especially during excessively hot days and the rainy season. This reduced the quality of the goods and resultantly led to the reduction of selling prices for each damaged item. In times of rains women have to run to nearby cover to avoid damage of their wares. Some vendors have started selling their wares under cover on pavements outside nearby stores and (because of this) they are in constant conflict with shop owners. Regarding the lack of proper shelter, one of the interviewees had this to say:

"We need proper shelter like people at Mupedzanhamo … Council is not doing anything to accommodate us. Our products get wet during the rainy season and obviously when the customers want to buy they negotiate for reduction of prices and we lose profits. This is a problem we always face each and every rainy season. If we had proper shelter it was better. Most of the times we run to over our products with tents and umbrellas because once they get wet they lose value and the price drops too" (In-depth interview, March 2012).

Secondly, the bad weather contributed to health problems especially influenza. Because of this, some traders opted to remain at their home during incremental weather, thereby reducing their daily income. Thirdly, particularly because there is no overarching shelter for the market, the weather drives potential customers away. One respondent who sells second-hand clothes stated that *"when it is cold and raining there is no business"*. Magaba is not an official designated area of

operation as far as vending is concerned and vendors are not allowed to put up even ad-hoc tents to shelter their products. Hence, the problems experienced by the traders are perennial.

In addition to shelter (and the physical set-up of the market more broadly), there is no ablution facility at the market. Vendors and their customers (and passers-by) relieve themselves at a nearby cemetery. Women vendors expressed discomfort in using the cemetery for this purpose and had advocated for some time for the provision of toilets, if only movable cabin toilets.

d) Competition

A significant challenge for the women traders is the question of competition. Ever since the formation of the Government of National Unity, there has been no meaningful improvement to the Zimbabwean economy and the informal trading sector is swamped by new and old entrants. Most of the informal trading places in Harare are characterized; it seems quite literally at times, by the law of the jungle. Women traders at Magaba expressed, in one way or another, the emergence of market saturation – in fact of over-saturation – which has contributed to the lowering of profits and profit margins. Competition at Magaba was marked by constant fluctuation as, during my field work, I noticed changes to the number of traders on-site on a daily basis; and this also leads to significant irregularity and variation in daily sales. One Magaba interviewee noted:

"There are so many people coming to Magaba as you can find everything here. But if you are selling similar goods you hardly get cash because customers have a variety to choose from unless you have regular customers. And if you are selling quality goods, customers will flock to you and you make good money. Most of the people who can afford to do so are now running to supermarkets because all the goods are back in the shelves … [which is] *a situation different from the previous year's"* (In-depth Interview March 2012).

Regular traders complain about suffering severe competition from irregular traders, mainly those people who trade at Magaba market as a complementary source of income.

Month end and weekends are normally the most viable time because customers (at least those who are employed) have buying power after receiving their monthly or weekly salary or wage. This rapid influx into markets after pay-day is caused mainly by the low incomes earned from formal employment and the immediate consumption needs of low income households. Generally, prices for goods at Magaba are lowered by traders when demand decreases, which in turn lowers profit margins during the expected slower days of the month. The ever-increasing competition has also contributed to increased working hours by traders to maximize sales; according to the Magaba survey,

63.3% of traders have increased their working time for this reason. Despite this intense competition, and the stress that it invariably put on women traders given the livelihoods demands of their households, women traders regularly shared information with other traders about where they sourced their goods for resale and at what cost price. This was mainly done among traders with well-established high levels of trust between them.

Competition does not only emanate from within the informal trading sector. As previously mentioned, in recent years there has been some recovery of the formal retail sector in terms of availability and cost of basic commodities in Zimbabwe. Prices in supermarkets and shops are still high compared to the informal sector, though, with high and medium income urbanites frequenting these retail outlets while lower income groups still purchase commodities in the informal sector. The point however is, in the past, shelves in the formal retail sector were empty and commodities were scarce up until 2007 and 2008, and upper and middle income groups until that time often purchased goods in the informal sector. This no longer is taking place, at least on its previous scale, and hence informal traders like at Magaba have lost a significant customer base to a formal economy seeking to get back up on its feet.

e) Employment

Informal trading for most women at Magaba is their main source of income and, as indicated, it is not necessarily a reliable and sufficient income source. Any prospect of formal employment, despite the low salaries and wages currently earned, may be a more viable option for at least some of these women. But the prospects of this employment are exceedingly limited considering an unemployment rate of 80%. The Government of National Unity, regrettably, has not improved matters as all main economic indicators demonstrate. Employment policies and programmes have had only limited effects. For instance, black empowerment under the leadership of Saviour Kasukuwere (Minister of Youth, Development, Indigenization and Empowerment by then) has failed to transform the lives of the urban poor. In this regard, one married interviewee highlighted the following:

"We were thinking things will get better since 2009 but there is no change; people are still suffering, there are no jobs at all, some companies are retrenching workers and people are surviving in the black [informal] *market. We need jobs because black market money is not predictable; one month I get more and the other month I get less. Companies at least pay per month although it is not much; but you are guaranteed that you will at least get something at the end of the month. Without jobs which pay well our lives will be hard because we need better income to sustain our families"* (In-depth Interview March 2012).

Another vendor aged twenty five shared the same view:

"I didn't get a proper job after I finished my school and worse I am an orphan and I am the first born. I have to take care of my siblings but because there are no jobs in the country I can't just sit and starve at our home. The money that I get here is very little, I hardly struggle to pay for fees, rates and groceries; other months I have to rely on my relatives. If I could get a job life could be different ... It's hard ... It's hard....life it's difficult" -

(In depth Interview March 2012).

In addition, these respondents reported that formal employment was better because it comes with fringe benefits.

A stable income earned per month was what vendors as a whole desired through formal employment. But, because of the absence of employment opportunities, most vendors were satisfied that their informal trading activities gave their households at least some form of financial certainty. Other vendors spoke of their involvement in informal trading in more voluntaristic terms in the light of low levels of remuneration in the formal economy.

One respondent aged thirty eight argued the following:

"You know that I have been there in the industries and I was getting very little at the end of each month. I could not even properly take care of my family... I do not want to go back again in the industries. Now [through informal trading] at least I can make more money because I do not just rely on selling mazitye [second hand clothes] but I also do other things and I am getting more money compared to the one I was getting at Lyons [the place of formal employment] ... I would wait for money I can make now in two weeks...so why would I waste my time to go to work than making money in the black market. It's better to work in the black market than industries" (In-depth Interview March 2012).

Many Zimbabweans working in the informal sector have been conditioned to believe that sustainable livelihoods are only possible in and through this sector. This is not a denunciation of formal employment *per se*, but reflects the fact that formal employment is currently marked by very low levels of remuneration which inhibit payment of basic necessities like rent, education and health care. This in part leads to informal sector proliferation.

f) Seasonality

Beyond the many economic challenges noted already (including the fluctuations in sales within a particular month), Magaba traders face seasonal peaks and troughs in sales and this leads to ebbs and flows in livelihood activities. Seasonality affects traders differently (or possibly not at all), depending on the wares in which they are trading, as the sales of certain products dropped or rose during different seasons. One young trader aged twenty seven who sells freezits, cold drinks and homemade ice cream reported the following:

"You know when it is cold people do not buy freezits, or anything that is cold or liquid. This is a problem that we have and the business will be very low; at times you change to sell other things like tea with a slice of bread with eggs but there are already people who have established that market so you cannot expect to get much money from that" (In-depth Interview, March 2012).

Another trader aged thirty seven who sells farm produce noted:

"When it is summer, my business flourishes because a lot of people will be buying fruits (mangoes, peaches, avocados) and also green maize cobs and round nuts … This is the time I get most of my profits" (In-depth Interview, March 2012).

Some of the traders revealed that they are not directly affected by seasonality because they have a number of income sources besides the one at Magaba, including traders who also relied on remittances and renting-out of rooms.

Traders, who lack diversification, either within their trading activities in terms of commodity inflexibility or outside trading completely, are mostly affected by seasonality. Furthermore, vendors selling durables (such as clothes and braids) expressed different opinions with regard to the existence and affects of seasonality. But most claimed that, during the festive seasons (for instance Easter and Christmas holidays); they experienced high demands while other parts of the year were off-season in this regard.

X. Coping Mechanisms

The insufficient income earned currently by Magaba women traders has led to adjustments in household management primarily by searching for new avenues of saving the little income that is earned (that is, by reducing expenditure). For instance, my study revealed that most households are now limiting their household expenditure to strictly the basics (basic foodstuffs, rent and education primarily). This includes purchasing the cheapest foodstuffs available. Also, fewer meals per day (and smaller portions per person) were frequently reported by the respondents. The same meal (namely *sadza*, or boiled mealie meal, and boiled vegetables) is repeated over and over again. Furthermore, to cut on transport costs, walking to the Magaba market place (where livelihoods were carried out) was reported by those who resided reasonably close to the Magaba market. Additionally, women looked for cheaper houses in the high density areas to reduce rental costs, with some families now living in one room divided into two with a curtain. Sending children to

less expensive schools especially in the rural areas was another attempt to overcome the challenge of inadequate income.

Magaba women, as noted previously, generally do not have access to credit for a variety of reasons. However they now at times borrow money from relatives, friends and neighbours. In cushioning the insufficiency of income the majority of vendors have also resorted to savings groups (or *ma-round*). This type of social network, which exists beyond the immediate circle of women traders at Magaba and entails more neighbourhood-based groups, enables access to cash or in-kind foodstuffs on a reasonably regular basis in the context of the growing uncertainties of informal trading operations. This does not increase overall household income but does allow for large lump sums at frequent intervals. Aside from the *ma-rounds*, women vendors have tried to diversify their sources of livelihood income even further (beyond the diversification described earlier in the thesis) by for instance having trading stalls scattered at different locations selling different goods and engaging in part-time employment as domestic workers. In some incidences, children have been asked by their parents to abscond from classes on certain occasions to seek casual work to supplement household income. Quick cash was also acquired through the selling of assets and this was done normally at unreasonably low prices because of the urgent situation. One cross border woman revealed the following:

"Sometimes you do not have any choice because when you do not have any money and you need money urgently you just have to dispose your property. I still remember I had to sell my two door fridge to get money for collecting a passport. Knowing the importance of having a passport I was left with no choice but it worked to my advantage. Right now I can go to Mozambique and hoard clothes". (In-depth Interview, March 2012).

XI. Conclusion

The introduction of this paper traced some of the events that have led to Zimbabwean crisis and it went to give a snapshot of the sustainable livelihood approach. The paper then explored the various livelihood strategies executed by women traders to maintain family economic well-being and upward mobility. Albeit the fact that this paper is not representative, the relatively small number of interviews and survey questionnaires administered suggest important understanding of the nature of the livelihood strategies within the contemporary Zimbabwe. Three questions were posed:

- Identify and explain the livelihood strategies of women traders at Magaba

- In constructing livelihood strategies, what are the constraints they meet?

- With such constraints, how do women traders counter these constraints?

The paper discussed in great detail the vulnerability context of the Magaba traders, notably the economic and political crises which have marked Zimbabwe for many years. The vulnerability context relates mainly to the Zimbabwean economy (for example, unemployment and inflation) but it is generally recognized that the economic crisis has roots, at least partially, in political mismanagement (such as the fast track land reform process). This crisis impelled the Magaba women to enter into trading activities and to remain within the informal economy. Once in the trading sub-sector, the Magaba women made use of available individual and household assets (or capitals) in pursuing vending activities but also in simultaneously diversifying into other income-generating activities and food security initiatives (such as urban agriculture) to make up a livelihood portfolio (or number of livelihood strategies). The traders faced a series of challenges during their actual operations, many of them of an economic character and which relate back to the vulnerability context (such as transport costs). The Magaba women traders, in often ingenious fashion, responded to these challenges as – at best – coping mechanisms. The 'end' result, which is always subject to on-going fluctuation – are livelihood outcomes. The Magaba women have made important contributions to their household income and food security but, as a grouping, they emphasized that they are struggling and that they are effectively hanging in and hanging on in the face of adversity.

These empirical findings have implications for development theory. Precisely a sustainable livelihood approach is a substantial contrivance for evaluating urban livelihoods; access and control to different capitals enhance fruitful livelihood outcomes. In particular through social capital women traders argument their safety nets through forming informal savings groups (locally known as *ma-round*). The findings have implications for urban development policy. To avert urban poverty and vulnerability, city fathers and other stake holders should consider not only formalising but support informal operations. This can be done through less interest credit facilities bearing in mind that these operations yield less income per day, week and month. To achieve this participatory approaches are significant to ascertain the needs of traders. It is imperative for city authorities, municipality in particular to recognise the significance of these informal activities and provide useful as well infrastructural facilities that willaid to attainment of fruitful livelihood strategies. This will consequently reduce urban suffering and uplift standards of living.

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The Intergenerational Dynamics of Social Inequality–Empirical Evidence from Europe and the United States

By Veronika V. Eberharter

University of Innsbruck, Austria

Abstract- Based on nationally representative data from the German Socio-Economic Panel (SOEP), the Panel Study of Income Dynamics (PSID), and the British Household Panel Survey (BHPS) we analyze the intergenerational transmission of economic and social (dis-)advantages in Germany, the United States and Great Britain. We test with the hypotheses that the extent and the determinants of intergenerational income mobility and the relative risk of poverty differ with respect to the existing welfare state regime, family role patterns, and social policy design. The empirical results indicate a higher intergenerational income elasticity in the United States than in Germany and Great Britain, and country differences concerning the influence of individual and parental socio-economic characteristics, and social exclusion attributes on intergenerational income mobility and the relative risk of poverty.

Keywords: *social and economic inequality; intergenerational income mobility; poverty, social exclusion.*

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I. Introduction

Most of the industrialized countries are confronted by changing social and economic structure, increasing economic and social inequalities, low income and social isolation. The negative relation between income inequality and intergenerational income mobility suggests that children growing up in low-income households can only escape the poverty trap if intergenerational income mobility compensates economic and social inequality (Mayer and Lopoo 2005). From the socio-political point of view, the research of the determinants of intergenerational income mobility and poverty persistence is essential to design effective social policy measures. Though focused on alleviating social and economic inequalities, the social policy of a country reproduces "stratification" in terms of power, class and other forms of inequality. The policy instruments and transfer packages tell a great deal about the working of a country's welfare state regime. The welfare state regime defines a complex of legal and organizational properties, the role of the state interacting alongside the market, the civil society, and the family in the provision of welfare (Therborn 1995, de Swaan 1988, Arts and Gelissen 2002). The existing topologies of welfare state regimes are based on various dimensions, as social insurance and poverty policy (Leibfried 1992, Korpi and Palme 1998), welfare expenditures, benefit equality, and taxes (Castles and Mitchell 1993, Bonoli 1997, Kauto 2002), female work desirability (Siaroff 1994), political tradition (Navarro and Shi 2001), or decommodification and stratification (Esping-Andersen 1990, Esping-Andersen 1994, Esping-Andersen 1999).

The Esping-Anderson welfare state regime typology clusters democratic industrial societies into liberal, conservative, and social democratic welfare state regimes. The liberal welfare state regime (United States, Great Britain, Canada, Australia, New Zealand) is characterized by low decommodification and strong individualistic self-reliance. The public philosophy is grounded on the idea of opportunity reflecting individual efforts, which indicates an open, liberal and dynamic social system. The distributional consequences of the market forces are accepted. A relatively unregulated labor market fosters the creation of low-paid jobs, large wage dispersions, and small differences in the jobs performed by women and men. Labor market policies offer less protection for workers and do little to ameliorate market-based risks. The market rather than the state is promoted in guaranteeing the welfare needs of the citizens. These countries are characterized in terms of minimal assistance to allow the worker the opportunity to gain entry back into the market should circumstances dictate a temporary departure. The state reacts only in case of social failures and limits the help to special groups. The transfers are modest and the rules for entitlement are very strict. The principle of stratification leads to low-income state dependents, and people not able to afford social insurance plans. The education systems are less stratified and standardized which may induce a higher social mobility. At the other hand, privately financed higher education suggests intergenerational social immobility (Couch and Dunn 1997, Mortimer and Krüger 2000, Charles et al. 2001, Hall and Soskice 2001, Dustmann 2004, Gornick and Meyers 2003).

The conservative-corporatist welfare state regime (Germany, Austria, France, Italy) is typified by a modest level of decommodification. Government policies ensure against market-based risks and protect those who are unable to succeed in the market place.

Author: University of Innsbruck, Department of Economics, Universitaetsstrasse 15/3, A-6020 INNSBRUCK, Austria.
e-mail: veronika.eberharter@uibk.ac.at

The direct influence of the state is restricted to the provision of income maintenance benefits. The labor market institutions and labor market policies ensure employment stability. Health care, welfare, social insurance, national assistance, and old age pensions are provided at government expense. Social policy is designed to guarantee income equality. Family policies facilitate the incorporation of women into the labor force (e.g. child care, paid maternity leave, job return guarantees) and support the transition from the traditional male bread-winner model to the adult worker model. At the other hand tax policy (e.g. tax splitting) favor men as breadwinner and women foremost as mothers, which reinforce the preservation of traditional family role patterns concerning the allocation of time into paid work (Charles et al. 2001, Lewis 2006). The education system is formal and coordinated, and higher education is publicly provided. In Germany, the vocation-oriented educational "dual system" relies on occupation-specific credentials, and results in socially stratified and sex segregated outcomes. The federal states have the primary responsibility for organizing the educational system, which results in a high level of standardization, and constitutes the mechanisms for perpetuating social inequalities (Mortimer and Krüger 2000, OECD 2012).

The social democratic approach to welfare and social policy (Scandinavian countries) is especially committed to create equal opportunity, to reduce social risks, and to diminish social divisions. The level of decommodification is high, and stratification is directed to achieve a system of highly distributive benefits. These countries advocate full employment and promote equality including the provision of a safety net that no one should be allowed to fall through. Social policy aims at maximizing the capacities of individual independence. Women are encouraged to participate in the labor market.

The paper aims to analyze the influence of the individual and parental socio-economic mapping, and social exclusion characteristics on the intergenerational income mobility and the relative risk of poverty in countries with different welfare state regimes, labor market institutions, family role patterns, and social policy design. The paper focuses on the situation in Germany, the United States, and Great Britain. We test the hypotheses that the link between social stratification, intergenerational income mobility, and poverty persistence works differently according to the existing welfare state regime, family role patterns, and the social policy:

- In the United States and Great Britain we expect a higher income inequality which is associated with lower intergenerational income mobility than in Germany. Due to high individualism and self-relience in the society we expect that the impact of family background characteristics on intergen-

erational income mobility and the relative poverty risk is more expressed than in Germany.
- In Germany, social policy is designed to focusing on a higher social permeability of the society. We expect a higher intergenerational income mobility at the bottom of the income distribution compared to the United States and Great Britain.
- In all the countries, we suppose that instable family structures, non-employment, and disability boost the relative risk of poverty.

To analyze the determinants of the intergenerational income mobility we employ a regression approach on the permanent post-government income variables of children and parents including a set of individual and family background controls (Solon 1999, Björklund and Jäntti 2000, Hertz 2004, Couch and Lillard 2004, Grawe 2004). We apply quintile transition matrices and the Bartholomew mobility index (Bartholomew 1982, Dearden et al. 1997) to evaluate the intergenerational mobility for different income positions. To analyze the determinants of the relative poverty risk we employ a binomial logit model (Mc Fadden 1973, Maddala 1983, Heckman 1981). The explanatory variables contain a set of individual and family background socio-economic resources, and social exclusion attributes.

The paper is organized in 5 sections: section 2 focuses on the theoretical background of the intergenerational transmission of social and economic disadvantages, section 3 reports the data and sample organization, section 4 outlines the methodology to analyze the intergenerational income mobility and the relative risk of poverty conditional to individual and family background characteristics, and social exclusion attributes. Section 5 presents the empirical results and section 6 concludes with a summary of findings and discussion of some stylized facts about the intergenerational heritage of economic and social disadvantages to derive policy implications and directions for further research.

II. Theoretical Background

Poverty and social exclusion are dynamic processes limiting a person's future prospects (Atkinson 1998). Social exclusion is a multi-dimensional phenomenon, affecting both the quality of life of individuals and the equity and cohesion of society as a whole (Levitas et al. 2007). It reflects a combination of inter-related factors resulting from a lack of capabilities (Sen 1985, Sen 1992) required to participate in economic and social life (poor skills, labor market exclusion, living in a jobless household), service exclusion (public transport, gas, electricity, water, telephone), exclusion from social relations (common activities, social networks), exclusion from support available in normal times and in times of crisis, exclusion

from engagement in political and civic activity, poor housing, high crime environment, disability, health problems, or family breakdown (Social Exclusion Unit 1997, Saunders et al. 2007, Saunders 2008). Poverty is either discussed as a dimension of social exclusion (Marlier and Atkinson 2010) or a concept very close to social exclusion. If poverty is understood as encompassing low income situations implying a lack of participation in the key activities in social, political, and cultural life (Townsend 1979, United Nations 1995, Duffy 1995, Walker and Walker 1997, Burchard et al. 2002) or the inability to do things, that are in some sense considered normal by the society as a whole (Howarth et al. 1998), or the insufficiency of different attributes of well-being (e.g. housing, literacy, health, provision of public good, income, etc.), then both the concepts become very close (Bourguignon and Chakravarty 2003).

There are two major theories concerning the mechanisms of the intergenerational transmission of advantages and disadvantages. According to the family resource model it is not a lack of economic resources, but other characteristics of the parents that are correlated with economic status that influence the parental abilities to provide stimulating environments for their children to have economic success. Low-income parents more likely possess disadvantageous characteristics, and therefore they fail to provide stimulating environments for the better-off of their children (Mayer 1997). According to the neoclassical human capital approach (Becker 1964, Mincer 1974) the economic status of the parents is transmitted to their children. The structural hypothesis of intergenerational economic and social mobility emphasizes the view that limited parental resources during childhood restrict the social and economic status of the children as adults (Blanden et al. 2005, Mayer and Lopoo 2005). The parental investments increase the children´s human capital, which in turn positively affects their earnings capacity (Becker and Tomes 1986, Solon 1992, Solon 1999, Solon 2002, Chadwick and Solon 2002, Mazumdar 2005), their ability to gain non-labor income, and even their success in the marriage market (Pencavel 1998). Among the endowment conditions parental education, employment behavior, occupational choice, family role patterns, as well as social capital environment are of importance (Stevens 1999, Finnie and Sweetman 2003). At the other side, gaps in the parents' investment abilities impede the economic success of the offspring (Acemoglu and Pischke 2000).

The first generation of the studies on intergenerational income mobility (Becker and Tomes 1986) found an intergenerational correlation of about .20 for the United States, implying that the parental status does not strongly affect the children's economic and social position. Using multi-year income variables and correcting for measurement errors the second generation of analyses (Solon 1992, Solon 1999, Solon 2002) found empirical evidence of intergenerational income elasticity ranging between 0.20 and 0.60. The analysis of the dynamics of the intergenerational income mobility (Corcoran 2001, Mayer and Lopoo 2002) reveals a decreasing effect of the parental income status on the income and social position of the children.

III. Data Base and Sample Organization

The empirical analysis is based on data from the German Socio-Economic Panel (SOEP), the British Household Panel Survey (BHPS), and the US Panel Study of Income Dynamics (PSID), which were made available to us by the Cross-National Equivalent File (CNEF) project at the College of Human Ecology at Cornell University, Ithaca, N.Y..[1] The PSID started in 1980 and contains a nationally representative unbalanced panel of about 40,000 individuals in the United States. From 1997 on the PSID data are available bi-yearly. The SOEP started in 1984 and contains a representative sample of about 29,000 German individuals that includes households in the former East Germany since 1990 (Wagner et al. 2007). The BHSP started in 1991. The first wave consists of some 5,500 households and 10,300 individuals drawn from 250 areas of Great Britain. Additional samples of 1,500 households in each of Scotland and Wales were added in 1999, and in 2001 a sample of 2,000 households was added in Northern Ireland, making the panel suitable for UK-wide research. The surveys track the socioeconomic variables of a given household, and each household member is asked detailed questions about age, gender, marital status, educational level, labor market participation, working hours, employment status, occupational position, economic situation of the members of a given family over time, as well as household size and composition. The income variables are measured on an annual basis and refer to the prior calendar year. The data allow monitoring the employment and occupational status, the earnings situation, and the socio-economic characteristics of the individuals.

The data do not provide a sufficiently long time horizon to observe parents and children at identical life cycle situations, but cover an adequately long period to allow monitoring socioeconomic characteristics, employment and occupational status, and earnings situation of children living in the parental household and when becoming members of other family units. In this way the data allow to draw inferences about the effects of being exposed to different life situations in the parental household on the economic and social situation as young adults. The sample is restricted to

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[1] For a detailed description of the data bases see Frick et al. (2007).

persons aged 14 to 20 years, and co-resident with their parents in four consecutive years (United States (1987-1991), Germany (1988-1992), and Great Britain (1991-1995). The data base does not allow identifying parents - children relations exactly, therefore we define 'parents' as adults, whose marital status is 'married', or 'living with partner' and who are living in households with persons indicated as 'children'. We use family (household) identifiers and relationship codes to match sons and daughters to their fathers and mothers within each data set. We allow families to contribute as many parent-child pairs to each data set as meet our screening rules: the number of the parent-child pairs equals the number of the children in the parental households. The young adults are at least 24 years old when we observe the economic and social status in 2005-2009 (Germany) or 2003-2007 (USA), and in 2004-2008 (GB) when living in their own households. We focus on persons participating in the labor market, and exclude persons in full-time education. We do not consider the former East Germans, for they are not included in the SOEP sampling frame before 1990. We analyze the intergenerational economic and social mobility of persons in Great Britain because other regions are not included in the first waves of the British Household Panel Survey. The selection process leads to a sample of 2,128 German women and men, the US sample covers 2,585 persons, and the British sample includes 1,840 women and men.

The paper follows the standard conventions and assumes that income is shared within families and thus household income is arguably a better measure of the economic and social status than individual income variables (Mazumdar 2005). The study is based on the equivalent post-government household income, which equals the pre-government household income plus household public transfers (social benefits: dwellings, child or family allowances, unemployment compensation, assistance, and other welfare benefits), plus household social security pensions (age, disability, widowhood), deducting household total family taxes (mandatory social security contributions, income taxes, or mandatory employee contributions). We use the referred income variables from the data base, thus the results make not allowance for the bias of imputed values on income inequality and income mobility (Frick and Grabka 2005). To consider the family structure we calculate the permanent household income per adult equivalent. We employ the 'old' OECD-equivalence scale (OECD 1982) made available by the data base, which assigns a value of one to the first adult household member, a value of 0.7 to each additional adult, and a value of 0.5 to each child (OECD 1982, Hagenaars et al. 1994). The household income variables are deflated with the national CPI (2001=100) to reflect constant prices. To exclude transitory income shocks and cross-section measurement errors we use 5-year moving averages of

the real equivalent post-government household income. The parental household socio-economic mapping is captured either by the characteristics of the father or the mother. In "double"-parent families the characteristics of the father are employed, in "single"-parents families the characteristics of the mother or the father are introduced in the analysis.

A major factor that will lead to changes in the quality of mobility data is that response rates tend to decline over time and so the representativeness of mobility tables derived from survey data may worsen. As the income variables highly determine survey-attrition we follow Fitzgerald et al. (1998a; 1998b) to construct a set of sample specific weights to address to the non-random sample attrition bias, that do not account for attrition in general, but for attrition among the particular groups under study We estimate a probit equation that predicts retention in the sample (i.e being observed as an adult) as a function of pre-determined variables measured during childhood. Presuming that the samples are representative when the children are still children we construct a set of weights

$$ w(z,x) = \left[\frac{\Pr(A=0 \vdots z,x)}{\Pr(A=0 \vdots x)} \right]^{-1} \qquad (1) $$

where x denotes the parental income as primary regressor, and z is a vector of covariates to predict attrition, indicated by A=1. Thus w(z,x) will take higher values for people whose characteristics z make them more likely to exit the panel before their adult income can be measured. The variables considered in z are the gender, and the parental age and educational attainment as well as their squares. We suppose these variables to affect the attrition propensities, to be endogenous to the outcome, that is to have an effect on the children's income as adults conditional on the parental income. The weights w(x,z) are multiplied with the parental household weights, which yields a set of weights that apply to the household of the children as adults. The parental household weights are assumed to capture the attrition effects and the weights, w(z,x), compensate for subsequent non-random attrition.

IV. Methodology

a) Intergenerational Income Mobility

The most common approach to quantify how economic (dis)advantages are transmitted across generations is to estimate the intergenerational income elasticity applying ordinary least squares (OLS) to the regression of a logarithmic measure of the children's income variable (y_c) on a logarithmic measure of the income variable of the parental household (y_p), and a set of control variables (X_c)

$$y_c = \beta_0 + \beta_1 y_p + \sum_{c=2}^{n} \beta_c X_c + \varepsilon_c. \qquad (2)$$

In model specification (a) we regress the logarithm of the average equivalent post-government income (2001=100) of the children's generation on the logarithm of the average equivalent post-government income (2001=100) of the parental household. The constant term β_0 represents the change in the economic status common to the children's generation. The slope coefficient, β_1, is used as a measure of intergenerational mobility and expresses the elasticity of the children's income variable with respect to the parents' income situation. The larger β_1 the more likely a person will inhabit the same income position as her parents, which implies a greater persistence of the intergenerational economic status. A β_1 close to zero bears evidence of an open society in which the economic situation of the parents has no impact on the economic success of the children. The random error component ε_c is usually assumed to be distributed $N(0, \sigma^2)$.

The model specification (b) introduces a set of individual and family background characteristics (X_c) to account for the indirect effects of the parental income on the children's income. To the extent that these variables lower the coefficient β_1 these other effects "account for" the raw intergenerational income elasticity. The gender dummy (GEN) takes the value 1 for men and the value 0 for women and controls for gender differences on intergenerational income elasticity. We include the years of education of the individual (EDUC) to capture the human capital level. In the case of missing values the educational attainment is set equal to the amount reported in the previous year. We include the average schooling years of the parents (EDUC$_P$) to capture the correlation between educational attainment of the parents and their ability to invest in education of the children, which in turn affects the income of the children as adults. The number of children (CHILD) in the household considers the effects of care requirements on the disposable household income. We consider the parental employment status and introduce the variable "parental unemployment" (UNEMP$_P$) which takes the value 1 if one of the parents is employed less than half the observation period, and 0 else. We include four occupational dummies to capture the effect of the social status of the parents (OCC$_p$) on the income situation in adulthood. The empirical specification of the occupational status is oriented at the ISCO-88 (International Standard Classification of Occupations). ISCO-88 aggregates the occupations into broadly similar categories in an hierarchical framework according to the degree of complexity of constituent tasks and skill specialization, and essentially the field of knowledge required for competent performance of these tasks. ISCO-88 uses four skill levels, which are partly operationalized in terms of the International Standard Classification of Education (ISCED) and partly in terms of the job-related formal training which may be used to develop the skill level by persons who will carry out such jobs (ILO 1990). This classification rather than one based more closely on the years of education is motivated by the concept of Roy (1951), that occupations require different types of or combinations of abilities and skills, and educational attainment (Goldthorpe 1987, Erikson and Goldthorpe 1992a, Erikson and Goldthorpe 1992b, Goldthorpe 2000). There is a distinctive ranking of the occupational dimensions: lower-numbered categories offer a higher prestige and a higher social status. This is particularly true for countries, where economic and social hierarchies are salient. We rearrange the 2-digit occupational categories provided by the database into 7 categories. In the analysis we consider four occupational groups "1 academic/ scientific professions/managers", "2 professionals/ technicians/ associate professionals", "3 trade/personal services", and "7 elementary occupations".

The regression model in specification (c) considers social exclusion characteristics that are expected to have adverse effects on a person's social and economic status. We include two dummy variables for family disruption, which take the value 1 if the marital status of the person (DISRUPT), respectively of one of her parents (DISRUPT$_P$) is "widowed", "divorced", or "separated", and 0 else. The disability status dummy variable takes the value 1 if the person (DISABIL) or on of her parents (DISABIL$_P$) is disabled, and 0 else. The health status dummy variable (SATHEALTH$_P$) takes the value 1, if one of the person's parents are in good health, and 0 else.

b) Intergenerational income transitions

The intergenerational income elasticity indicates the average income mobility but does not shed light on the probability of the intergenerational movement relative income positions which is one of the key issues from a welfare point of view (Heckman 1981). To evaluate the intergenerational persistence of income positions we employ a transition matrix of the logarithms of the permanent real equivalent household income [2001=100] of the parents and children. Both the income variables are allocated to five equally populated ranked income groups indexed by i and j. The elements $p_{ij} \geq 0$ of the transition matrix indicate the probability (in percent) that a person belongs to the jth quintile of the income distribution given that she belongs to the ith quintile of the income distribution of the parental household with $\sum_j p_{ij} = \sum_i p_{ij} = 1$ (Formby et al.

2004). The elements on the diagonal (p_{ii}) represent the stayers and the off-diagonal terms (p_{ij}) represent the movers concerning the intergenerational income position. The difference between the subscripts represents the distance from the main diagonal, the further away from the diagonal, the greater is the intergenerational mobility of the income positions. If the incomes of parents and children are equally distributed across the income quintiles, elements of the transition matrix are .2.

To quantify the dimension of the intergenerational income mobility we employ the Bartholomew index (Bartholomew 1982, Dearden et al. 1997), which expresses the mobility in terms of average income boundaries crossed over the observation period. The Bartholemew index sums up the moves across the income classes, i.e. outside the main diagonal

$$B = \frac{1}{m}\sum_{i=1}^{m}\sum_{j=1}^{m} p_{ij}\left|i - j\right| \qquad (3)$$

with p_{ij} the proportion of children in income class j having parents in the income class i. The further the distance between the children's and the parents' income classes the greater the weight assigned to it. In the case of no mobility the Bartholomew index takes the value zero. The Bartholomew index is not independent from the order of the transition matrix, the index value based on a matrix of five groups will be different from that based on a matrix consisting of ten groups. Hence, the Bartholomew index is not comparable across countries based on transition matrices of different orders (Börklund and Jäntti 2000).

a) Relative risk of poverty

To evaluate the determinants of the probability to count among the poor we employ a binomial logit model (Mc Fadden 1973; Heckman 1981; Maddala 1983). The dependent variable (pov) takes the value 1 if the household income is below the poverty threshold, which is the third decile of the real (2001=100) equivalent post government household income, and zero else. The probability that a person is potentially poor then is estimated to be

$$P(pov = 1) = \frac{e^{Z}}{1 + e^{Z}} . \qquad (4)$$

The Z characterizes the linear combination

$Z = B_0 + \sum_{c=2}^{n} B_c X_c$ with X_c the independent variables

and B_c the regression coefficients. In general, a probability greater than .5 predicts poverty, and a probability less than 0.5 predicts that the individual is better off. The interpretation of the regression coefficients B_c is based on the odds, that is the ratio of the probability that the person is in a poverty situation and the probability that the person is well off.

$$\frac{P(pov = 1)}{P(pov = 0)} = e^{B_0 + \sum_{c=2}^{n} B_c X_c} . \qquad (5)$$

The exp(B_c) are the factors by which the odds change when the c-th independent variable increases by one unit, e.g. this value expresses the relative risk ratio of poverty or social exclusion with a one-unit change in the c-th independent variable. The variables in (X_c) contain a set of individual and family background characteristics and social exclusion attributes. These variables are the same for all alternatives, but their effects on the probability are allowed to differ for each alternative income quintile. (Table 1)

V. EMPIRICAL RESULTS

Table 1 presents descriptive statistics of the non-weighted variables. The countries do not significantly differ concerning the real post-government household income and the educational attainment of the young adults and their parents. Country differences occur concerning the occupational distributions: In the United States the proportion of professional occupations (19.2%) of the young adults is significantly lower than in Germany (25.38%), and in Great Britain (28.26%). On the other hand, the proportion of trade and service occupations (22.11%) is significantly higher than in Germany (10.3%), and in Great Britain (11.0%). In the United States the parents' occupational distribution shows a significant higher proportion of elementary occupations (23.9%) than in Germany (15.7%), and in Great Britain (18.2%). Due to the generational effect, family disruption is more expressed in the parental households than in the children's. The proportion of fathers or mothers who are dissatisfied with their health is significantly higher in Germany (16.9%) and the United States (13.6%) than in Great Britain (8.0%).

Table 1 : Descriptive statistics

Variables	Description	Germany Mean / % in 1	SD	United States Mean / % in 1	SD	Great Britain Mean/% in 1	SD
y	ln(permanent real equivalent post-government income (2001=100, OECD equivalence scale, 5-year average)	9.564	.491	9.835	.930	9.311	.466
y_P	ln(permanent real equivalent post-government income (2001=100, OECD equivalence scale, 5-year average), parental household	9.380	.388	9.445	.659	8.984	.447
GEN	1 male, 0 female	.5202		.4887		.5136	
EDUC	Educational attainment, school years	12.442	2.916	12.807	2.030	n.a.	
$EDUC_P$	Educational attainment parents, average years of education	10.521	1.971	12.446	1.851	n.a.	
CHILD	Number of children in the household	1.128	1.052	1.412	1.278	1.246	1.211
EMP_P	1 father/mother is employed less than half the observation period, 0 else	.2093		.2830		.2335	
OCC	Occupational categories						
	1 "1 academic/scientific professions/managers", 0 else	.4632		.3405		.3933	
	1 "2 professionals/technicians/ associate professionals", 0 else	.2538		.1916		.2826	
	1 "3 trade/personal service", 0 else	.1028		.2211		.1101	
	1 "7 elementary occupations", 0 else	.1802		.1562		.1334	
OCC_P	Occupational categories (father/mother)						
	1 "1 academic/scientific professions/managers", 0 else	.3144		.3721		.3211	
	1 "2 professionals/technicians/ associate professionals", 0 else	.2085		.1878		.2473	
	1 "3 trade/personal service", 0 else	.1070		.1259		.1634	
	1 "7 elementary occupations", 0 else	.1572		.2387		.1820	
DISRUPT	Family disruption : 1 widowed, divorced, separated, 0 else	.0903		.0952		.0678	
$DISRUPT_P$	Family disruption, father/mother: 1 widowed, divorced, separated, 0 else	.1775		.2669		.2103	
DISABIL	Disability status: 1 disabled, 0 else	.0862		.0712		.0272	
$DISABIL_P$	Disability status, father/ mother: 1 disabled, 0 else	.0519		.0809		.0804	
$SATHEALTH_P$	Dissatisfaction with health, father/mother: 1 poor, very poor, 0 else	.1693		.1358		.0801	
N	Number of observations	2,128		2,585		1,840	

Source : SOEP-BHPS-PSID 1980-2010, author's calculations. Note: The subscripts indicate the parental household characteristics in double parents' families the variable refers to the father, in single parents' households to the father or the mother.

a) Intergenerational Income Mobility

The regression of the logarithm of the real equivalent post-government household income of the children's generation on the logarithm of the real equivalent post-government household income of the parents' generation reveal a higher intergenerational income elasticity in the United States (.678) than in Great Britain (.504), and in Germany (.484). The results corroborate the findings of various studies reporting a range of intergenerational income elasticity of 0.4 or even higher according to the analyzed countries, sample designs, time windows, age cohorts, and income variables (Becker and Tomes 1986, Solon 1992, Solon 1999, Solon 2002, Solon 2004, Mayer and Lopoo 2005, Mayer and Lopoo 2008, Aaronson and Mazumdar 2008, Lee and Solon 2009). The results confirm the hypothesis of a lower social mobility in the United States compared to Great Britain and Germany. The influence of the factors guaranteeing high intergenerational income mobility obviously is compensated and outperformed by the determinants inducing a higher intergenerational correlation of social and economic status.

The inclusion of a set of individual and family background characteristics accentuates the country differences of intergenerational income mobility patterns. In all countries, individual and family background variables considerably affect the intergenerational income mobility, but in varying amount. In the United States, the individual and family background characteristics contribute more than 21 percentage points to the "raw" intergenerational income elasticity, the β_1 coefficient decreases from .678 to .465. In Germany, these variables lower the intergenerational income elasticity by about 10 percentage points to .377. In Great Britain, the individual and family background attributes increase intergenerational income mobility by about 8 percentage points. The results confirm the hypothesis that economic success relates to a higher extent on individual and family background resources in the United States than in Germany and Great Britain. In Germany, social and family policy is obviously more successful to alleviate individual and family based social mobility barriers than in the United States.

In all countries, living with children in the household significantly reduces intergenerational income mobility. In Germany and the United States, women experience lower intergenerational income mobility, and higher education significantly increases the intergenerational income mobility which corroborates the human capital hypothesis. The parents' educational attainment does not significantly contribute to the children's economic success. Social origin matters: in Germany and Great Britain parents with academic or professional occupations significantly improves the chances to get better off in adulthood.

The contribution of social exclusion attributes to intergenerational income mobility is of little account, and reveals country differences concerning the effectiveness of welfare policy to guarantee social and economic mobility, and to alleviate individual and family disadvantages. In the United States, social exclusion characteristics have a significant higher impact on intergenerational income mobility than in Germany and Great Britain, and lower the β_1 coefficient by 8 percentage points. In Germany, social exclusion attributes contribute .3 percentage points to the intergenerational income mobility, and in Great Britain these variables lower the 'raw' intergenerational income elasticity by 2.6 percentage points. In Germany and the United States, family disruption has a significant negative effect on the intergenerational income mobility. To live with disabled parents in childhood (Germany) or to be disabled as adult (United States) significantly increases the intergenerational income elasticity. (Table 2)

Table 2 : Intergenerational income elasticity

Description		(a) Germany	(a) USA	(a) GB	(b) Germany	(b) USA	(b) GB	(c) Germany	(c) USA	(c) GB
	Constant	5.002***	3.346***	4.779***	6.181***	4.647***	5.595***	6.312***	5.579***	6.021***
y_p	post-gvt income, parental hh	.484***	.678***	.504***	.377***	.465***	.426***	.374***	.385***	.400***
X_2	GEN 1 male 0 female				-.149***	-.128***	-.031	-.123***	-.120***	-.028
X_3	EDUC				.017***	.088***	n.a.	.019***	.087***	n.a.
X_4	CHILD				-.149***	-.171***	-.127***	-.162***	-.197***	-.133**
X_5	$EDUC_p$				.004	.009	n.a.	.005	.003	n.a.
X_6	OCC_p 1 academic/scientific/managers, 0 else				.126*	.084	.207***	.144*	.048	.212***
	1 professionals, 0 else				.087	.069	.214***	.099	.044	.212***
	1 trade/personal service, 0 else				.004	.008	.070	.013	.020	.078
	1 elementary occupations, 0 else				-.121	-.074	.019	-.114	-.103	.111
X_7	EMP_p 1 unemployed, 0 else							-.031	-.055	-.021
X_8	DISRUPT 1 family disruption, 0 else							-.162**	-.322***	-.019
X_9	$DISRUPT_p$ 1 family disruption, 0 else							.089	.089	.089
X_{10}	$DISABILITY_p$ 1 disabled, 0 else							-.219*	-.003	-.129
X_{11}	DISABILITY 1 disabled, 0 else							-.081	-.447***	-.068
X_{12}	$SATHEALTH_p$ 1 excellent, good, fair; 0 poor, very poor							-.119	-.190	-.138
	R^2adj	.130	.229	.219	.356	.289	.323	.394	.365	.328
	RMSE	.458	.815	.411	.347	.708	.355	.338	.651	.354
	LL	-584	-1310	-537	-120	-790	-149	-106	-686	-145
	Mean VIF	1.23	1.30	1.30	1.23	1.30	1.30	1.23	1.30	1.30
	N	919	1079	1014	347	741	400	341	702	399

*Source : SOEP-BHPS-PSID 1980-2010, author's calculations. NOTE: * p<0.05; ** p<0.01; *** p<0.001*

b) *Intergenerational Income Transitions*

The Bartholomew index documents higher intergenerational income mobility for Germany compared with Great Britain and the United States. The higher intergenerational income mobility at the lower end of the income distribution in Germany than in Great Britain and the United States documents that German social policy, institutional labor market settings, and the public financed educational system are more effective to guarantee higher social permeability in the society. In the United States, the intergenerational immobility on the top of the income distribution is more pronounced than in Germany and Great Britain. The higher correlation between the children's economic success and the parental economic resources corroborates that high income parents are able to invest in the human capital of their children, which guarantees their economic and social advancement. However, the degree of immobility at the top and at the bottom of the income distribution might be exaggerated, for upward mobility is not possible for those performing the highest income category, and downward mobility is not possible for persons in the lowest income category (Lentz et al. 1989, Mazumdar 2005) (Table 3).

Table 3 : Intergenerational mobility of income positions

income position		Income position parental household				
		1	2	3	4	5
Germany	1	**.3370**	.2935	.1359	.1685	.0652
USA	1	**.3705**	.3125	.1339	.1295	.0536
Great Britain	1	**.4752**	.2178	.1386	.1188	.0495
Germany	2	.1522	**.2283**	.3152	.1467	.1576
USA	2	.2063	**.2332**	.2422	.1659	.1525
Great Britain	2	.2157	**.2647**	.2108	.2157	.0974
Germany	3	.1196	.1576	**.2228**	.2609	.2391
USA	3	.1222	.2262	**.1765**	.2398	.2353
Great Britain	3	.1139	.1782	**.2525**	.2475	.2079
Germany	4	.0924	.1087	.1793	**.2880**	.3315
USA	4	.0876	.1106	.2120	**.3318**	.2581
Great Britain	4	.0637	.1650	.2549	**.2647**	.2549
Germany	5	.0656	.1093	.1858	.2459	**.3934**
USA	5	.0246	.1034	.1478	.2611	**.4631**
Great Britain	5	.0446	.1634	.1634	.2723	**.3564**

Pearson Chi2(16)=163.99 (Germany), 248.63 (USA), 235.71 (GB) Pr=0.000 (Germany, USA, GB)

Source : SOEP-BHPS-PSID 1980-2010, author's calculations

	Bartholemew-Index	Percentage off the main diagonal
Germany	1.1828	.7062
USA	1.1252	.6875
Great Britain	1.1189	.6775

Source: SOEP-BHPS-PSID 1980-2010, author's calculations.

c) *Relative Risk of Poverty*

Table 4 presents the relative risk ratios ($\exp(B_c)$) and the significance level for each of the explanatory variables X_c of the binomial logit model. In Germany and the United States women experience a significant higher probability to count among the poor than men. In all the countries, each additional child living in the household significantly increases the relative risk of poverty. In the United States, each additional year of education as well as living with well-educated parents significantly reduces the relative risk of poverty. In Germany and Great Britain, to hold an academic or a professional occupation significantly lowers one's relative risk of poverty. Persons engaged in trade and service

occupations experience a significantly higher probability to count among the poor. The significant effect of the parental occupational status on the relative poverty risk underlines the intergenerational class persistence (Lentz and Laband 1989, Hellerstein and Sandler Morill 2011). In Germany and the United States persons whose parents are engaged in professional occupations have a significantly lower relative risk to be poor and persons with parents in elementary professions experience a significantly higher relative risk of poverty. In Germany, parental unemployment and health dissatisfaction significantly increase the relative poverty risk. In the United States and Great Britain marital status matters: divorce and separation increase the relative poverty risk.

Table 4 : The Relative Risk of Poverty

	Germany	USA	GB
GEN 1 male 0 female	2.365*	1.863*	.879
EDUC	.989	.627*	n.a.
CHILD	2.457*	2.082*	2.499*
OCC			
1 academic/scientific/managers, 0 else	1.148*	1.811	1.396*
1 professionals, 0 else	1.249*	1.094	1.231*
1 trade/personal service, 0 else	.887	.929**	1.716
1 elementary occupations, 0 else	.099	.106	.115
$EDUC_P$	.989	.967*	n.a.
OCC_P			
1 academic/scientific/managers, 0 else	1.115*	1.333	.499
1 professionals, 0 else	1.905	1.004	1.344*
1 trade/personal service, 0 else	.999	.996	.896
1 elementary occupations, 0 else	.364*	.996*	1.685
EMP_P 1 unemployed, 0 else	.166*	.796	.544
DISRUPT 1 family disruption, 0 else	.566	.808***	.805*
$DISRUPT_P$ 1 family disruption, 0 else	.891	.824	.972
DISABILITY 1 disabled, 0 else	.277	.865	.216
$SATHEALTH_P$ 1 excellent, good, fair; 0 poor, very poor	3.287*	.841	1.364
L	-111.262	-252.429	-148.281
χ^2	97.79	139.59	99.19
Pseudo R2	.3053	.2166	.2506
N	257	517	335

*Source : SOEP-BHPS-PSID 1980-2010, author's calculations. NOTE: * p<0.05; ** p<0.01; *** p<0.001*

VI.   Conclusions

We analyzed the extent of and the determinants of intergenerational income mobility and the relative risk of poverty in Germany, the United States and Great Britain. We tested the hypotheses that country differences concerning welfare-state regimes, family role patterns, institutional settings of the labor markets, and social policy design induce different working of the individual and parental socio-economic resources and social exclusion attributes on intergenerational income mobility and the relative risk of poverty. The empirical findings partly support these hypotheses:

- Though similar in their welfare state regime, the United States and Great Britain differ concerning the average intergenerational income elasticity, the intergenerational transition of income positions, the impact of individual and family background characteristics and social exclusion attributes on the intergenerational income mobility, and the relative risk of poverty.
- In the United States the intergenerational correlation of social and economic status is higher than in Germany and Great Britain, which contradicts the hypothesis of a mobile society, and a high permeability of the social system. The intergenerational income elasticity is higher than in Great Britain and Germany. The inclusion of individual and family background variables lower the 'raw' intergenerational income elasticity by about one third, compared to about one fourth in Germany, and about 15 percent in Great Britain. The inclusion of social exclusion attributes (family disruption, disability and health dissatisfaction) lower the "raw intergenerational income elasticity to a higher extent than in Germany and Great Britain.
- In all the countries, the highest intergenerational income persistence is evident in the tails of the

income distribution which corroborates the results of previous studies (Atkinson et. al. 1983, Dearden et. al. 1997, Corcoran 2001). In Germany, the results reveal the highest intergenerational income mobility in the lower tail of the income distribution, indicating that social policy more effectively alleviates the intergenerational transmission of social and economic disadvantages than in the United States and in Great Britain. In the United States, the transition matrix indicates the highest income persistence at the upper tail of the income distribution which corroborates that low income parents cannot sufficiently contribute to the well-off of their children. The intergenerational immobility in the tails of the income distribution results to an increasing intergenerational transmission of poverty and social exclusion, a deepening of economic and social inequality across generation, and produces economic inefficiencies imposing economic and social costs.

Growing up in low income or in social exclusion environment negatively affects a person's future social and economic position and life chances. The social and welfare policies of a country are forced to design efficient policy measures to break the intergenerational transmission of disadvantages, and to prevent the development of a self-replicating underclass. Regardless of a country's welfare state regime, it is necessary to recognize the potential of education, and to encourage human capital accumulation to be means to advance the social ladder. However, the results call for broader analysis of the mechanisms how families, labor markets and social policy interact in determining the intergenerational transmission of economic and social (dis-)advantages in further research.

VII. Acknowledgements

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The Question of Socioeconomic Benefits of Religious Seminaries in Pakistan

By Omar Javaid

Karachi Institute of Economics and Technology, Pakistan

Abstract- This paper intends to explore the Socio-Economic contribution of Institution of *Madresa* in Pakistani society while critically evaluating the authenticity of criticism against the institution which has surfaced after the 9/11 incident, accusing *Madresa* to be the breading ground of militancy, terror networks and sectarian violence. Additionally the paper explores the free-for-all service of *Madresa* in providing education, increasing literacy rate and employability for the poorest of the poor. It is discovered that *Madresa* provide a near equivalent of primary to tertiary levels of education by only spending almost half the amount spent by its conventional counterparts in the country. Along with this residential *Madaris* save the poorest of children from various illegal activities including child prostitution.

GJHSS-E Classification : *FOR Code: 950404*

THEQUESTIONOFSOCIOECONOMICBENEFITSOFRELIGIOUSSEMINARIESINPAKISTAN

Strictly as per the compliance and regulations of:

The Question of Socioeconomic Benefits of Religious Seminaries in Pakistan

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Abstract- This paper intends to explore the Socio-Economic contribution of Institution of *Madresa* in Pakistani society while critically evaluating the authenticity of criticism against the institution which has surfaced after the 9/11 incident, accusing *Madresa* to be the breeding ground of militancy, terror networks and sectarian violence. Additionally the paper explores the free-for-all service of *Madresa* in providing education, increasing literacy rate and employability for the poorest of the poor. It is discovered that *Madresa* provide a near equivalent of primary to tertiary levels of education by only spending almost half the amount spent by its conventional counterparts in the country. Along with this residential *Madaris* save the poorest of children from various illegal activities including child prostitution. Furthermore role of religiosity in crime reduction is also discussed in the light of various cross-national secondary researches and it is argued that by enhancing the influence of *Madresa* to increase the religiosity of the society, crimes of all nature, including corruption and white collar crimes, can be significantly reduced. The most of the conclusion are drawn on the basis of limited data available on Madaris affiliated with *Wifaq-ul-Madaris Al-Arabia* (which adhere to Deobandi school of thought) therefore the confidence level of conclusions needs to be further enhanced by adding more primary data on other networks of Madaris operated with by Ahle-Tashee, Ahle-Hadith and Barelvi schools. The paper however provides a basis for further research in Pakistan to explore the influence of *Madresa*-initiated-religiosity on law and order situation, the degree of employability of *Madresa* graduates and the cost effectiveness of *Madaris* in all corners of Pakistan.

I. Introduction

Many believe that the incident of 9/11 changed the perception of a large majority regarding many things in the world (Haven, 2011). It was axiomatically assumed that the culprits behind the incidents are Islamic extremists and their eradication from the world is necessary to make this world a better place to live. George Bush defined the incident as an attack on American Values or values of the free world (Klocke, 2004), and that things should go back to normal so that 'Free Americans' can go back to shopping (Bacevich, 2008). To bring things back to normal it was perhaps considered important to eradicate all sources generating negative sentiments against the values of the 'free world' (secular and liberal), along with the people who advocates these sentiments to the extreme, from

stand point of the free world. In this context *Madresa* were considered to be part of the problem and were assumed to be breading grounds of extremism. In the famous 'Civil Democratic Islam' Cheryl Benard accuses "… radical Islam turns young people into cannon fodder and suicide bombers. Madrassas specifically educate boys to die young, to become martyrs …" (Benard, 2003). A simple Google search reveals hundreds of reports, articles papers which are written with the same presumption, just like it was assumed that Iraq being a big producer of WMD, as we will see in a while. Later it was proved that WMB rhetoric was a lie (Chulov & Pidd, 2011), so was the case dismissed against *Madresa* that they were breading grounds for terrorists (Puri, 2010).

II. Definition

Madresa is an Arabic word used in two different contexts: 1) commonly it could mean only "school"; 2) in terminological sense *Madresa* is an institution providing education pertaining to the teachings of Qur'an, *hadith* (sayings of the Prophet Muhammad *s.a.w*), jurisprudence (fiqh), and law. Historically, *Madaris* were known as an institution of higher studies and existed in parallel to more basic version of schools called 'kuttab' where students would only learning Qur'an. In contemporary sense "*Madresa*" has been used for any school - primary, secondary, or tertiary - that promotes a curriculum based on Islamic Shariah. However in some countries, like Egypt and Lebanon, the term '*Madresa*' is used in literal sense refers to any educational institution (state-sponsored, private, secular, or religious), mainly because the spoken language there is Arabic. On the contrary in Pakistan, India and Bangladesh, *Madresa* commonly refers to a religious school where the curriculum is derived from Islamic Shariah and is affiliated with any of the registered boards such as *Wifaq-ul-Madaris Al-Arabia* (Deobandi school of thought), *Tanzim-ul-Madaris* (Barelvi school), *Wafaq-ul-Madaris* (Ahle-Tashee school), *Wafaq-ul-Madaris* (Ahle Hadith school) and *Rabita-ul-Madaris* (Jamaat-e-Islami).

Any unregistered *Madresa* doesn't fall in the definition stated above. Activities or conduct of any such *Madresa* will not be considered worthy of acknowledgment in this study.

Author : Karachi Institute of Economics and Technology.
e-mail: omar.javaid@pafkiet.edu.pk

III. History

In literal sense the first *Madresa* was established by Prophet Muhammad *s.a.w*[1] himself which was known as 'Sufa'. It was a simple place to sit where Prophet *s.a.w* use to teach his companions *r.a.a*[2] about the fundamentals of Islam. Government operated *Madaris* (*plural of Madresa*) were later established in around 1065 CE in Morocco – during the late Abbasid period. Nizamul Mulk Tusi created the first officially recognized one by the name of *Madresa* Nizamiyah. Its branches were spread in various Abbasid cities by at the end of the 11th century. Before Tusi's initiative *Madaris* were an integral part of *Masajid* (Mosques), however when the *Masajid* became overloaded and educational activities begin to disrupt the *Ibadat* (prayers) or worshipers, separate buildings of *Madaris* begin to erect adjacent to *Masajid*.

The scope of education there ranged from basic religious education, from primary to tertiary levels, specializing in the areas of *Fiqh* (Islamic Jurisprudence), Medicine and even administrative sciences. Along with these engineering, mathematics, architectural sciences were also taught in *Madaris*. It is also said that Muslim scientist were also educated in this institution (Jalindhari, 2011, pp. 163, 164). *Madaris* therefore provided complete educational solution in Islamic civilization.

The epistemological foundation of everything taught in a *Madresa* since the beginning till today rests upon Quran and Sunnah, therefore *Madresa* have always been considered as a significant contributor in shaping the value structure of society in an Islamic way where they exist.

It is believed by various Islamic historians and scholars that during British rule in subcontinent after 1857 and communist revolution in Balkans etc after 1917 *Madresa* were considered to be the breeding grounds of the resistance against the occupation of British (Qureshi, 1998) or communist rules in respective regions (Usmani, 2008, pp. 293-303), therefore various violent and non-violent means were used to reduce or eliminate the role of *Madresa* from the society. It is often quoted that Bukhara and Samarqand which remained knowledge centers of Islamic civilization since many centuries were deliberately cleansed (sic) by communist forces and to day that traditional values and spirit is missing from these cities. Perhaps even today *Madresa* are again assumed as a source of resistance or rejection of the value system (Jalindhari, 2011, p. 338) which global players are busy preaching and spreading in the world by hook or crook. Iraq, Afghanistan and Libya are recent examples.

On the other hand the perspective of foreigners like Lord Macaulay in 1835, author of the famous minutes of education, was that the education system of the subcontinent, of which *Madresa* were a major part, was a root of backwardness, ignorance and barrier in progress of the region as envisioned by the European standards of that time. Macaulay wrote in his minutes on education:

*"I have conversed both here and at home with men distinguished by their proficiency in the Eastern tongues. I am quite ready to take the Oriental learning at the valuation of the Orientalists themselves. **I have never found one among them who could deny that a single shelf of a good European library was worth the whole native literature of India and Arabia** ['this would include all religious text as well', Author]. The intrinsic superiority of the Western literature is, indeed, fully admitted by those members of the Committee who support the Oriental plan of education (para 10) … It is impossible for us, with our limited means, to attempt to educate the body of the people. We must at present do our best to form a class who may be interpreters between us and the millions whom we govern; a class of persons, Indian in blood and colour, but English in taste, in opinions, in morals, and in intellect. To that class we may leave it to refine the vernacular dialects of the country, to enrich those dialects with terms of science borrowed from the Western nomenclature, and to render them by degrees fit vehicles for conveying knowledge to the great mass of the population (para 34)"*[3]

With this standpoint Britishers made serious efforts to undermine the role of Madresa and (Ghazi, 2011, pp. 40-41) replace it with their own brand of education system suitable for their own needs. Ulema and all stakeholders of *Madaris* gave a fierce resistance to the onslaught by Britishers on the Institution of Madresa particularly after the loss of Political power of Mughal Empire after mutiny of 1857 (Qureshi, 1998). The role of Ulema in the independence movement is also worth noting. According to Anjum (2006):

"The Indian madrasas where Muslim children learned the art and etiquette of life were destroyed. In the Bengal Province alone, where some eighty thousand madrasas were running under the rule of Jehangir, all of them were demolished … It will not be true to say that this independence [of subcontinent] is achieved by the sole efforts of Ulema. However, there is no denying the fact that Ulema played the most crucial and critical role in

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[1] *Sal-lal-laho-Alaehe-Wasal-lam* (May peace be upon him)
[2] *Razi-Allah-tala-Anhu* (May Allah be pleased with them)

[3] Bureau of Education. Selections from Educational Records, Part I (1781-1839). Edited by H. Sharp. Calcutta: Superintendent, Government Printing, 1920. Reprint. Delhi: National Archives of India, 1965, 107-117.

this. The significant factor is that in this noble cause Ulema from a cross section of schools of thought participated. Prominent among them are Maulana Imam Bakhsh Sahbai, Maulana Shah Abdul Aziz Muhaddis Dehlavi, Maulana Fazl-e-Haq Khairabadi, Mufti Sadruddin Khan Aazurda, Mufti Inayat Ahmad Kakorvi, Maulvi Jafer Thanesari, Maulvi Liyawat Allahabadi, Maulvi Rasheed Ahamd Gangohvi, Maulana Mazharul Haq, Maulana Barkatullah Bhopali, Maulana Ahmad Raza Khan, Maulana Sayyid Naimuddin Moradabadi, Maulana Hasrat Mohani, Maulana Mohammad Ali Jauhar, Maulana Shaukat Ali, Maulana Abul Kalam Azad, etc.".

A part from Ulema Intellectuals like Allama Iqbal and Akbar Ala Abidi were also xenophobic to the new system of Education brought by the foreigners. Through their poetry they heavily criticized the philosophical foundation and the impact which the colonial education system created in the society. Some lines from their poetry are as follows:

"Youn Qatal se wo bachon ke wo badnam na hota;
afsoos ke firaoon ko collegoon ki na sojee"

 ….

"In se bibi ne school hi ki bat ki
Ye na batlaya khan rakhi he roti rat ki" (Akbal Ala Abadi)

"Mehsoos per bina he Alam-e-Jadeed ki;
Hai is dour mein sheesha aqaid ka pash pash"

 …

"Hai taleem peer falsafa-e-magribi;
hai nadan ko bas hastee-e-ghaib ki talash" (Iqbal going sarcastic)

The alternative education which Akbar Ala Abadi and Iqbal[4] seem to be inclined toward is closer to the version followed in *Madresa*. Even today we find people who are against or in favor of the *Madresa* institution to various extents. Some actively look forward for their eradication from the society, whereas some even offer financial support worth billions (Ghazi, 2011, p. 198) for maintenance of old *Madaris* and establishment of new ones.

IV. The Pakistani Context

It can be inferred that Pakistani society is primarily a religious in nature, where non-liberal and non-secular values are deeply embedded in its culture. For the same reason perhaps *Madresa* have found a safe haven in Pakistan. It can be said so as the number of students currently studying in the *Madresa* is around

2 – 3 millions (Andrabi, Das, Khwaja, & Zajonc, 2005; Jalindhari, 2011). Madaris spent roughly Rs. 950/- per month on average on the education and accommodation of these students (detailed discussion coming below). Even if we take a conservative number of 2 million students studying in the *Madresa* institution across the country then a rough estimate of the expenditure on education with 'accommodation' by the entire *Madresa* institution in Pakistan could be around Rs. 2 billion monthly and around Rs. 24 billion annually. All of this money is collected by *Madresa* in the form of charity, Zakat, and 'accounts payables' as they don't have any other source of income. One can estimate the extent of financial support received by *Madresa* from the society in general.

Furthermore every year around hundred thousand pass-outs and assume different religious roles in the society (Ghazi, 2011), such as clerics in mosques. From the population of Pakistan around 84% observe Friday prayers and 40% pray in mosques in Pakistan; and this number "… has increased in Pakistan during the last decade" (Gallup Pakistan, 2000). According to another survey at least 64% of the population "… seeks information regarding religion from religious leaders and Imams". Furthermore it is inferred in the same survey that "this have changed in these few years and religious scholars have become more prominent in disseminating religious information" (Gallup Pakistan, 2009). The religious leaders and Imams with whom Pakistani population is interacting more often, as mentioned above, are none other than graduates from *Madresa*.

Keeping this in view ideological and socio-economic influence of the entire system of *Madresa* on the overall society can also be assumed to be significant. However Beauty of this significance is in eye of the beholder. This makes it a tricky topic as appraisal of an education institution under discussion will be different or even contradictory when done from religious perspective versus liberal secular perspective.

There is no question about the inherent contradiction or conflict which exists between liberal / secular and Islamic value systems at ontological, cosmological and epistemological levels. However since an ordinary man is more concern about the physical manifestation instead of conceptual connotations of the two systems, therefore it would be a relatively better idea to find some common ground at the practical levels. For example the two value systems wouldn't much argue on the importance of:

- Impact on the law and order situation of the society by the graduates of the institution etc.

- Providing a safe house to millions of children from the poorest pockets of society

- Fund utilizing efficiency of the institution (both value systems are against wastage perhaps due to different reasons),

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[4] Iqbal has even criticized the culture prevalent in *Madresa* system or religious seminaries in his poetry, like in some lines in his famous '*Iblees ki majlis-e-shura*' (The Devils Council), but this doesn't mean that he was against the philosophical foundation of the institution, which is clear from some of the lines from his poetry quoted above.

- Ability to produce Employable citizens
- Contribution in enhancing literacy rate

V. Madresa And Terrorism; Linked Or Not?

Before proceeding further it is crucial to discuss the connection of *Madresa* with terrorism, local and international. It is a known fact that less than one percent of terrorist activities in Europe in last decade were conducted by so called Islamic terrorists (Danios, 2010). Even from this small number, it is interested to note that so called Muslim terrorists who have ever been arrested had never attended any *Madresa* (Puri, 2010). While citing various sources Winthrop and Graff (2010) notes in one of their comprehensive report on linkages between Madresa and militancy in Pakistan:

"… a recent study of militants involved in the Kashmir dispute suggests that few are recruited in Madresa. Other Pakistan experts confirm this, suggesting, for instance, that Lashkare-e-Tayaba draws its recruits not from Madresa but from universities, colleges and among unemployed youths. This finding is consistent with studies of terrorist recruits in other parts of the world, which, though suffering from methodological flaws, suggest that recruits are not generally less well educated or poorer than the average citizens in their country of origin. Research … also shows that the recruits involved in five of the largest international terrorist attacks had no connections to Madresa."

In a Most Wanted Terrorists list of Pakistan released by Dataflow Research Department (2009), only 10% of the terrorists had some form of preliminary education from a *Madresa*, none of them had attended tertiary level education in a Madresa, the remaining 90% were graduates of secular education system of the country, or their qualification are not known but their pictures in the report hints toward their nonreligious background.

Some authors have taken a biased and opinioned view on the connection between *Madresa* and militancy, like a study by International Crisis Group (2002) infers without citing references of any credible source.

"Most madrasas do not impart military training or education but they do sow the seeds of extremism in the minds of the students … In short, madrasa education and upbringing aim to indoctrinate with an intolerance of other religious systems." (pp. 2-3)

Looney (2003) also without citing any credible source makes a sweeping statement:

"Unfortunately, many of the Madrassas have built extremely close ties with radical militant groups, both inside and outside of Pakistan. In this capacity they have increasingly played a critical role in sustaining the international terrorist network." (p. 261)

On the other hand a small number of *Madaris*, in relation with their total number, involved in local (inside Pakistan) form of terrorism primarily belong to banned organizations like TTP or Lashkar-e-Jhangvi etc with doubtful affiliations. Some even claim that these banned organizations are subsidiaries of RAW (the Indian intelligence agency) and operate various unregistered brainwashing *Madaris* along Pak-Afghan Boarders (Aaj TV, 2011). Some even are of the opinion that "9/11 was a Mossad operation" (Sabrosky, 2010; Madsen, 2011). Even if it is agreed that a small percentage of unregistered *Madaris* are involved in militancy or terrorism to a certain degree, then it is most certain that they would be condemned and denounced by the official networks of *Madaris* (Jamiat Ulama-i-Hind, 2009; Ghazi, 2011; Jalindhari, 2011, p. 350).

Beside this terrorism is a recent phenomenon, though the institution of *Madresa* has played a prominent social role since many centuries in Muslim societies, since they are the only form of formal education system which prevailed throughout the Islamic civilization for many centuries. This role even extended to preservation, defense and propagation of brand of value system which they hold sacred to themselves, so is the case today. This defense has been also been in the form of aggression to any foreign force challenging the value system dear to them (Jalindhari, 2011, p. 328). The most recent examples are during the Russian invasion of Afghanistan and continuous occupation of Kashmir by Indian armed forces.

Madresa pass-outs have been very active in volunteering to support the resistance movements (Usmani, 2008, p. 398). Though this happens only when a foreign force invade their land (which includes all parts of the world with dominant Muslim population) with military force, however it is claimed that the *Madresa* graduates only offer any or all forms of resistance to the foreign invaders only and prefer not to hurt any civilian population (Usmani, 2008, p. 397).

Keeping this history in view, the possibility of Pakistani *Madaris* (Plural of *Madresa*) pass-outs being involved in offering resistance of NATO and American allies in Afghanistan cannot be ruled out though the magnitude would be lower than their role in resisting communist invasion some decades ago. This reduced role could be due to the restrictions from Pakistani Govt. and Pakistani Army against all cross border activities since 9/11.

VI. Madresa Reforms

Since Pakistani Govt. has offered itself as an ally of America therefore, in this context, any initiative by the Govt. to reform the *Madresa* system is seen with suspicion and is considered as an attempt to defuse their resistive spirit. Looney, while citing various key figures from *Madresa* Networks managed by different

schools of thought, anticipates "their [*Madaris*] biggest suspicion is that every government move in this direction is a Western-inspired maneuver to gain control over Islamic institutions to change the Islamic education and values to suit the West" (2003, p. 268).

This rigidity in the attitude of *Madresa* against any change can be understood by putting oneself in their shoes. How a university in the in Europe, America or Australia would respond if they are told to advocate values contradictory to the spirit of liberalism, secularism and democracy. In a similar way the institution *Madresa* may not also be accepted to adopt anything which they consider contradictory to their value system.

VII.   Madresa And Sectarian Conflict

Ali (2008), Ahmer (2009) and Zaman (1998) has written on the root cause of sectarian violence in Pakistan. This conflict has been prevalent among the two sects Shia and Sunni mainly. Both authors agree that these outfits have been created in reaction to injustice of the feudal system mainly in lower Punjab area, where this feudal system has its inclination toward *Ahl-e-Tashee* sect (Shia). In reaction to this injustice and illegitimate use of power against the lower class militant organizations have emerged to resist the hegemony of unduly dominant sects of the rival group. The violent reactions by both factions against each other however have also been criticized by these authors as socially destructive and have demanded solutions to the problem.

Zaman (1998) and Ahmer (2009) have in fact taken a more historical and holistic view on the development of the sectarian conflicts in Pakistan, starting from branding of *Ahmedies* as non-Muslims, to influence of Iranian revolution on Shia community in Pakistan and its subsequent uprising on Zia's pro Sunni policies, to the formation of *Sipah-e-Mohammad*, a banned militant outfit, as subsidiary of TNJP and finally the creation of *Sipah-e-Sahaba* in reaction to the Shia militancy and injustice of Shia magnets and feudal class against the sunni peasants in the Jhang region. Zaman's arguments seem unbiased as he blames both factions in contributing to the problem and not in the solution.

It is also claimed that modern form sectarian violence between Shia-Sunni (The Nation, 2010) and Barelvi-Deobandi (Ghazi, 2011, p. 61) is caused by a local or foreign conspirators. Furthermore political and economic factors create a context to breed violence where arguments of religious (whose health might be questionable) nature only provide moral justification to a violent act.

It is argued that in a society which is already divided on political, ethnic, racial and economic grounds, presence of religious divide is a no surprise. Molana Qari Muhamamd Hafeez Jalindhari, Head of

Wafaq-ul-*Madaris* Al-Arabia network, questions that why religious sectarian violence gets more attention in the media or emphasized by the government despite the fact its magnitude in the overall violence, occurring due to political, ethnic and racial reasons, is insignificant. He even argues that if government is really serious then it should work to eradicate all forms of violence occurring at various types of fault lines, let alone religious (Jalindhari, 2011, p. 110).

According to Mufti Zahid Sangharvi, graduate of Darul-uloom Korangi, "around 2 out of 16 years of *Madresa* education, topics related to differences among various 'schools of thought' and sects are taught". It largely depends on the teacher how he is teaching the topics, says Mufti Zahid. Mainstream *Madaris* are not involved in sectarian violence, rather they condemn the phenomenon however, in his view, some teachers in *Madaris* in remote rural areas does incite hate for other sects among their students, which might contribute to the problem, however "The percentage of such *Madaris* might be insignificant in total" (Sangharvi, 2011). It is also claimed that highest respect is paid to the viewpoints of other schools of thoughts such as those belong to Imam Malik, Imam Shafi and Imam Hambal *r.a* [5] (Jalindhari, 2011, p. 107), however it is also admitted by Molana Hafeez Jalindhari that while discussing the viewpoints of the other sects (like *Barelvi* or *Ahle-Tashee*) the tone of the discussion becomes intense and critical beyond the appropriate limits. Molana Jalindhari suggests that this habit is inexcusable and must be rectified whenever and wherever it is present (p. 168).

No matter how little the involvement may be, if there is a point of weakness then it should be proactively being taken care of. Ali (2008) also confirms the observation of Mufti Zahid Sangharvi stated above for Ahmedpur-East region in lower Punjab, however he also suggests that government has to address the issues of rural development, take measures to eradicate economic disparity and protect the violation peasant rights which provide a context for hatred among feudal (*Ahle-Tashee*) and peasant class (Sunni).

This suggests that roots of sectarian violence might be traced to economic and political causes instead of religious ones alone, let alone of any foreign conspiracy. However this shouldn't excuse *Madaris* executive bodies to keep a check and take precautionary measures when and where needed within their system or curriculum and avoid becoming part of the problem.

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[5] *Rehmatullah Alaeh* (Main Allah shower His blessing on him)

VIII. Socio-Economic Role of Madresa Graduates

The question of Madrasa's socio-economic contribution in the society is also worth probing. Some discussion will be done on:

- Economic role of *Madresa* graduates in society,
- Employability of *Madresa* graduates,
- Influence of Law and order of society,
- Providing a Safehouse for poor children, and
- Contribution in increasing literacy rate

a) Economic role

In a contemporary sense if person is capable of adding economic value in the society through his skills, talents, competencies etc then he or she qualifies to be called as human capital, whose economic value needs to be greater, in monetary terms, then the investment put into the development of his skills and talents to qualify as human capital. In view of Smith (1776) if a person's:

> " acquisition of such talents, by the maintenance of the acquirer during his education, study, or apprenticeship, always costs a real expense, which is a capital fixed and realized, as it were, in his person. Those talents, as they make a part of his fortune, so do they likewise that of the society to which he belongs. The improved dexterity of the workman may be considered in the same light as a machine or instrument of trade which facilitates and abridges labor, and which, though it costs a certain expense, repays that expense with a profit".

A *Madresa* graduate doesn't qualify to that. A typical private corporation requires a variety of skills in the domains of marketing, management, logistics, finance, accounts, production, quality control etc. Furthermore the organizational culture and norms, its value system allows only those to fit in those who accept the same value system. A *Madresa* graduate isn't like that and his value system also doesn't makes him compatible with most organizational cultures of contemporary nature such as where free mingling of opposite genders is an organizational norm. "Headhunter says in today's job environment Madresa graduates are at a disadvantage", asserts Imtiaz (2011) while quoting various head hunters`. In the same context the need to provide Madresa students vocational training is also highlighted, Haider (2011) in one of his articles, while quoting many researchers, concludes:

> "Instead of teaching Math and English, I would recommend vocational training for all Madresa students … Pakistan needs plumbers, motor mechanics, electricians and other similar craftsmen who can demand a decent wage in the current market place."

This critique on *Madresa* graduates is coming from a value system alien to Islam, economic role of an individual as emphasized above is valued in a capitalistic order, where accumulation of wealth for pleasure and freedom maximization is considered to be the end objective of all economic activity (Ansari & Arshad, 2006); it is also considered his responsibility to do so as his higher standard of living will increase his consumption patterns which eventually give reasons for the producers to produce more, henceforth the economic engine of the society will move faster and faster, if this continues to happen.

In the same light a corporate environment is designed to encourage employees to advance in their careers for the sake of increasing levels of remuneration and status. Each of these levels promises a better then before standard of living. The top executives maintain a lifestyle to aspire the middle and lower level management so that they may work hard to earn the same standard at sometime in future. A person is bound to get entangled in such a system if he considers improving his consumption and accumulation cycle intermittently throughout his life. There is no end point to it. A *Madresa* graduate cannot be expected to become a part of such a lifestyle, simply because "unprecedented wealth creation" (Heilbroner, 2007) is not what he is trained or suppose to do; his value system inspire him to become a virtuous man instead. Consuming and accumulating as an end objective doesn't make any sense to him. Submission to 'Divine Will' instead of 'freedom maximization' is his primary concern and goal.

b) Employability

Extensive primary research is required to find out the kind of jobs acquired by *Madresa* graduates and how much they earn, however it wouldn't be wrong to assume that the vast majority of them belongs to lower economic class, and works mainly as teachers in the same *Madresa*, as an *Imam*, *Khateeb* or *Moazen* in Mosques and become teachers of Arabic or Islamiat in private of public schools etc. In view of Molana Adil Digri around 70% of graduates assume a religious role after passing out (Digri, 2011). All of these are low paying jobs from economic perspective. Evans (2008) asserts:

> "Why do parents choose a madrasah education? ... The first is employment. Critics of madrasahs are right to say that the curriculum [there] is often narrowly focused on religious subjects, although self-discipline, an important life skill, does potentially follow from the highly regulated and intense environment of an urban madrasah. A madrasah graduate is unlikely to be able to become a doctor, engineer, or a pilot … Even with a decent education, the likelihood of getting a secure job is low … A madrasah graduate, even from a primary school (maktab) is likely to be literate, placing them ahead of illiterate peers in the employment market.

of illiterate peers in the employment market. Moreover, there is an apparent market—however limited—for madrasah teachers, and parents may believe that there is an opportunity for their children to earn a livelihood from teaching at one."

Sajjad (2009) also notes while referring to various works:

"Indeed, even as graduates of secular schools are unemployed in large numbers, it is rare to find a madrasa graduate unemployed. Similarly … if a student wants to make a livelihood working in a spiritually rewarding if low-paying job, he should be admired, not condemned."

Molana Adil Digri and Mufti Zahid Sangharvi have also believe that almost 95% of *Madaris* graduates find a respectable job. Majority of them becomes an Imam of a Masjid or *Madresa* teacher. A few also advances their education and chose to become an Islamic Jurist or Mufti as well (Digri, 2011; Sangharvi, 2011).

After the brink of Islamic finance, a few who are qualified till the level of Mufti have been able to find Jobs in Islamic Banks and Takaful companies. Today this number is small however Islamic Banks and Takaful companies locally and internationally are growing at a noticeable pace (Imam & Kpodar, 2010) and has "promising growth prospects" in future as well (Akhtar, 2008). Global financial crisis has also turned attentions of many including Vatican toward acknowledging that "banks should look at the rules of Islamic finance to restore confidence amongst their clients at a time of global economic crisis" (Totaro, 2009). This has open new job prospects for *Dars-e-Nizami* (Equivalent of post graduation) and *Takhasus* (qualification necessary to become an Islamic Jurist) Graduates.

Along with that a growing number of Islamically Inspired business in all types of industries[6] and Halal food industry (Islam, 2011) is also promising in this context. At present most of the *Muftian* (plural of *Mufti* or Islamic Jurist) find their way into *Darul-Ifta*[7] of a *Madresa*

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[6] Currently two parallel movements though philosophically aligned are working for this cause. One of them is operating from Lahore by the name of *Ahya-e-Deen* led by senior scholars of Tableeghi Jamat and the other one in Karachi by the name of UBBM (Ubudiya Based Business Model) Forum led by Sheikh Hashim, CEO of Al-Khair Creative Wears. These movements comprises of numerous scholars, entrepreneurs, business professionals and top level executives from a diverse background. Educational Institutions like Ripha Center of Islamic Business (http://www.riphah.edu.pk/RCIB/tabid/178/Default.aspx) and Guidance Institute (http://www.hikmahfoundation.com/ wordpress/), and advisory services like Shariah Consultancy Services (http://scsguide.com/) and Naafay Consultancy (http://www.ciraat.com/naafey/) etc are getting an overwhelming response from business community indicating that demand for Islamic jurists (Mufti) as Shariah Advisors and teachers is most likely to be increase substantially in future.

[7] Department of *Madresa* which provides solution to various domestic or commercial problems or disputes brought by general public

(bigger ones) where they provide legal advice, decree (Fatwa) and Shariah compliant solutions to various business and family related matters. But that again is a very small percentage of graduates as well.

It is also argued that specialization courses offered in *Madresa* are intended to make the graduate expert theologian or a jurisprudent, not a doctor, engineer, or something else (Evans A. , 2008). In Muslim societies such religious experts are highly valued as they provide guidance to general public with respect to various personal, domestic and business related problems. They even provide help in resolving various marriage (divorce), inheritance or commercial disputes, sharing the load of formal court system of the country, which is already highly congested by backlog cases in Pakistan (Rehman, 2011). Mufti Abdul Manan, member of *Darul-ifta*, Darul Uloom Korangi Karachi, states that solution or *Fatawa* for around 13,000 problems and disputes are provided on yearly basis. Around 35 *Muftian* alone in Darul Uloom Korangi Karachi provides this service to general public free of charge. In Karachi the total number of these *Fatawa* goes upto 60,000 per annum (Manan, 2011). Keeping this in view it can be safely assume that in absence of *Darul-Ifta* operated within large *Madaris*, court system of Pakistan would have strained even more.

Madresa in their own perspective are doing a massive contribution to the society by preserving the value system from the onslaught of foreign values, disseminating the knowledge of Islam and Shariah (Ghazi, 2011) and perform various ritualistic duties like leading prayers in congregation, leading funeral prayers, performing Nikah ceremonies etc. Ahmad (2004) also acknowledges this social role of the clergy.

c) Influence on Law and order

It is generally assumed that religious institutions let it be a church, synagogue, Buddhist temple, *masjid* or a *Madresa*, are a source of religiosity in a society. There is significant cross-national empirical evidence available that religious influence reduces the crime rates in any particular society. The fear of punishment in hereafter restrains people from committing crime (Ellis, 1985); furthermore the moral code offer by the religion also offers deterrence against criminal behavior (Ellis & Peterson, 1996). Evans, Cullen, Dunaway & Burton (1995) has also inferred after their analysis that "participation in religious activities was a persistent and non-contingent inhibiter of adult crime". Stack & Kposowa (2006) has also inferred that religiosity and tax fraud are inversely proportional, which suggests that a religiously conscious society is likely to avoid tax frauds and fiscal deficits. Muhamad (2009) have also found Muslim students in Malaysia being less tolerant toward unethical business practices if they are more religious, he infers that more students from "religious education stream … are less tolerant toward unethical

business practices". In a theoretical paper Al-Khalifah (1994) has also inferred that "religiosity, in an Islamic context, serves as a mechanism which shields people from criminal temptation". Ali (1985) has examined the impact of religious inclination of the society, its penal code, the education system on the low crime rate which prevails in the Saudi society, he asserts that "a combination of factors seems to contribute to the very low rates of crime in Saudi Arabia including the firm and deterrent effect of Islamic criminal law, the general effect of religion and religiosity, the influence of Quranic teachings, and the Islamic educational system." Gunes (2003) in his study on university students in Turkey, a Muslim predominant country, also concludes that "religion and religiosity have important social control functions on crime through shaping attitudes of people against crime [among university students in Turkey]."

Analogously there is little or no evidence available to significantly connect *Madresa* graduates in Pakistan with crimes of various types such as drug trafficking, money laundering, forged currency, printing, extortion, murder for hire, fraud, human trafficking, corruption, black marketeering, political, violence, terrorism, and abduction for ransom. This could be so because many of these crimes are too sophisticated for a typical *Madresa* graduate, 95% of those have never seen a gun in their life even on a television, it is believed (Ghazi, 2011, p. 254). Secondly the religiosity factor also significantly reduces ones inclination toward crime as empirically shown by various researchers cited above. Keeping this in view, it is safe to hypothesize that, a *Madresa* graduates and any one directly or indirectly associated with *Madresa*, regular attendees of Mosques (which is also operated by *Madresa* graduates) and those involved in missionary organizations like *Tablighi Jamat* are less likely to involve in any criminal activity as compare to those who are illiterate or those who attend secular schools. However a comprehensive primary research is needed of similar nature cited above to factually back this insight, or reject it.

d) Safehouse for poor Children?

There is no accurate figure of Madresa enrolment in Pakistan, however it wouldn't be wrong to assume the number to be more than 2 million, among which around 1.5 million are residing at 9000 Madaris affiliated with Wafaq-ul-Madaris Al-Arabia network, which adhere to Deobandi school of thought, alone *(Jalindhari, 2011, p. 180)*. After dismissing the allegation of being a breeding ground of militancy or terrorists (discussed is detailed above), It can be argued that these Madresa are safehouses for the poor children. It is said so because "runaways, school dropouts and illiterate boys from poor and often abusive families are found to be at high risk. The main factors pushing … boys into prostitution are the need for food, clothing,

accommodation and money" *(ECPAT, 2006, p. 11)*. Food, clothing, accommodation and money are what poor students of Madresa get free of cost along with education of comparable quality and chance of getting a respectable employment after graduation. Perhaps for the same reason former President Pervez Musharaf called Madresa as the Pakistan biggest network of NGOs *(Musharraf, 2002)*.

On the other hand there have been reports on child sexual abuse incidents occurring within the premises of some Madaris in Pakistan *(Murphy, 2005; Jafferi, 2011)*. Neutrality of these media reports is also questionable. Child abuse and Molestation is an unfortunate reality in Pakistan and there has been numerous incidents reported in media every now and then *(Pakistan Today, 2011)*. Majority of these young victims are abused, molested or exploited by their acquaintances.

In a report compiled by Sahil (NGO working against child abuse in Pakistan) 81% out of 4543 abusers were acquaintances in the year 2010. Among these 3106 were family members of the victim, 22 were school teachers and 18 were identified as "Molvis" etc. From the total of 675 places of abuse, whose data was collected by Sahil, 369 were abusers place, 306 were victims place, 18 were schools, 10 were Mosques and 2 were Madresa etc *(Sahil, 2010)*. In an earlier report prepared by Sahil, out of total of 13181 abusers, 117 were "Molvis" and 101 were school teachers from the year 02' to 06', whereas only one Madresa was reported to be a where crime took place in this 4 year period *(Sahil, 2007)*. These reports have been compiled from the cases which gained a spotlight in media therefore it is believed by Sahil that these *"number of incidents do* not represent the total numbers of such incidents in Pakistan-because such issues are taboo and are not easily reported. Any attempt to quantify the issue of child sexual abuse is bound to be limited in scope" (Sahil, 2011).

In another report published by ECPAT, schools in Pakistan (Lahore and Peshawar) can be a place where children can be forced into child prostitution (Muhammad & Zafar, 2006, p. 36), furthermore the report notes that some "schools are not safe places for children. Teachers, whose role should be to protect children from abuse, can become abusers and exploiters due to poor supervision by the Education Department and the local community." (p. 37). In this report there was no mention of Madresa being a place of sexual abuse of children, on the contrary it was mentioned that various community religious leaders (who appeared in focus group discussion on the subject) "strongly felt that falling moral standards and increasing obscenity are also important factors behind boy prostitution" (p. 49).

Madaris authorities don't deny the likelihood of such cases of child abuse occurring within the premises

of Madresa boundaries or Madresa teachers being involved in such acts. Mufti Zahid Sangharvi *(2011)* has also accepted that occurrence of such unfortunate incident is possible in Madresa. He even mentioned a personal account of firing a teacher, who was accused by a student for sodomizing him, from the Madresa where he himself teaches. Even Murphy *(2005)*, in his not so neutral article, has quoted Molana Hafeez Jalindhari, head of Wifaq-ul-Madaris Al-Arabia (cited *above as well), saying "I cannot rule out isolated incidents of sex abuse at Madresa, but I reject reports* that hundreds of students are being subjected to sexual attacks at Madresa". Keeping in view the statistics documented and published by Sahil, claim of Molana Jalindhari seems correct that such are only isolated incidents. Portraying the entire institution of Madresa, where less than 5 crimes were reported to have taken place, for being involved in such a cruel act is unjustified. If we put such a label on Madresa then secular schooling system would also have to be labeled as a den of child abuse and molestation keeping in view the numbers compiled by Sahil which shows an almost equal involvement of a school teacher as compare to a religious teacher, and a significantly higher use of a school as a place of abuse as compare to a Madresa.

A school which doesn't provide accommodation to him also cannot guarantee his protection beyond school hours from the possible threat which may exist in his neighborhood or family members. On the other hand, keeping in view Sahil's statistics referred above, for a poor child a Madresa would be a safer place then his neighborhood, let alone his home; as the chance of his getting abused, molested and exploited and even killed in the process are significantly higher when he is not a resident student of a Madresa.

e) Increasing Literacy rate: Free of cost

Evans (2008) has highlighted the need of a research which explores the literacy increasing function of *Madresa* in society. It is known fact that *Madresa* provide education utterly free of cost, in fact many even bears the expense of boarding and lodging of students. Evans in the same essay notes "Even if *Madresa* do little more than make thousands of young people who would not otherwise learn to read and write, that is an educational achievement."

Ghazi (2011, pp. 91, 256, 258) even claims that the literacy rate in Pakistan has contributed significantly increased by *Madresa* because the condition in public school is not good enough to achieve this objective. This claim seems farfetched and inconsistent with the argument in the same book on page 254, which can also be backed by a research (Andrabi, Das, Khwaja, & Zajonc, 2005), that in Pakistan out of total only 2-3% students (liberal estimates) goes to *Madresa* for their primary education, and the rest goes to public or private schools.

By fraction of the total, the contribution of *Madresa* in increasing the literary rate might be small, however *Madresa* provide education free of cost at primary, secondary and even at tertiary levels. This means in the least sense the institution of *Madresa* have been doing a government's job of increasing the literacy rates in the country without using the taxpayer's money. Furthermore Ghazi (2011, p. 89) has also reported that out of 2.1 million students in registered *Madresa* around the country 0.9 million are female. If this is true then it is sufficient to refute the allegation of biasness religious circles has toward the education of female, as well.

It would be interesting to find out how a *Madresa* spends on teaching one child in comparison to a conventional welfare school operated in Pakistan by any NGO or a public school. Some authors have done some number crunching to work out the breakeven cost of educating a child in some parts in Pakistan. The average cost of private school per month per student was Rs. 326.3 and Rs. 191.2 in government schools in Lahore Pakistan; furthermore pupil-teacher ratio is 25.2 in private schools and 42.5 in government schools (Alderman, Orazem, & Paterno, 2001). In another paper by it was noted that "private schools in Lahore, Pakistan functioned in 1995 with monthly tuition under 100 rupees. The presumption was that households in Quetta, a poorer city than Lahore, could afford at most 50 rupees per month tuition …" (Alderman, Kim, & Orazem, 2003, p. 269). This was more than ten years back; today the cost would have increased manifolds keeping in view on high inflation rate persistent particularly during last four years.

TCF foundation, which is one of the largest non-profit education provider in Pakistan, spent Rs. 735.5 million (2010, p. 27) in 2010 on the management of 730 schools across Pakistan (this expense includes salaries of teachers to marketing for fund raising activities). The total students studying in these schools are 102,000. It is also mentioned that around 92% of the total expenditure is on providing education to students. If this true then roughly Rs. 7206 per student per year is spent by TCF on the education of one child. That's around Rs. 600 per month per student. TCF is also not 100% free like a *Madresa*, however people can "pay-as-they-afford" and "… up 95% scholarships are provided to all deserving students. Books and uniforms are also heavily subsidized and provided on easy installments." (2010, p. 17).

According to a rough estimate, based on the macro level statistics in the Economic Survey of 2009-10 available on Ministry of Finance official website (www.finance.gov.pk) the total expenditure by government on maintain the education system was Rs. 215 Billion, in which roughly 29.6 million students were enrolled in all levels of education (roughly 80% of which were undergraduate students). This also gives us a crude estimate of government expenditure of Rs. 600

per student per month in the fiscal year of 2009-10. It is interesting to note that TCF foundation spends almost the same amount as government of Pakistan spends on education; however the quality of the education and infrastructure maintained by both is different by miles, proof of which can be easily found just by walking in any of the schools operated by both parties.

On the other hand *Madresa* named Jamia Ashrafia in Mankot near Multan claims to spend Rs. 1,110 on one student per month which includes the amount spent on his accommodation as well. Out of 600, 450 are resident students in this *Madresa*. The maximum education which a student receives is till Dora-e-Hadith (equivalent to Masters Degree from conventional university). Molana Adil Digri, head of Jamia Farooqia Digri, provided monthly expenditure per student of around 30 *Madresa* of interior Sindh, along with maximum level of education provided in there (see Appendix-A). Education provided ranges from Hifz (equivalent to 5th Grade in conventional schools), Saniya (Matriculation), Rabia (Intermediate or collage education), Sadesa (equivalent to bachelors), Almia or Dars-e-Niazmi (equivalent to post graduation).

All of these *Madaris* provides accommodation to the students. The average of this expenditure is Rs. 957[8], which includes the cost of education (books and salary of teachers), food, medicine (when required), utility expense etc. The amortization cost of the building isn't included in this expense as it is the property of Waqf (endowment) established by the founder(s) of the *Madresa*.

According to Molana Adil Digri, as per a thumb rule, around one third of the said expenditure goes in education and the rest goes to manage the accommodation of students. If this is so then on average a *Madresa* in Interior Sindh is spending roughly Rs. 319 on student's education on monthly basis, and this number is even lower in interior Baluchistan and Khyber Pakhtoonkhwa (Digri, 2011).

According to a conservative estimate around 2 million studies in *Madaris* today, multiplying it with students monthly expense status above we get Rs. 640 million approximately which would be spent by *Madaris* to educate 2 million of its students.

This is almost half of the amount spent by TCF foundation or Govt. of Pakistan, who would consume Rs. 1.2 Billion to provide education to the same number of students. Despite spending this much, the parents would have to bear expense of uniforms, books, transportation (as almost all TCF or public schools doesn't provide accommodation to students) etc to a certain degree depending upon the subsidy offered by their respective school.

The quality of education provided in these *Madresa* is also equivalent or better than conventional

or public schools as it is often observed that pass outs of *Madresa*, appearing in equivalent examination systems like federal board, secure top positions in primary, secondary and tertiary levels of education (Ghazi, 2011, p. 73). This claim doesn't seem much farfetched keeping in view the quality of public schooling system in Pakistan (PETF, 2011).

IX. Conclusion

An attempt has been made to explore the impact of *Madaris* on the society, which these days are under the spot light due to their alleged involvement in terrorist activity. Investigation done by various researchers, cited in the paper, proves otherwise. Instead of that various social benefits of the institutions has been also highlighted by various authors, details of which has already been mentioned above. Some of the direct benefits include from providing education free of cost, providing a safe house for millions of poor children who otherwise might risk ending up as child labor (Bhatti, 2010), if he is lucky, or child prostitute (ECPAT, 2006; IRIN, 2010), at worst.

A part from that without charging any fee *Madaris* develop individuals with significantly higher chance of getting employed. Being a source of religiosity in the society, it can be also inferred that influence of *Madaris* help reduce crimes in the society. However in Pakistan and Sub-continent, it is argued by some authors that *Madaris* has been a source of inciting sectarian violence, though a critical review of this accusation suggests that this phenomenon is not endorsed by mainstream *Madresa* network and role of foreign hand also cannot be ignored. In short with a little effort internal reforms can help eradicate the weakness of reacting to the economic and political injustice prevalent in some part of the country which provides a pretext of sectarian conflicts, as discussed. Keeping in view the magnitude of the situation, it should be the prime responsibility of the government to provide the economic and political rights to the vulnerable class so that suppressed ones do not use religion to justify their violent reaction to the injustice done to them by effluent feudal class.

Publically available data was analyzed to compare the amount spent on each student by TCF or government of Pakistan with that of *Madaris*. A sample of around 32 *Madaris* across the Sindh was taken, in which monthly expense per student to educate a child was found to be around 50% less than that of a TCF school (on avg) or a general estimate of expenditure done by Govt. of Pakistan. Over and above *Madaris* doesn't charge a penny from their students and even provide accommodation, on the contrary TCF and public schools are not hundred percent free, students have to purchase text and note books in most cases, take tuitions and even have to spend on daily traveling

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[8] Min = 700, Max = 1300

provide accommodation, on the contrary TCF and public schools are not hundred percent free, students have to purchase text and note books in most cases, take tuitions and even have to spend on daily traveling which a *Madresa* resident student doesn't have to worry about.

The conclusions drawn on this paper are based on limited or secondary data. More primary data on Madresa expenditure should be taken from the entire country with provincial, rural and urban categorization to increase the confidence level of the conclusion on economic efficiency. Furthermore the criminal records of

Pakistan needs to be analyzed in details to find out the academic profiles of the incarcerated population and that how many of them are *Madresa* pass-outs, to feel more confident the propensity of *Madresa* pass-outs to become a criminal. Also more primary data is required to increase the confidence level of inference about the employability of *Madresa* graduates as well. Information regarding how a Madresa handles any corrupt elements within itself with some case-studies is also required to understand the seriousness which exists to the institution clean black-sheeps.

APPENDIX-A

Name of *Madresa*	Location	No. of Students	Maximum Education	Total Expense per Student (Rs.)	Monthly	Educational Expense
Inamul Uloom	No'kot	200	Rabia	1,200		400
Ibrarul Uloom	No'kot	50	Hifz	1,000		333
Farooqia	Jhandoo	70	Hifz	800		267
Baitul Uloom	Tando Jan Mohammad	60	Saniya	800		267
Noorul Islam Hammadia	Tando Jan Mohammad	65	Rabia	900		300
Isha'at Al-Quran	Digri	40	Hifz	700		233
Hasan Ibn-e-Ali	Digri	100	Hifz	700		233
Jamia Farooqia	Digri	50	Almia	1,000		333
Jamia Ahsanul *Madaris*	Digri	40	Saniya	1,000		333
Mutla'al Uloom	Digri	200	Almia	800		267
Jamia Omar	Kot Ghulam Mohammad	100	Almia	1,200		400
Ashraful *Madaris*	Kot Ghulam Mohammad	150	Rabia	1,200		400
Siddique Akbar	Jhalori	150	Saniya	800		267
Darul Uloom	Mir Pur Khas	150	Sadasa	1,200		400
Darul Uloom Amna	Mir Pur Khas	150	Sadasa	1,200		400
Razul Quran	Mir Pur Khas	50	Rabia	900		300
Maftahul Uloom	Mir Pur Khas	100	Almia	900		300
Tajweedul Quran	Mir Pur Khas	80	Hifz	800		267
Tajweedul Quran Husna	Mir Pur Khas	70	Hifz	800		267
Khalid bin Waleed	Mir Pur Khas	80	Rabia	800		267
Isha'at Al-Quran	Mir wah	100	Hifz	900		300
Taleem Al-Islam	Tando Ghulam Ali	250	Sadasa	900		300
Darul Uloom	Tando Ghulam Ali	50	Hifz	800		267
Siddique Akbar	Tando Ghulam Ali	40	Hifz	800		267
Siddique Akbar	Tando Ilah Yar	400	Almia	1,000		333
Darul Uloom	Tando Ilah Yar	300	Almia	1,000		333
Madinatul Uloom	Tando Adam	350	Almia	1,200		400

Darul Uloom Hasnia	Shahdad Pur	1400	Almia	1,200	400
Jamia Arabia Muftaul Uloom	Haiderabad	1000	Almia	1,300	433
Darul Fuyooz Al-Hashmia	Sajawal	700	Almia	900	300
Average				957	319

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"
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Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than $1.4 \times 10\text{-}3$ m3, or 4 mm somewhat than $4 \times 10\text{-}3$ m. Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

Structure

All manuscripts submitted to Global Journals Inc. (US), ought to include:

Title: The title page must carry an instructive title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) wherever the work was carried out. The full postal address in addition with the e-mail address of related author must be given. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining and indexing.

Abstract, used in Original Papers and Reviews:

Optimizing Abstract for Search Engines

Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy and planning a list of possible keywords and phrases to try.

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art.A few tips for deciding as strategically as possible about keyword search:

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

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

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

Acknowledgements: Please make these as concise as possible.

References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

References to information on the World Wide Web can be given, but only if the information is available without charge to readers on an official site. Wikipedia and Similar websites are not allowed where anyone can change the information. Authors will be asked to make available electronic copies of the cited information for inclusion on the Global Journals Inc. (US) homepage at the judgment of the Editorial Board.

The Editorial Board and Global Journals Inc. (US) recommend that, citation of online-published papers and other material should be done via a DOI (digital object identifier). If an author cites anything, which does not have a DOI, they run the risk of the cited material not being noticeable.

The Editorial Board and Global Journals Inc. (US) recommend the use of a tool such as Reference Manager for reference management and formatting.

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Tables: Tables should be few in number, cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g. Table 4, a self-explanatory caption and be on a separate sheet. Vertical lines should not be used.

Figures: Figures are supposed to be submitted as separate files. Always take in a citation in the text for each figure using Arabic numbers, e.g. Fig. 4. Artwork must be submitted online in electronic form by e-mailing them.

Preparation of Electronic Figures for Publication

Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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Before start writing a good quality Computer Science Research Paper, let us first understand what is Computer Science Research Paper? So, Computer Science Research Paper is the paper which is written by professionals or scientists who are associated to Computer Science and Information Technology, or doing research study in these areas. If you are novel to this field then you can consult about this field from your supervisor or guide.

TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

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2. Evaluators are human: First thing to remember that evaluators are also human being. They are not only meant for rejecting a paper. They are here to evaluate your paper. So, present your Best.

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16. Use proper verb tense: Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

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21. Arrangement of information: Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

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24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

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33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

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Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.

Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

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Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

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- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

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· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

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Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.

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The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

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- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including <u>definite statistics</u> - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

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The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

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- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.

- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
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- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

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- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

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- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
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- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

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- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
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The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
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- Not at all, take in raw data or intermediate calculations in a research manuscript.

- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

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- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
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- In spite of position, each table must be titled, numbered one after the other and complete with heading
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- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
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Approach:

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Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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