Welcome from the Editor


This is our fourth year to publish academic issues related to the social sciences. Previously, we have only published issues in the business disciplines. Expanding to include the social sciences has been very interesting. In academics, we have a potpourri of interesting topics for our students.

All articles that appear in this volume of the *International Journal of Economics and Social Science* have been recommended for publication by the Reviewers/Advisory Editors, using a double, blind peer review process. Personal thanks are extended to the Reviewers/Advisory Editors for all their hard work and dedication to the Journal. Without their work, the publication of this Journal would be impossible.

This is my second year as Editor-in-Chief, and I wish to express my sincere thanks and appreciation for all the support, encouragement, assistance and advice throughout this year. The publishing of the journal is an intense educational experience which I continue to enjoy.

Congratulations to all our authors. I extend a hearty invitation to submit your manuscripts for future issues of Mustang Journals!

Please also consider joining us at one of our friendly conferences. Our next conference is in October, 2015 in Dallas. I hope to see you then.

Dr. Nicholas Jewczyn
Editor in Chief
*International Journal of Economics and Social Science*
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**Volume 5 (Spring, 2015)**

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The Conference is affiliated with our six peer-reviewed journals:
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Exploration/Exploitation during Development: Linking CEO Behavior & Poor Outcomes in SME’s

Bree Morrison & Ranjna Patel, Bethune-Cookman University
Rethinking the Brain: An Applied Emotional Intelligence Model using expanded choice sets for improved decision making

Nashville, Fall 2014 Conference:

Wilburn Lane, Christopher Manner, Union University
Who Tends to Forward Viral Advertising Videos? The Effect of Demographics, Social Media Use, and Personality on the Intent to Forward Viral Video Ads

Hui “Harry” Xia, University of St. Joseph (Macao)
Coping with Emerging and Advanced Market Risks

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Brand Equity Valuation for Prospective Candidates in the 2016 U.S. Presidential Race
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Oklahoma City, Fall, 2012 Conference:

Kusum Singh, LeMoyne-Owen College
Paper: Distance to the Border: The Impact of Own and Neighboring States’ Sales Tax Rates on County Retail Activity

Daniel Adrian Doss, Russ Henley & David McElreath, University of West Alabama

Ralph Bourret & Dana Roark, Northwest Oklahoma State University
Paper: Are Routine Retiring CEOs More Closely Monitored in their Last Year?
COPING WITH EMERGING AND ADVANCED MARKET RISKS

Harry Xia*

This study recognizes that there is intense competition among emerging markets and against advanced economies to capture their share of the global economy. Such competition has mitigated the risks, as discussed, of currency war, inflation targeting, state capitalism and economic nationalism. Internationally, lower growth could focus leaders on increased co-operation and a new push for liberalization as possible solutions explored in this study to deal with such risks. Further discussion addresses non-tariff trade barriers which could bring new consensus to global trade talks and yield bigger benefits down the road.

Overview

For the past six years or so, advanced economies have been exposing international investors to a lot of risk, from the U.S. economy trembling over its fiscal cliff and the EU struggling to control the eurozone crisis, to Japan seemingly sunk into permanent stagnation. Hence, it would be easy to conclude that the biggest global risks, as of 2013, would come from these advanced economies.

Yet, that’s not what Eurasia, a political risk consultancy group argues. In its predictions for 20131, the group puts emerging markets at the top of their risk rankings. That’s because, they argued, the advanced economies have proved in recent years that they can manage crises. Conversely, there are several risks suggesting emerging markets will likely struggle to cope with the world’s growing political pressures. Eurasia argues that

“But…with an absence of global leadership and geopolitics very much “in play,” everyone will face more volatility. That’s going to prove a much bigger problem for emerging markets than the developed world. In 2013, the first true post-financial crisis year, we’ll start to see that more clearly.”

People tend to think of emerging markets—including the so-called BRIC nations of Brazil, Russia, India and China—as immature states in which political factors matter at least as much as economic fundamentals for the performance of markets.

It was even before the recent global financial crisis that growth of emerging markets had shaken the foundations of faith in free markets, which appeared to have fully and finally established the dominance of the liberal economic model tested by the past success of advanced economies with its fundamental components of private wealth, private investment, and private enterprise. Figure1 illustrates the significant growth these regions have experienced in the past decade or so.

* Dr. Harry Xia, Faculty of Administration and Leadership, University of Saint Joseph, Macau. Email: harry.xia@usj.edu.mo


2 Ibidem.
Emerging markets led by BRIC have demonstrated stronger growth than the advanced economies. To combat the economic and social challenges surfaced through the global financial recession, both advanced and emerging economies have injected politics and political motivations into the performance of global markets on a scale we haven’t seen in decades. Massive state interventions, including currency rate manipulation, inflation targeting, state capitalism and economic nationalism in certain areas, have been accelerated in markets as governments and central banks around the world try to stimulate growth and rescue vulnerable domestic industries and companies.

However, such a shift doesn’t guarantee a panacea for all economic problems. Along with its own risks and intensified confrontation, emerging markets’ most tumultuous growth model seems to have more or less reached a turning point. Growth rates in all the BRICs have dropped while U.S. and EU are facing possible secular stagnation, which calls for a more thorough search for better measures and solutions.

1 Currency Rate

Currency war, also known as competitive devaluation of currency, is a term raised as the alarm by Brazil’s Finance Minister Guido Mantega to describe the 2010 effort by the U.S. and China to have the lowest value of their currencies. The rationale behind a currency war is really quite simple. By devaluing one's currency it makes exports more competitive, giving that individual country an edge in capturing a greater share of global trade, therefore, boosting its economy. Greater exports mean employing more workers and therefore helping improve economic growth rates, even at the eventual cost of inflation and unrest.

The U.S. allows its currency, the dollar, to devalue by expansionary fiscal and monetary policies. It's doing this through increasing spending, thereby increasing the debt, and by keeping the Fed funds rate at virtually zero, increasing credit and the money supply. More importantly,

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through “quantitative easing” (QE), it has been printing money to buy bonds, with its peak at $85 billion a month.

China tries to keep its currency low by pegging it to the dollar, along with a basket of other currencies. It keeps the peg by buying U.S. Treasuries, which limits the supply of dollars, thereby strengthening it. This keeps Chinese yuan low by comparison. More recently, the yuan has taken a violent turn toward devaluation against the dollar since February 2014. Obviously, both U.S. and China were able to benefit from currency rate manipulation to secure their leading positions in international trade.

According to the World Trade Organization (WTO) International Trade Statistics 2013 released 24 October 2013, and as depicted in Figure2, the U.S. was the world’s biggest trader in merchandise by then\(^5\), with imports and exports totaling US$ 3,881 billion dollars in 2012. Its trade deficit amounts to US$ 790 billion dollars, 4.9 percent of its GDP. China followed closely behind the U.S., with merchandise trade totaling US$ 3,867 billion dollars in 2012. China’s trade surplus was US$ 230 billion dollars, or 2.8 percent of its GDP.

![Figure 2](image)

**Figure 2 – Leading export and import traders of 2012. Sources: International Trade Statistics 2013 (WTO)**

Through manipulation of currency rate, devaluation is also used to cut real debt levels by reducing the purchasing power of a nation’s debt held by foreign investors, which works especially well for the U.S. But such currency rate manipulation has invited destructive retaliation in the form of a quid pro quo currency war among the world’s largest economies.

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\(^5\) China replaced the United States to become the world’s largest merchandise trader in 2013. Data from the US Commerce Department showed on Feb 6, 2014 that the US’ combined exports and imports stood at $3.91 trillion in 2013, about $250 billion less than China’s.
A joint statement issued by the government and the Bank of Japan (BOJ) in January 2013 stated that the central bank would adopt a 2 percent inflation target. Later on, Haruhiko Kuroda, the BOJ’s governor announced the BOJ’s boldest attempt so far to stimulate Japan’s economy and end years of deflation. The bank intends to double the amount of money in circulation by buying about ¥13 trillion yens in financial assets, including some ¥2 trillion yens in government bonds, every month as long as necessary. BOJ’s effort together with the months of anticipation that preceded it has knocked the yen down sharply against the dollar and other major currencies, as shown in Figure3, and sparked a rally in Japanese shares. But it has also further reignited fears of currency tensions around the globe.

![Figure3](image-url)  
**Figure3 – US dollar exchange rates against currencies of selected countries, January 2005-March 2014. Indices of US dollars per unit of national currency, 1 January 2005 = 100.**

*Sources: Federal Reserve Bank of St. Louis.*

The EU made its move in 2013, to boost its exports and fight deflation. The European Central Bank (ECB), after cutting its policy rate to 0.5 percent in May, lowered its rate further to 0.25 percent on November 7, 2013. This immediately drove down the euro to dollar conversion rate to $1.37 dollars.

Brazil and other emerging market countries are concerned because the currency wars are driving their currencies higher, by comparison. This raises the price of commodities, such as oil, copper and iron, their primary exports. This makes emerging market countries less competitive, slowing their economic growth.
In fact, India's new central bank governor, Raghuram Rajan, has criticized the U.S. and others involved in currency wars that they are exporting their inflation to the emerging market economies.

However, while condemning U.S. and currency wars, BRICS, except for China, had their currencies devalued against the US dollar after the financial crisis.

In currency wars, exchange rate manipulation can be accomplished in several ways:

- **Direct Intervention** – Adopted by the People’s Bank of China (PBOC) and BOJ, in which a country can sell its own currency in order to buy foreign currencies, resulting in a direct devaluation of its currency on a relative basis.
- **Quantitative Easing** – Taken by U.S. Federal Reserve, in which a country can use its own currency to buy its own sovereign debt, and ultimately depreciate its currency.
- **Interest Rates** – Exercised by BOJ, Federal Reserve and European Central Bank (ECB), in which a country can lower its interest rates and thereby create downward pressure on its currency, since it becomes cheaper to borrow against others.
- **Threats of Devaluation** – Used by U.S. towards China, in which a country can threaten to take any of the above actions along with other measures and occasionally achieve the desired devaluation in the open market.

An important episode of currency war occurred in the 1930s. As countries abandoned the Gold Standard during the Great Depression, they used currency devaluations to stimulate their economies. Since this effectively pushes unemployment overseas, trading partners quickly retaliated with their own devaluations. The period is considered to have been an adverse situation for all concerned as unpredictable changes in exchange rates reduced overall international trade.

### 1.1 Control the Currency Rate and Capital Flows

To avoid a repeat of such painful history and damage to international trade caused by ongoing currency wars, Pascal Lamy, former Director-General of the World Trade Organization, pointed out that “the international community needs to make headway on the issue of reform of the international monetary system. Unilateral attempts to change or retain the status quo will not work.” in the opening the WTO Seminar on Exchange Rates and Trade on 27 March 2012.

The key challenge to the rest of the world is the U.S. policy of renewed quantitative easing, which gives both potential benefits and increasing pressure to other countries. Among the benefits would be to help push back the risk of deflation that has been observed in much of the advanced world. Avoiding stagnation or renewed recession in advanced economies, in turn, would be a major benefit for emerging markets in world trade, whose economic cycles remain closely correlated with those in the developed world. Another major plus would be to greatly reduce the threat of protectionism, particularly in the U.S. The most plausible scenario for advanced country protectionism would be precisely a long period of deflation and economic stagnation, as seen in the 1930s.

Based on our observations, the adjustment issue has been relatively easier in other advanced economies (especially countries within the EU) that are also experiencing high unemployment and are threatened by deflation. In this situation, there could be a rationale not so much for a currency war as for a coordinated monetary easing across developed countries to help

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fend off deflation while also reducing the risk of big exchange rate realignments among the major developed economies\(^8\).

In contrast, it is more complicated for most emerging markets, such as China, that experiences relatively stronger growth and higher inflationary rather than deflationary pressures. In this situation, the U.S. easing poses more challenging policy choices by creating added stimulus for capital flows to emerging markets, flows that have already been surging since 2010, attracted both by high short-term interest rate spreads and the stronger long-term growth prospects of emerging economies.

To put currency rate and capital flows under reasonable control with the increasing pressure from U.S. monetary easing, there are three approaches suggested by the World Bank experts\(^9\).

First is to maintain a fixed exchange rate peg and an open capital account while giving up control of monetary policy as an independent policy instrument. This approach tends to suit smaller economies such as Hong Kong that is highly integrated both economically and institutionally with the larger economy to whose exchange rate they are pegged. It is less appropriate for larger developing countries, such as China, whose domestic cycles may not be at the same pace as the economy (U.S.) to which they are pegged. In this situation, importing loose U.S. monetary policy will tend to stimulate excessive domestic money growth, inflation in the goods market, and speculative bubbles in asset markets. By taking this approach, China’s adjustment will occur through high inflation, the highest one among all major economies in Figure 4, and appreciation of the real exchange rate. Countries may attempt to avert some of these consequences by issuing domestic bonds to offset balance of payments inflows. But this course also has disadvantages, for example, fiscal costs and a tendency to attract yet more capital inflows by pushing up local bond yields.

Figure 4 – Relative consumer price indices, 2010=100. Sources: OECD Main Economic Indicators (MEI) database.

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Second is to pursue independent monetary policies that target their own inflation and activity levels, combined with relatively flexible exchange rates and open capital accounts, which a growing number of emerging economies have been moving toward in the aftermath of the financial crises of the late 1990s. Given rising inflation pressures, the appropriate monetary policy in many emerging markets at present would likely be to tighten, which will, however, attract even more capital inflows and further appreciate exchange rates. Sustained appreciation raises concerns about loss of export competitiveness and could lead to contentious structural adjustments in the real economy. So countries may also fear that large appreciations will undercut their long-term growth potential. A standard recommendation for countries in this position is to tighten fiscal policy (increasing the rate of taxation and / or cutting government spending) as a way of reducing upward pressure on local interest rates and the exchange rate.

Third is to combine an independent monetary policy with a fixed exchange rate by closing the capital account through capital controls. Such controls may sometimes be a useful temporary expedient, but they are not unproblematic, especially in the longer term.

Figure 5 lists some of the main types of capital controls and some evidence of their varying effectiveness. Foreign exchange taxes can be effective in reducing the volume of flows in the short term, and can alter the composition of flows toward longer-term maturities. Unremunerated reserve requirements can also be effective in lengthening the maturity structure of inflows, but their effectiveness diminishes over time. There is some evidence that prudential measures that include some form of capital control (such as a limit on bank external borrowing) may be effective in reducing the volume of capital inflows.

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<th>Types of capital controls</th>
<th>Volume of inflows</th>
<th>Composition of inflows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign exchange tax</td>
<td>Can somewhat reduce the volume in the short term.</td>
<td>Can alter the composition of inflows toward longer-term maturities.</td>
</tr>
<tr>
<td>Unremunerated Reserve Requirements (URRs)</td>
<td>Typically accompanied by other measures</td>
<td>Have been effectively applied in reducing short-term inflows in overall inflows, but their effect diminishes over time.</td>
</tr>
<tr>
<td>Prudential measures with an element of capital control</td>
<td>Some evidence that prudential type controls can be effective in reducing capital inflows.</td>
<td>Effectiveness depends largely on existence of other controls in the country.</td>
</tr>
<tr>
<td>Administrative controls: These are sometimes used in conjunction with URRs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5 – Effectiveness of Capital Control Measures

In practice, most emerging economies combine the three in varying proportions, achieving, for example, a certain degree of monetary autonomy combined with a “managed” flexible exchange rate.

It is interesting to observe two major emerging economies as points on this continuum. Brazil is an example of flexible exchange rates, independent monetary policy and high international financial integration, which is now experiencing a fluctuation in its exchange rate, adding pressure to its competitiveness. In addition, a rising current account deficit is raising concerns about the risk of a future crisis. Under such circumstances, it is plausible for the policy makers to turn to a combination of exchange market intervention and capital flow controls to try to temper or smooth the pace of its currency appreciation. More importantly, Brazil may need to tighten fiscal policy to reduce incentives for capital inflows. Strengthening macro-prudential and financial regulation as well as developing capital markets can help reduce the risk of a build-up


in financial fragility and improve the efficiency of capital allocation, along with better safety nets to reduce the costs of transitional unemployment. Many of these reforms will take time to implement.

China, another member of BRIC, represents a different point with limited exchange rate flexibility, backed by heavy exchange market intervention, and some capital controls. China is also experiencing the high inflation pressures in goods and asset markets predicted by the first approach offered by WTO. Chinese policy makers may understand and appreciate the potential macro-management benefits of greater exchange rate flexibility and more monetary autonomy. But the macroeconomic management has also become intertwined with deep structural imbalances—high investment relative to consumption, industry relative to services, corporate profits relative to wages—each bolstered by vested interests and a complex political economy.

Authorities are also concerned about the size and duration of transitional unemployment caused by a downsizing of the tradable goods and export sectors, which may become a threat to the social stability ranking high on their priority list. Thus the move toward macroeconomic policy reform and more exchange rate flexibility in China, though inevitable, is likely to be prolonged.

To echo what Lamy said at the WTO seminar, reform of the international monetary system to cease currency war and put capital flow under control takes time. Joint efforts, from advanced and from emerging economies, are needed in global platforms such as the G-20 and the World Bank to coordinate advanced countries macro-prudential and financial sector regulatory reform that can help reduce the risk and improve the quality of capital flows to emerging markets. Such process would not necessarily lead to radical accomplishment, but rather incremental action, backed by sound commitment to momentous progress over the medium term.

2 Inflation Targeting

Inflation, a rise in the overall level of prices, which erodes savings, lowers purchasing power, discourages investment, inhibits growth, fuels capital outflow, and, in extreme cases, provokes social and political unrest. People view it negatively and governments consequently have tried to battle inflation by adopting conservative and sustainable fiscal and monetary policies.

Because interest rates and inflation rates tend to move in opposite directions, central bankers have adopted “inflation targeting” to control the general rise in the price level based on such understanding of the links from the monetary policy instruments of interest rates to inflation. By applying inflation targeting, a central bank estimates and makes public a projected, or “target”, inflation rate and then attempts to use interest rate changes to steer actual inflation toward that target. Through such “transmission mechanism”, the likely actions of a central bank will take to rise or lower interest rates become more transparent, which leads to an increase of economic stability.

Inflation targeting, as a monetary-policy strategy, was introduced in New Zealand in 1990. It has been very successful in stabilizing both inflation and the real economy. As of 2010, as shown in Figure 6, it has been adopted by almost 30 advanced and emerging economies.

<table>
<thead>
<tr>
<th>Country</th>
<th>Inflation targeting adoption date</th>
<th>Inflation rate at adoption date (percent)</th>
<th>2010 end-of-year inflation (percent)</th>
<th>Target inflation rate (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand</td>
<td>1990</td>
<td>3.30</td>
<td>4.03</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Canada</td>
<td>1991</td>
<td>6.90</td>
<td>2.23</td>
<td>2 +/- 1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1992</td>
<td>4.00</td>
<td>3.39</td>
<td>2</td>
</tr>
<tr>
<td>Australia</td>
<td>1993</td>
<td>2.00</td>
<td>2.65</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Sweden</td>
<td>1993</td>
<td>1.80</td>
<td>2.10</td>
<td>2</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1997</td>
<td>6.80</td>
<td>2.00</td>
<td>3 +/- 1</td>
</tr>
<tr>
<td>Israel</td>
<td>1997</td>
<td>8.10</td>
<td>2.62</td>
<td>2 +/- 1</td>
</tr>
<tr>
<td>Poland</td>
<td>1998</td>
<td>10.60</td>
<td>3.10</td>
<td>2.5 +/- 1</td>
</tr>
<tr>
<td>Brazil</td>
<td>1999</td>
<td>3.30</td>
<td>5.91</td>
<td>4.5 +/- 1</td>
</tr>
<tr>
<td>Chile</td>
<td>1999</td>
<td>3.20</td>
<td>2.97</td>
<td>3 +/- 1</td>
</tr>
<tr>
<td>Colombia</td>
<td>1999</td>
<td>9.30</td>
<td>3.17</td>
<td>2 - 4</td>
</tr>
<tr>
<td>South Africa</td>
<td>2000</td>
<td>2.60</td>
<td>3.50</td>
<td>3 - 6</td>
</tr>
<tr>
<td>Thailand</td>
<td>2000</td>
<td>0.80</td>
<td>3.05</td>
<td>0.5 - 3</td>
</tr>
<tr>
<td>Hungary</td>
<td>2001</td>
<td>10.80</td>
<td>4.20</td>
<td>3 +/- 1</td>
</tr>
<tr>
<td>Mexico</td>
<td>2001</td>
<td>9.00</td>
<td>4.40</td>
<td>3 +/- 1</td>
</tr>
<tr>
<td>Iceland</td>
<td>2001</td>
<td>4.10</td>
<td>2.37</td>
<td>2.5 +/- 1.5</td>
</tr>
<tr>
<td>Korea, Republic of</td>
<td>2001</td>
<td>2.90</td>
<td>3.51</td>
<td>3 +/- 1</td>
</tr>
<tr>
<td>Country</td>
<td>Year</td>
<td>Inflation Target</td>
<td>Inflation Forecast</td>
<td>±/-%</td>
</tr>
<tr>
<td>-----------</td>
<td>------</td>
<td>------------------</td>
<td>--------------------</td>
<td>------</td>
</tr>
<tr>
<td>Norway</td>
<td>2001</td>
<td>3.60</td>
<td>2.76</td>
<td>2.5</td>
</tr>
<tr>
<td>Peru</td>
<td>2002</td>
<td>–0.10</td>
<td>2.08</td>
<td>2.0</td>
</tr>
<tr>
<td>Philippines</td>
<td>2002</td>
<td>4.50</td>
<td>3.00</td>
<td>4.5</td>
</tr>
<tr>
<td>Guatemala</td>
<td>2005</td>
<td>9.20</td>
<td>5.39</td>
<td>5.5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2005</td>
<td>7.40</td>
<td>6.96</td>
<td>5.0</td>
</tr>
<tr>
<td>Romania</td>
<td>2005</td>
<td>9.30</td>
<td>8.00</td>
<td>3.0</td>
</tr>
<tr>
<td>Serbia</td>
<td>2006</td>
<td>10.80</td>
<td>10.29</td>
<td>4.0</td>
</tr>
<tr>
<td>Turkey</td>
<td>2006</td>
<td>7.70</td>
<td>6.40</td>
<td>5.5</td>
</tr>
<tr>
<td>Armenia</td>
<td>2006</td>
<td>5.20</td>
<td>9.35</td>
<td>4.5</td>
</tr>
<tr>
<td>Ghana</td>
<td>2007</td>
<td>10.50</td>
<td>8.58</td>
<td>8.5</td>
</tr>
<tr>
<td>Albania</td>
<td>2009</td>
<td>3.70</td>
<td>3.40</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Figure 6 – Summary of Central Banks using inflation targeting to control inflation.**

Sources: Hammond, 2011; Roger, 2010; and IMF staff calculations.

Inflation targeting is characterized by (1) an announced numerical inflation target, (2) an implementation of monetary policy that gives a major role to an inflation forecast and has been called forecast targeting, and (3) a high degree of transparency and accountability. A major advantage of inflation targeting is that it combines elements of both “rules” and “discretion” in monetary policy. This “constrained discretion” framework combines two distinct elements: a precise numerical target for inflation in the medium term and a response to economic shocks in the short term.

### 2.1 Inflation Targeting with Advanced Economies

There are a number of central banks in more advanced economies—including the European Central Bank (ECB), the U.S. Federal Reserve (Fed), the Bank of Japan (BOJ), and the Swiss National Bank—that have adopted many of the main elements of inflation targeting, and several others are moving toward it. Although these central banks are committed to achieving low inflation, they do not announce explicit numerical targets or have other objectives, such as promoting maximum employment and moderate long-term interest rates, in addition to stable prices.

In popular perception, and in their own minds, central bankers were satisfied with inflation targeting as an effective tool to squeeze high inflation out of their economies. Their

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credibility is based on keeping inflation down and who therefore always must be on guard in case prices start to soar.

This view is dangerously outdated after the financial recession. The biggest challenge facing the advanced economies’ central banks today is that inflation is too low! After rebounding during the first two years of the recovery due to U.S.’s quantitative easing and loosening monetary policy of other advanced economies, inflation in developed markets has drifted lower since mid-2011 and generally stands below central bank targets, as depicted in Figure 7. Given considerable slack in developed economies, however, inflation may drop further.

Figure 7 – CPI Inflation of U.S., eurozone and Japan from Jan. 2000 to Nov. 2013 (percent, year-on-year). Sources: Bloomberg & QNB Group Forecasts.

The most obvious danger of such low inflation is the risk of slipping into outright deflation, in which prices persistently fall. As Japan’s experience in the past two decades shows, deflation is both deeply damaging and hard to escape in weak economies with high debts. Since loans are fixed in nominal terms, falling wages and prices increase the burden of paying them. Once people expect prices to keep falling, they put off buying things, weakening the economy further.\textsuperscript{15}

This is particularly severe in the eurozone, where growth averaged -0.7 percent in the first three quarters of 2013 and annual CPI inflation fell from 2.2 percent at the end of 2012 to 0.9 percent in the year to November 2013 (see Figure 7). At the same time the euro has appreciated 8.2 percent in 2013 against a weighted basket of currencies, which is likely to be holding back inflation and growth. The ECB already cut its main policy rate from 0.5 percent to 0.25 percent in November 2013, leaving little room for further interest rate cuts.

Meanwhile, inflation in the U.S. has fallen to around 1 percent, the lowest levels since 2009 when the global recession and collapsing commodity markets dragged down prices. These low inflation rates raise the risk that the U.S. together with the eurozone could be entering their own deflation trap with lost decades of low growth and deflation ahead.

Interestingly enough, Japan sets a deviant example in inflation targeting, in which its central bank wants to reverse inflation to a set target of 2 percent. Since the 1990s, the

Japanese economy has languished in a weak state of feeble growth and deflation that persisted into this century. From 2000 to May 2013, annual inflation of the CPI was negative (averaging -0.3 percent), while real GDP growth was less than 1 percent over the same period.

The Prime Minister, Shinzo Abe, who came to power at the end of 2012, introduced a raft of expansionary economic policies known as “Abenomics”, which included a 2 percent inflation target and buying about ¥13 trillion in financial assets (some ¥2 trillion in government bonds) every month as long as necessary together with heavy spending on public infrastructure and an active policy to weaken the Japanese Yen.

Japan’s economy has turned. Growth has averaged 3.1 percent so far in 2013 and inflation rose from -0.3 percent in the year to May to 1.1 percent in the year to October, above inflation in both the U.S. and eurozone for the first time this century. Rising Japanese inflation is a direct consequence of expansionary economic policies introduced in 2013, which could help the country escape from the lost decades of low growth and deflation from the real estate crash of 1989 until today. Abenomics including surge of inflation is likely to have contributed significantly to Japan’s improving economic performance.

The current situation in U.S. and eurozone calls for a continuation and possibly acceleration of unconventional monetary policy to offset the dangers that deflation could pose on an already weak recovery. The experience of Japan provides a useful historical precedent. It is likely that the ECB will engage in unconventional monetary policies to provide stimulus by extending its long-term refinancing operations (LTROs), which provide unlimited liquidity to EU banks in exchange for collateral at low interest rates. The ECB also must also stress that its target is an inflation rate close to 2 percent for the eurozone as a whole, even if that means higher inflation in Germany.

The U.S. is still buying $55 billion worth of bonds a month after its recent cut of $10 billion per month in April 2014, and will maintain its current policy rate at essentially zero for “a considerable time after the asset purchase program ends”. If inflation continues to slow, QE tapering could take even longer to be implemented. Meanwhile, the Fed can also change its forward guidance as it just did to reduce the “threshold” below which unemployment must fall even further from 6.5 percent to 6 percent or below before interest rates are raised16.

### 2.2 Inflation Targeting with Emerging Economies

In emerging markets the inflation picture looks quite different. With unemployment rates hovering around long-term averages, these economies appear to be operating near their full potential. Correspondingly, emerging-markets consumer price inflation has been low since 2012 and has edged higher in recent months. In the aggregate, consumer price weighted emerging markets inflation ticked up to 4.2 percent year-over-year in September 2013, compared with 4.1 percent in August and 4 percent at the end of 2012, as shown in Figure 8. The sequential trend inflation rate (three months over three months, seasonally adjusted annual rate) has risen more sharply since midyear, reaching 5.5 percent in September 201317.

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The concern for emerging-markets economies is about high inflation together with potential slower growth. Inflation has started to pick up in emerging markets during 2013, even as growth has fallen short of expectations, and looks particularly disappointing when compared with figures from before the 2008 financial crisis. A poorer growth-inflation trade-off suggests that economic potential in emerging markets has slowed considerably. This observation is a particular worry in the largest emerging markets, including China, India and Brazil. All have been growing at poor rates compared with previous years, but in none has inflation fallen significantly during the past year.

Inflation targeting has been successfully practiced in a growing number of countries over the past 20 years, and many more countries are moving toward this framework. Although inflation targeting has proven to be a flexible framework that has been resilient in changing circumstances including during the recent global financial crisis, emerging markets however, must assess their economies to determine whether inflation targeting is appropriate for them or if it can be tailored to suit their needs. Facing the unique challenge of high inflation with slow growth, emerging economies may include currency rate and other alternatives, along with interest rates, to play a more pivotal role in stabilizing inflation.

3 State Capitalism

The spread of a new sort of state capitalism in the emerging world is causing increasing attention and problems. As a symbol of state owned enterprises (SOEs), over the past two decades, striking corporate headquarters have transformed the great cities of the emerging markets. China Central Television's building resembles a giant alien marching across Beijing's skyline; the gleaming office of VTB, a banking powerhouse, sits at the heart of Moscow's new financial district; the 88-storey PETRONAS Towers, home to Malaysia's oil company, soar above Kuala Lumpur. These are all monuments to the rise of a new kind of Hybrid Corporation, backed by the state but behaving like a private-sector multinational18.

State capitalism is usually described as an economic system in which commercial and economic activity is undertaken by the state, with management and organization of the means of

production in a capitalist manner including the system of wage labor, and centralized management.\(^{19}\)

State capitalism can also refer to an economic system where the means of production are owned privately but the state has considerable control over the allocation of credit and investment, as in the case of France during the period of dirigisme. Alternatively, state capitalism may be used similar to state monopoly capitalism to describe a system where the state intervenes in the economy to protect and advance the interests of large-scale businesses. This practice is often claimed to be in contrast with the ideals of both socialism and laissez-faire capitalism.\(^{20}\) In 2008, the term was used by U.S. National Intelligence Council in “Global Trends 2025: A World Transformed” to describe the development of Russia, India, and China.

Marxist literature defines state capitalism as a social system combining capitalism, in which wage system of producing and appropriating surplus value, with ownership or control by a state. Through such combination, a state capitalist country is one where the government controls the economy and essentially acts like a single huge corporation, extracting the surplus value from the workforce in order to invest it in further production.

State-directed capitalism is not a new idea: its remote roots can be traced back to the East India Company. After Russia’s October Revolution in 1917, using Vladimir Lenin’s idea that Czarism was taking a "Prussian path" to capitalism, Nikolai Bukharin identified a new stage in the development of capitalism, in which all sectors of national production and all important social institutions had become managed by the state; he officially named this new stage as “state capitalism”.\(^{21}\)

Rising powers have always used the state to drive the initial growth: think of Japan and South Korea in the 1950s or Germany in the 1870s or even the U.S. after the war of independence. But these countries have--eventually found the limits of such a system and thus moved away from it.

Singapore’s economic model, under Lee Kuan Yew’s government, is another form of state capitalism, where the state lets in foreign firms and embraces Western management ideas while owning controlling shares in government-linked companies and directs investment through sovereign wealth funds, mainly Temasek.

Within the EU, state capitalism refers to a system where high coordination between the state, large companies and labor unions ensures economic growth and development in a quasi-corporatist model. Vivien Schmidt cites France and, to a lesser extent, Italy as the prime examples of modern European State capitalism.\(^{22}\)

The leading practitioners of state capitalism nowadays are among emerging markets represented by China and Russia--after Boris Yeltsin’s reform. The tight connection between its government and business is so obvious, whether in major industries--the world's ten biggest oil-and-gas firms, measured by reserves, are all state-owned--or major markets, as state-backed companies account for 80 percent of the value of China's stock market and 62 percent of Russia's. Meanwhile, Brazil has pioneered the use of the state as a minority shareholder together with

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indirect government ownership through the Brazilian National Development Bank (BNDES) and its investment subsidiary (BNDESPar)\(^{23}\).

State capitalists like to use China's recent successes against America and EU's troubles in the financial crises. They argue that state owned enterprises have the best of both worlds—the ability to plan for the future but also to respond to fast-changing consumer tastes. State capitalism has been successful at producing national champions that can compete globally. Two-thirds of emerging-market companies that made it onto the Fortune 500 list are state-owned, and most of the rest enjoy state support of one sort or another. Chinese companies are building roads and railways in Africa, power plants and bridges in South-East Asia, and schools and bridges in America. In the most recent list of the world's biggest global contractors, compiled by an industry newsletter, Chinese companies held four of the top five positions. China State Construction Engineering Corporation has undertaken more than 5,000 projects in about 100 different countries and earned $22.4 billion in revenues in 2009. China's SinoHydro controls more than half the world's market for building hydro power stations\(^{24}\).

In 2009, just two Chinese state-owned companies, namely China Mobile and China National Petroleum Corporation, made more profits ($33 billion) than China's 500 most profitable private companies combined. In 2010, the top 129 Chinese SOEs made estimated net profits of $151 billion, 50 percent more than the year before (in many cases helped by near-monopolies). In the first six months of 2010 China's four biggest state commercial banks made average profits of $211 million a day.

Under state capitalism, governments can provide SOEs and companies under their indirect control with the resources that they need to reach global markets. One way is by listing them on foreign exchanges, which introduces them to the world's sharpest bankers and analysts. Meanwhile, they can also acquire foreign companies with rare expertise that produces global giants. Shanghai Electric Group enhanced its engineering knowledge by buying Goss International for $1.5 billion and forming joint ventures with Siemens and Mitsubishi. China's Geely International gained access to some of the world's most advanced car-making skills through its acquisition of Volvo for $1.8 billion\(^{25}\).

Governments embrace state capitalism because it serves political as well as economic purposes. Especially, during the recent recession, it puts vast financial resources within the control of state officials, allowing them access to cash that helps safeguard their domestic political capital and, in many cases, increases their leverage on the international stage.

### 3.1 Risks Associate with State Capitalism

Dizzied by the strength of state capitalism demonstrated through the recent financial crisis, it is easy for outside investors to become blind to the risks posed by the excessive power of the state there. Companies are ultimately responsible not to their private shareholders but to the government, which not only owns the majority of the shares but also controls the regulatory and legal system. Such inequality creates lots of risks for investors.

There is striking evidence that state-owned companies are less productive than their private competitors. An OECD paper in 2005 noted that the total factor productivity of private companies is twice that of state companies. A study by the McKinsey Global Institute in the


\(^{25}\) Ibidem.
same year found that companies in which the state holds a minority stake are 70 percent more productive than wholly state-owned ones.

Studies also show that SOEs use capital less efficiently than private ones, and grow more slowly. The Beijing-based Unirule Institute of Economics argues that, allowing for all the hidden subsidies such as free land, the average real return on equity for state-owned companies between 2001 and 2009 was -1.47 percent\(^{26}\). SOEs typically have poorer cost controls than regular companies. When the government favors SOEs, the others suffer. State giants soak up capital and talent that might have been used more efficiently by private companies.

SOEs also suffer from “Principal-agent problem”, which indicates the tendency of managers, as agents who run companies, to put their own interests prior to the interests of the owners who are the principals. This problem is getting more severe under state capitalism. Politicians who can control or influence the nomination of SOE executives may have their own agenda while being too distracted by other things to exercise proper oversight. Boards are weak, disorganized and full of insiders.

For example, the Chinese party state exercises power through two institutions: the State-Owned Assets Supervision and Administration Commission (SASAC) and the Communist Party's Organization Department. They appoint all the senior managers in China Inc. Therefore, even the most prestigious top executives of China's SOEs are cadres first and company men second, who naturally care more about pleasing their party bosses than about the market and customers. Ironically, China's SOEs have even successfully attempted to make them pay more dividends to their major shareholder, the state.

Politicians under state capitalism have far more power than they do under liberal capitalism, which creates opportunities for rent seeking and corruption on the part of the SOE elite. State capitalism suffers from the misfortune that it has taken root in countries with problematic states. It often reinforces corruption because it increases the size and range of prizes for the victors. The ruling parties of SOEs have not only the government apparatus but also huge corporate resources at their disposal.

In China, where its long history combines with a culture of *guanxi* (relationships) and corruption, the People's Bank of China (PBOC, China’s central bank) estimates that, between the mid-1990s and 2008, some 16,000-18,000 Chinese officials and SOE executives made off with a total of $123 billion. Russia has the nepotism and corruption among a group of “bureaugarchs”, often-former KGB officials, who dominate both the Kremlin and business. Other BRIC countries suffer from the similar problem. Transparency International, a campaigning group, ranks Brazil 72nd in its corruption index for 2013, with China 80th, India 94th and Russia an appalling 127th. In contrast, as Figure 9 shows, advance economies favoring a free market model score much better than their emerging market counterparts under state capitalism.

\(^{26}\) Ibidem.
State capitalism also stems the rise of globalization to various degrees as it shackles the flow of money, goods, ideas, information, people, and services within countries and across international borders. Ensuring that trade is fair is harder when some companies enjoy the support directly or indirectly from a national government. Western politicians are beginning to lose patience with state-capitalist powers that rig the system in favor of their own companies.

More worrying is the potential for capriciousness. State-capitalist governments can be unpredictable with scant regard for other shareholders. Politicians can suddenly step in and replace the senior management or order SOEs to pursue social rather than business goals. In 2004, China’s SASAC and the Communist Party’s Organization Department rotated the executives of the three biggest telecoms companies. In 2009, they reshuffled the bosses of the three leading airlines. In 2010, they did the same to the heads of the three largest state oil companies, each of which is a Fortune 500 company.

3.2 Response to State Capitalism

Will state capitalism completely reverse globalization’s progress? Ian Bremmer, the founder and president of Eurasia Group, indicated that it is highly unlikely. Despite the relatively high growth of emerging markets after the global financial crisis, it has not proven that government engineered growth can outstrip the expansion of well-regulated free markets over the long run. States like China and Russia will face tremendous pressures as internal contradictions in their development. Recently, we witnessed the terrible environmental price China continues to pay for its growth, and Russia’s vulnerable reliance on Vladimir Putin at the expense of credible governing institutions which all put their economic resilience to the test. A Free market does not depend on the wisdom of political officials for its dynamism. That’s the primary reason it will almost certainly withstand the state capitalist challenge.

However, the financial crisis and advanced countries’ apparent responsibility for it may ensure the growth of state capitalism over the next several years. The future of this path will depend on a range of factors: any wavering of Western faith in the power of free markets, the...
U.S. administration’s capacity to kick-start its economy growth, the ability of Russian government’s dependence on oil exports to withstand the pain inflicted by prices drop, the Chinese Communist Party’s ability to create jobs and maintain tight control of its own people, and dozens of other variables. In the meantime, corporate leaders and investors must recognize that free market capitalism is no longer the unchallenged international economic paradigm—and that politics will have a profound impact on the performance of markets for many years to come28.

Increasingly, multinational companies and international traders are operating in an environment where they have to pay much more attention to politics, and they can't invest purely on the basis of where the markets may be attractive.

4 Economic Nationalism

In the good old days, growth in trade and cross-border investment brought prosperity and development. Globalization appeared to deliver rising living standards for all, there was no conflict: the leaders of nations could simultaneously support the architecture of globalization while taking the plaudits for prosperity at home. That’s all changed. As English statesman Lord Palmerston noted: "nations have no permanent friends or allies, they only have permanent interests".

Nations led by politicians, who are primarily interested in strengthening their political capitals by serving and protecting their most powerful constituents (the local voters, political benefactors, or powerful industries and interest parties), naturally try to help boost their domestic economies rather than making choices with the global economy in mind. In the aftermath of the global financial crisis, these interests dictated a body of policies that emphasized domestic control of the economy, labor, and capital formation, even if this required the reversal of the trend to greater global integration and a return to economic nationalism29.

The financial crisis inevitably revealed that integration reduces the effectiveness of a nation’s economic policies, unless other nations take coordinated action. Governments’ initial reaction to the global financial crisis was pouring large amounts of government spending in a competitive rather than cooperative way to bailout its own economy first, as shown in Figure 10.

As it became clearer that the recession would last longer than originally anticipated, governments started to throw up barriers to trade and investment meant to keep local workers employed through the next election. Economic nationalism leads to the imposition of tariffs and other restrictions on the movement of labor, goods and capital. America tacked a 127 percent tariff on to Chinese paper clips; Japan puts a 778 percent tariff on rice. Protection is worse in the emerging world, as shown in Figure 11. Brazil’s tariffs are, on average, four times higher than America’s, and China is three times higher.

Besides tariff, big emerging markets like Brazil, Russia, India and China have displayed a more interventionist approach to globalization that relies on industrial policy and government-directed lending to give domestic sellers more advantages. Industrial policy enjoys more respectability than tariffs and quotas, but it raises costs for consumers and puts more efficient foreign firms at a disadvantage. The Peterson Institute estimates local-content requirements cost the world $93 billion in lost trade in 2010.

For advanced economies, government procurement policies also favor national suppliers. “Buy American” campaigns as seen in the recent U.S. presidential election and preferential policies are used to direct demand. Safety and environmental standards are used to prevent foreign products penetrating national markets. According to Global Trade Alert, a monitoring service, at least 400 new protectionist measures have been put in place each year since 2009, and the trend is on the increase.

Another obvious move in economic nationalism is through capital markets. Nations with high levels of government debt that face financing difficulties seek to limit capital outflows.

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These would prevent depositors and investors withdrawing funds to avoid potential losses from sovereign defaults. In Europe, there was a tendency for a breakdown in the common currency and redenomination of investments into a domestic currency.

In Cyprus, explicit capital controls designed to prevent capital flight were implemented. On the other hand, low interest rates and weak currencies in developed economies have led to volatile and destabilizing capital inflows into emerging nations with higher rates and stronger growth prospects. Brazil, South Korea and Switzerland have implemented controls on capital inflows.

As a result, global capital flows fell from $11 trillion in 2007 to a third of that in 2012. The decline happened partly for cyclical reasons, but also because regulators of nations who saw banks’ foreign adventures end in disaster have sought to gate their financial systems.

Political tension and national security can make existing economic nationalism more complicated and intensified. Mr. Snowden first revealed the existence of the clandestine data mining program of U.S. National Security Agency (NSA) in June 2013, which involves U.S. firms in the IT and telecoms space. Basically, it proves that U.S. firms operate under certain kinds of rules in connection with the U.S. government and the military industrial complex. Snowden’s revelations provoked a storm in the Chinese media and added urgency to Beijing’s efforts to use its market power to create indigenous software and hardware.

As a consequence, U.S. technology companies including Cisco Systems immediately face new challenges in selling their goods and services in China as fallout from the U.S. spying scandal starts to take a toll. Cisco Systems warned its revenue would dive as much as 10 percent in the fourth quarter of 2013, and keep contracting until after the middle of 2014, in part due to a backlash in China after Snowden’s revelations about U.S. government surveillance programs. Beijing may be targeting Cisco in particular as retaliation for Washington’s refusal to buy goods from China’s Huawei Technologies Co, a telecommunications equipment maker that the U.S. claims is a threat to its national security because of links to the Chinese military.

4.1 Response to Economic Nationalism

Economic nationalism may offer near-term pain relief but, as a political response to economic failure, it only risks locking in that economic failure for the long term. The world had learned from that dreadful decade of the Great Depression the lesson that protectionism makes a bad situation worse.

Trade encourages specialization, which brings prosperity; economic cooperation encourages confidence and enhances security; global capital markets, for all their problems, allocate money more efficiently than local ones.

In December 2013, the World Trade organization (WTO) sealed its first global trade deal after almost 160 ministers who had gathered on the Indonesian island of Bali agreed to reforms to boost world commerce. Tense negotiations followed 20 years of bitter disputes. At the heart of the agreement were measures to ease barriers to trade by reducing import duties, simplifying customs procedures and making those procedures more transparent to end years of corruption at ports and border controls.

"For the first time in our history, the WTO has truly delivered," WTO chief Roberto Azevedo told exhausted ministers after the long talks. "This time the entire membership came together. We have put the 'world' back in World Trade organization," he said. "We're back in business … Bali is just the beginning."
China, a key member of BRIC, also started to respond to the challenge in a right way. On December 2nd of 2013, the People’s Bank of China (PBOC) issued a set of guidelines on how financial reform will proceed inside the new Shanghai Free Trade Zone (SFTZ). This 29 sq. km (about 18 sq. miles) enclave, created three months earlier, has been trumpeted by Li Keqiang, the country’s prime minister, as a driver of economic reform under his newish administration. To boost cross-border investment and trade, the PBOC wants to allow firms and individuals to open special accounts that will enable them to trade freely with foreign accounts in any currency. Selected foreign institutional investors may be allowed to invest directly in the Shanghai stock market. And interest rates may be liberalized for certain accounts at designated firms inside the SFTZ, which would open a new window of globalization and free capital market in China.

Conclusion

As mentioned at the beginning of this paper, the BRIC economies are contributing less to global growth. In 2008 they accounted for two-thirds of world GDP growth. In 2011 they accounted for half of it, in 2012 a bit less than that. The IMF sees them staying at about that level for the next five years. Goldman Sachs predicts that, based on an analysis of fundamentals, the BRICs share will decline further over the long term.

Other emerging markets will pick up some of the slack including the “Next 11” including Bangladesh, Indonesia, Mexico, Nigeria and Turkey. Although there are various reasons to think that this N11 cannot have an impact on the same scale as that of the BRICs, emerging markets other than BRIC will play a vital role in the future. Advanced economies will continue to lose their share which will contribute to a general easing of the pace of world growth, as shown in Figure12.

![Graph showing past and forecast GDP growth](image)

**Figure12** – Emerging markets led by BRIC have demonstrated stronger growth than the advanced economies. SOURCE: Goldman Sachs.

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Internationally, lower growth could focus leaders on increased co-operation and a new push for liberalization, which will mitigate the risks, as discussed, of currency war, inflation targeting, state capitalism and economic nationalism. A predicted slowdown could bring new consensus to global trade talks as we witnessed in Bali in December 2013. More deals that address non-tariff trade barriers, and especially those on trade in services, could yield bigger benefits down the road.

References


A META-ANALYSIS OF THE ENERGY CONSUMPTION-ECONOMIC GROWTH NEXUS

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A META-ANALYSIS OF THE ENERGY CONSUMPTION-ECONOMIC GROWTH NEXUS

Abstract
The nexus between energy consumption and economic growth has been a focus of extensive research in the past, but has recently attracted more interest given the debates surrounding environmental and economic policies. However, the vast amount of empirical evidence from previous studies is mixed. Employing a meta-analysis method, this study attempts to statistically summarize the findings of the extant literature by probing three research questions: (1) Is there a one-way relationship running from energy consumption to economic growth for most of the developing countries? (2) Does short-run analysis show a more significant causality than the long-run analysis? and (3) Do the studies using the electricity consumption data as the energy consumption yield different results from those using the total energy consumption data? Our study introduces the meta analysis method to economics by providing answers to these questions. Policy implications are also suggested.
Key Words: Energy consumption; Economic growth; Granger causality; Meta-analysis

1. Introduction

The causal relationship between energy consumption and economic growth is a well-studied topic in the energy economics literature. The focus has been on whether energy consumption stimulates economic growth or economic growth incites energy consumption. It has been argued that it is worthy to increase energy use to accelerate economic growth provided that the benefit of economic growth outweighs the cost of environmental damages. On the contrary, if energy consumption does not increase or even harm economic growth, an energy consumption conservation policy can be used to avoid the harmful impacts on the economy. A pioneering paper by Kraft and Kraft (1978) provided evidence to support a unidirectional causality running from income (GNP) to energy consumption (EC) in the case of the U.S. over the period 1947-1974 by utilizing Sims (1972) methodology. In the following year, using U.S. monthly data from 1973 to 1979, Akarca and Long (1979) showed instead that energy consumption leads employment (in the literature, some economists use employment or production to substitute for economic growth). Also using monthly data from 1973 to 1979, Akarca and Long (1980) found bi-directional causality between energy consumption and GDP, which was different from the result of Kraft and Kraft (1978). Since the early 1980’s, authors have empirically challenged Kraft and Kraft’s initial findings. For example, Yu and Hwang (1984) provided evidence of the absence of any causality between energy consumption and GNP over the 1947-79 annual data. Yu and Choi
(1985), and Erol and Yu (1987) have both supported the absence of causality. Since then, there has been a proliferation of studies using different techniques, time periods, distinct proxy variables, countries and different econometric methodologies. However, the findings are mixed and controversial. For example, some studies found a unidirectional Granger causality from energy consumption to economic growth for the Philippines (Yu and Choi, 1985), India (Masih and Masih, 1996), Singapore (Glasure and Lee, 1997), France, West Germany, Japan, and Turkey (Soytas and Sari, 2003). On the other hand, Yu and Choi (1985) and Soytas and Sari (2003) found a bi-directional relationship for South Korea, and Cheng and Lai (1997) also found one for Taiwan. Some studies, like Erol and Yu (1987b, 1989), Yu and Jin (1992), and Yu et al. (1988) went one step further to test the neutrality hypothesis and found a neutrality relation (i.e., no causal relationship between the variables). These diverse outcomes might be owed to the different countries’ characteristics such as different indigenous supplies, different cultures, and different political and economic histories.

One of the main reasons for these apparently conflicting statistical findings, apart from many structural, institutional, and policy differences, lies in methodological differences, and most importantly, the sort of causality techniques, tests, and lag structures employed. Table 1 and Table 2 provide an overview of recent literature based on different countries, methods, or periods. From the tables we can observe that most of the earlier analyses employed simple log-liner models to investigate the energy consumption-economic growth nexus through an ordinary-least-square (OLS) method without any regard for the nature of the time series properties of the variables involved. In recent years, time series analyses, including Granger causality (i.e., Sim’s technique, Hsiao’s technique, and Toda-Yamamoto test), co-integration, error correction model, and variance decompositions are vastly applied to address the relationship. Also seen in the tables, the sample can be either country-specific or multi-country.

We can basically separate the empirical hypotheses into four kinds. (1) Neutrality Hypothesis (GDP→EC): there is no causality between energy consumption and economic growth. (2) Conservation Hypothesis: There is a uni-directional causality running from economic growth to energy consumption (GDP→EC). It is supported if an increase in GDP is accompanied by an increase in energy consumption. (3) Growth Hypothesis: There is a uni-directional causality running from energy consumption to economic growth (EC→GDP). It suggests that energy consumption plays an important role in economic growth, either directly or indirectly, in the production process, and the restrictions on the use of energy may adversely contribute to economic growth. (4) Feedback Hypothesis: there is a bi-directional causality between energy consumption and economic growth (EC↔GDP). This view implies
that both energy consumption and economic growth Granger cause each other, and energy consumption and economic growth affect each other at the same time.

The direction of causation between energy consumption and economic growth has significant policy implications. For example, if a uni-directional causality is found to run from energy consumption to economic growth, then conserving (or reducing) energy consumption will diminish economic growth. On the other hand, if there exists a uni-directional Granger causality running from economic growth to energy consumption, then energy conservation policies may be implemented with little to no adverse effects on economic growth. The finding of no causality suggests that either conservative or expansive policies in relation to energy consumption will have no effect on economic growth.

Few efforts have been made to synthesize the earlier results from consumption-growth nexus studies although it warrants particular attention. One exception might be Qzturk (2010), who provided an overall history of the existing studies addressing the causal links between energy consumption and economic growth; however, no formal efforts have been exercised to reach a general conclusion. In this study, we introduce a method, meta analysis, to statistically synthesize the results from the vast literature. The meta-analysis is a statistical method that allows a systematic synthesis of quantitative empirical evidence of research studies and is capable of finding effects or relationships between constructs (Lipsey and Wilson, 2001). It is used to combine results from various studies utilizing different research designs, and has been widely applied in the marketing literature (e.g., Peterson et al., 1985; Rao and Monroe, 1989; Sultan et al., 1990; Geyskens et al., 1999), as well as other fields of studies. [This methodology applied to economics in general, energy consumption and economic growth in particular, is nevertheless, absent.

This paper takes three major issues into account by using the meta-analysis to synthesize the past studies on the causal relationship between energy consumption and economic growth from the following three research questions: 1. Is there a one-way relationship running from energy consumption to economic growth for most of the developing countries? 2. Does short-run analysis show a more significant causality than the long-run one? 3. Do the studies using the electricity consumption data as energy consumption yield different results from those using the total energy consumption data? We will discuss these research questions in more detail in the next section.

The rest of the paper is organized as follows: Section 2 develops research questions. Section 3 details the method of meta-analysis. Section 4 presents the main result. Section 5 concludes.
2. Development of Research Questions

2.1 Developed versus developing countries

The studies on the nexus between energy consumption and economic growth utilize different sample countries and can be divided into two distinct groups: developed or developing countries (Asafu-Adjaye, 2000; Lee, 2005; Lee, 2006; Lee and Chang, 2007b). As seen in the Table 1 and Table 2, most of the developing countries have exhibited the tendency that energy consumption spurs economic growth. For instance, Masih and Masih (1996) found consistent evidence of energy consumption causing income in India through the error correction model. Masih (1997) also found that energy consumption explained a greater proportion of shocks to income in Korea. Asafu-Adjaye (2000) added the price factor (using the consumer price index to represent energy price) and applied Johansen’s co-integration technique and the Granger causality test to investigate energy dependency and the relationship between energy consumption and economic growth. The finding shows a uni-directional causality with energy consumption leading economic growth in India and Indonesia. Subsequently, Oh and Lee (2004) showed the short-run uni-directional causality running from energy to GDP in Korea. Moreover, Lee (2005) employed data on 18 developing countries from the year 1975 to 2001 and yielded similar results. In addition, in six developing countries, Iran, Pakistan, Indonesia, Malaysia, Singapore, and Tunisia, energy is regarded as an important input. Growth of energy has a huge impact on growth rate GDP in all countries both in the short-run and long-run results (Soytas and Sari, 2007). Further, no matter whether it is in the country-specific studies or multi-country studies, Granger causality and co-integration have been used by authors constantly. By using these methods, a uni-directional causality was found for Turkey (Murray and Nan, 1996; Soytas et al., 2001; Soytas and Sari, 2003), Taiwan (Lee and Chang, 2007a; Chiou-Wei et al., 2008), Malaysia (Chiou-Wei et al., 2008), Shanghai (Wolde-Rufael, 2004), and Hong Kong (Ho and Siu, 2007).

In addition to the above-mentioned countries, China may be a good example to illustrate why the developing countries exhibit the one-way causality. As one of the fastest growing economies in the world with an average annual GDP growth rate of about 10%, China rapidly increased its energy consumption in heavy industry and chemical industry, such as steel, automobile, and oil refinery, which has outpaced the advanced or developed countries to accelerate economic growth (Yuan et al., 2010). However, it is worthy to note that the results rendered by the extant literature on this presumed direction are still controversial. For example, opposite direction of causation was also found for Indonesia (Masih 1996), 18 developing countries (Lee and Chang, 2007b), and the Philippines and Singapore (Chiou-Wei et al, 2008).
Accordingly for the initial investigation, we propose the following research question:

**Research Question 1:** Does the literature suggest that there is a one-way relationship running from energy consumption to economic growth for the developing countries?

### 2.2 Short-run versus long-run analysis

The results from the short-run and long-run analyses are chosen for further discussions in this study. To a policy maker, making policies for the short term or long term is an important decision. There are results from studies that have displayed the same direction of causality from both the short-run and long-run analyses (Hwang and Gum (1991)). However, the study of Lee and Chang (2005) showed that short-run and long-run causalities both run from energy consumption to GDP, but not vice versa. Nevertheless, Ang (2007) used an error correction model and co-integration at the same time to test the causal relationship between energy consumption and output in France. His result shows that economic growth exerts a causal influence on growth of energy use and growth of pollution in the long-run while the results of short-run analysis point to a uni-directional causality running from growth of energy use to output growth. Based on this result, we can conclude that energy is a limiting factor to economic growth and lack of energy supply will have a negative impact on economic growth. Moreover, through an examination of 16 Asian countries, Lee and Chang (2008) suggested that although economic growth and energy consumption lack a short-run causality, there is a uni-directional causality running from energy consumption to economic growth in the long-run analysis. Using the Central American countries as samples instead, Lee and Chang (2009), however, showed the opposite result. To further understand, time frame is important as governments would execute different energy measures or economic stimulus plan in different time periods. Accordingly, we put forward the second research question:

**Research Question 2:** Does the short-run analysis show a more significant causality than the long-run analysis?

### 2.3 Total energy consumption & single electricity consumption

Many energy items that could represent the measure of energy consumption have been discussed extensively. Energy consumption can be classified by petroleum, coal, carbon, natural gas, CO₂, NOₓ, and electricity consumption et al. In this study, we choose electricity consumption as a single energy consumption measure and try to survey and synthesize the empirical evidence of causality between electricity consumption and economic growth, and then compare it to the results using total energy consumption as the energy consumption proxy. Electricity consumption used
to proxy energy consumption in the study of the connection between energy consumption and economic growth has recently been widely discussed. For example, Yang (2000) used Granger’s technique to re-examine the causality between energy consumption and GDP in Taiwan and further investigated the causal relationship between GDP and disaggregated categories of energy consumption, such as oil, natural gas, coal, and electricity. He revealed a bi-directional causality between electricity consumption and GDP growth in his study. Shiu and Lam (2004) examined the causal relationship between electricity consumption and real GDP for China. They found that electricity consumption and real GDP for China are co-integrated and there is a uni-directional Granger causality running from electricity consumption to real GDP but not vice versa. Altinay and Karagol (2005) provided strong evidence of a uni-directional causality running from the electricity consumption to income in Turkey, indicating that the supply of electricity is extremely important to meet the growing needs of the industries. Ho and Siu (2007) not only showed there is a long run equilibrium relationship between GDP, but that a one-way causal effect exists from electricity consumption to real GDP. However, Jamil and Ahmad (2010) concluded that real GDP Granger causes electricity consumption. Moreover, these studies suggested that the magnitude of the connection between electricity consumption and economic growth has a tendency to increase and that the issue becomes more and more vital. We thus propose the following question:

Research Question 3: Do the studies using the electricity consumption data as a measure of energy consumption yield different results from those using total energy consumption data?

3. Method

The meta-analysis is increasingly recognized as a powerful tool for deriving scientific theoretical generalizations through the procedure of quantitative accumulation and integration of empirical evidence from different researches (Churchill and Peter, 1984; Farley and Lehmann, 1986; Fern, Monroe and Avila, 1986). Many medical studies have utilized this technique. A large variety of marketing parameters have also been meta-analyzed in the marketing literature, including research in advertising, consumer behavior, channels, and research methods. However, few studies if at all have been implemented in economics in general and the nexus between energy consumption and economic growth in particular. The meta-analysis can be an effective method to settle empirical debates and has made tremendous progress in acceptance and impact in the last three decades as a distinct research method (Hunter & Schmidt, 2004). Moreover, on account of including statistical analyses that detect effects or relationships that are unclear in other approaches, the
meta-analysis offers advantages over conventional synthesis analyses such as historical accounts of research or descriptive synthesis of literature (Lipsey and Wilson, 2001). Furthermore, for the purpose of integrating these different findings, it is also a quantitative method of synthesizing empirical evidence across numerous studies that may differ in data sources, estimation methodologies, sample compositions, and time periods. The main idea of this method is to cope with individual problems from different individual studies. By bringing all these studies together, the meta-analysis enables the removing of these individual effects from empirical findings (Hunter & Schmidt, 2004). The meta-analysis can help settle the differences across studies and qualify the statistical exploration of the relationships between variables in an integrated framework. Below we describe how we carry out our study.

3.1 Literature search

In this study, to collect the relevant information on past studies, only information on computer-based published empirical studies were collected. The searches were conducted using the following key words: energy consumption, electricity consumption, economic growth, GDP, developed and developing countries. Manual searches were conducted for journal articles; references were identified through the online database search. Manual searches include mainly Energy, Energy Journal, Energy Policy, Journal of Economics, Journal of Ecological Economics, Energy Economics, Journal of Applied Energy, Journal of Policy Modeling, and Resource and Energy Economics. The published studies conducted from 1996 to 2009, available in English, are selected. For the first research question, we defined our countries of developing and developed based on the standard World Bank’s World Development Indicators (2010). The literature search generated 63 manuscripts, and data was coded for sample size, effect size, and potential moderators (i.e., country, time period, and type of energy consumption). Through the coding and recoding process, 23 manuscripts not meeting the eligibility criteria were not included in the study. As previously indicated, only studies for which an effect size can be computed were included in this meta-analysis.

3.2 Eligibility criteria

Meta-analysis considers all the available results from an empirical literature to make inferences from a larger pool of information than what could have been provided by a single study. In order to have a consistent standard, we define the eligibility in our study. The study eligibility criteria serve three main purposes (Lipsey & Wilson, 2001). First, the characteristics of the criteria create a clear direction from
which research studies are identified and examined. Second, the criteria offer a straightforward research sphere of energy consumption and economic growth. Finally, the criteria act as an essential guidance to the process of selecting or rejecting candidates for inclusion in the study. We collect from eligible studies t-statistics, Chi-squared statistics, F-statistics, regression coefficients, correlation coefficients, and use the primary data like the parameters between energy consumption and economic growth or electricity consumption and economic growth, in order to execute the next step.

3.3 Independent samples

Multiple studies by the same authors were reviewed and different versions of the same paper have been compared to avoid duplication. The sample reporting more useable information has been kept for the meta-analysis, other samples are excluded if overlapping or duplicated samples are found.

3.4 Effect size

We begin the process of the meta-analysis by transforming diverse reported statistics like t-statistics, Chi-squared statistics, F-statistics, regression coefficients, correlation coefficients into a general metric of effect size. In this study, we have obtained 195 observations of effect size from forty empirical studies. Each observation has been turned into effect size and then we apply one-way ANOVA to test the relationship between energy consumption and economic growth from three dimensions. Following are the formulations.

When we have a t statistic, the effect size is calculated by the following formula

\[
g = \sqrt{\frac{t^2}{t^2 + n_e + n_e - 2}}
\]  

(1)

When we have an F statistic, the effect size is calculated by the formula

\[
g = \sqrt{\frac{F}{F + n_e + n_e - 2}}
\]  

(2)

When we have a Chi-squared statistic, the effect size is calculated by the formula

\[
g = \sqrt{\frac{x^2}{n_e + n_e + 2}}
\]  

(3)

When we have a correlation statistic, the effect size is calculated by the formula

\[
g = \frac{2r}{\sqrt{1 - r^2}}
\]  

(4)
In formula (1), \( g \) is effect size and \( t \) represents a t-statistic value, while \( n_d \) and \( n_c \) represent the numbers of observation for two groups like developing versus developed countries, short-run versus long-run analysis, and total energy consumption versus single electricity consumption, respectively. Similarly, when we have an F statistic or Chi-squared statistic instead, we change the formula into (2) or (3). When we have coefficient estimates, we use the fourth formula in which \( r \) represents the value of the estimated correlation coefficient in the study.

### 3.5 Confidence Intervals

A confidence interval establishes the degree of precision in the estimate of the mean effect size (Lipsey and Wilson, 2001). By using confidence intervals, a general exercise in the meta-analysis is to interpret the significance of mean effect sizes. Pulling together this body of work and subjecting it to a systematic, quantitative scrutiny can help us to develop a clearer sense of the effect size and to answer a range of more specific questions.

### 4. Results

In this study, we report the results of our meta analysis of the nexus between energy consumption and economic growth. The literature search has generated 63 manuscripts. Through the coding and recoding process, 23 manuscripts not meeting the eligibility criteria are not included in the study. As previously indicated, only studies for which an effect size can be computed are included in this meta-analysis. Recall that our included sample is restricted to the studies with reported statistic data between energy consumption and economic growth, such as F-value, t-value, P-value, chi-square \((\chi^2)\), Pearson’s correlation coefficient \((r)\), or coefficient of determination in linear regression \((R^2)\). Three hypotheses are proposed in this paper. Through one-way ANOVA, we obtain the following results.

#### 4.1 The Result for Research Question 1

For the first question, there are 55 effect sizes in the developing country group and 43 effect sizes in the developed country group. The standard deviations of effect sizes are respectively equal to 0.530 for the developing countries and 0.364 for the developed countries. In Table 4, we can see that the empirical result from the ANOVA analysis is significant \((F=2.83; \ p=0.008)\). The mean effect sizes of the relationship between energy consumption and economic growth for the developing and developed countries are +0.433 and +0.367, respectively; the 95% confidence interval about the mean effect size is 0.413-0.455 (exclude zero mean size effects), which suggests that the result for the developing countries is more significant than the one for the
developed countries. Further, according to Cohen (1977), when effect size equals to 0.2 or less, the effect is small; when effect size equals to 0.5 but larger than 0.2, the effect is medium; when effect size equals to 0.8 or larger, the effect is large. Overall, for the developing countries, the effect size between energy consumption and economic growth is positive and it is slightly below the medium effect level (ES=0.433), but the effect is larger and more significant than the one for the developed countries. Based on earlier discussions and these statistical results, we have a firm answer to the research question “Is there a one-way relationship running from energy consumption to economic growth for most of developing countries?” Our empirical evidence suggests that most of studies in our sample showed a tendency that the causality runs from energy consumption to economic growth in the developing countries.

4.2 The Result for Research Question 2

Regarding the second research question, there are 32 effect sizes from short-run analyses, and 28 effect sizes from the long-run analyses in our sample. The standard deviations of the effect size are respectively equal to 0.135 in the short-run analysis group and 0.227 in the long-run analysis group. From Table 4, we find that the mean effect size of the relationship between energy consumption and economic growth in short-run and long-run analyses are +0.338 and +0.292 respectively; and the 95% confidence interval about the mean effect size is 0.261-0.401 (exclude zero mean size effects). Overall, the effect size in either the short-run or long-run analyses exhibits a positive and medium-to-low effect (ES=0.338, 0.292); however, the empirical result is insignificant (F=2.758; p=0.443). Hence, the answer to the question “Is the impact caused by energy consumption more significant in the short run analyses than in the long-run analyses is “no”. In Table 4, the result also suggests that the relationship between energy consumption and economic growth differs with respect to time periods. As a result, a policy maker should consider the empirical results not only from short-run analysis, but also from the long run analysis when making decision.

4.3 The Result for Research Question 3

Lastly, this study tries to test whether there is any difference in the results from the studies using the electricity consumption as a proxy for energy consumption and the studies using total energy consumption as a proxy. In our sample, there are 21 effect sizes in single (electricity) energy consumption group, and 16 effect sizes in the total energy consumption group. The standard deviations of effects are equal to 0.336 for the total energy consumption and 0.362 for the single electricity consumption. Table 4 shows that the empirical result is significant (F=1.529; p=0.044). The table also shows
that the mean effect size of the relationship between energy consumption and economic growth for total energy and for single electricity consumption are +0.336 and +0.362, respectively. The 95% confidence interval about the mean effect size is 0.340-0.378 (exclude zero mean size effects), suggesting that the result from single electricity consumption group is more significant than the result from the total energy consumption group. Overall, the effect size in the single electricity consumption group between energy consumption and economic growth is positive and the value is medium to low (ES=0.362), indicating that when electricity consumption is used as the energy consumption variable, the relationship between energy consumption and economic growth is better revealed than when total energy consumption is used as the consumption variable, and the overall effect tends to be at the level of medium to low. Consequently, there is an affirmative answer to the research question “Do the studies using the electricity consumption data as energy consumption yield different results from those using total energy consumption data?” There is a uni-directional causality between electricity consumption and economic growth, so we conclude that economic growth will slow down when there is a diminution in the supply of electricity.

Conclusions

There is a large literature on the connection between energy consumption and economic growth and the empirical results from these studies are mixed, to say the least. In this study we make an effort to see whether there is any evidence that a particular view of the relationship can be established more in favor than others statistically. We focus on three sets of questions: whether studies reveal more uni-directional causality from energy consumption to economic growth in developing country samples than from developed country samples; whether short-run analyses reveal more relationship between energy consumption and economic growth than long-run analyses; and whether electricity consumption used to proxy energy consumption is better to reveal stronger connection than using the overall energy consumption. To achieve the objective, we resort to the meta-analysis method.

Regarding the first question, we find that in the literature there is more finding of a uni-directional causality from energy consumption to economic growth for developing countries than for developed countries; and the difference is statistically significant. This is perhaps because most developing countries focus on the heavy industries for enhancing the domestic infrastructure and national competitiveness in the early stage of development, which in turn necessitates a lot of energy for input. Our study also suggests that results from the short-run and the long-run analyses are still mixed or conflicting with each other. This is perhaps less surprising since usually, we do not expect the same results from short run and long run analyses due to the
different nature of the analyses. This suggests that it may not be a good idea for policy makers to solve long-run problems by setting short-term policy goals and using short-run methods. Regarding the third question, we find evidence that there is a uni-directional causality from electricity consumption to economic growth. Based on the previous discussions, we may conclude that shortage of electricity is a limiting factor to economic growth and, hence, shocks to electricity supply will have a negative impact on economic growth. Consequently, we suggest that the government should encourage the efficient usage of electricity consumption to enhance economic growth.

Our empirical findings suggest that specific country conditions need to be considered when making policy. In the developed countries, there exists Granger causality running from economic growth to energy consumption. A developed country is likely to start a new, clean energy business in order to economize the energy use or to exploit a mechanism to control the electricity consumption. Especially as a result of the rapid growth in worldwide energy use, most of the developed countries are implementing energy regulations such as energy standards, codes etc., to reduce energy consumption.

Broadly speaking, it is more or less arguable that global warming is mostly caused by the increase in CO₂ emission in the human consumption of fossil fuels. Industrial countries should pursue more energy conservation policies, and cleaner energy sources should be used to substitute fossil fuels. Nowadays, in the emerging, developing, or developed countries, how to promote the efficiency of the usage of energy is the most important issue. The ideal policy is to encourage energy consumption and enhance economic growth at the same time. As a result, government efforts should concentrate on the identification and support of means to maintain year-on-year energy efficiency improvements to endure output growth.

This study utilizes the meta-analysis for a small set of characteristics in a literature and it opens a door to more studies that can focus on other aspects of the literature. It remains to be seen how the results on the connection between energy consumption and economic growth will depend on other sets of parameters such as a set of common variables, time intervals, study methods, and so on.
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<th>Authors (Year)</th>
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<td>Soytas et al. (2001)</td>
<td>1960-1995</td>
<td>Turkey</td>
<td>Co-integration, Causality</td>
<td>EC→GDP</td>
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<td>Lee and Chang (2005)</td>
<td>1954-2003</td>
<td>Taiwan</td>
<td>Johansen, Co-integration, VEC</td>
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<td>Lee and Chang (2007a)</td>
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<td>Taiwan</td>
<td>Causality, Co-integration, VECM</td>
<td>EC→GDP</td>
</tr>
<tr>
<td>Ho and Siu (2007)</td>
<td>1966-2002</td>
<td>Hong Kong</td>
<td>Co-integration, VECM</td>
<td>EC→GDP</td>
</tr>
<tr>
<td>Bowden and Payne (2009)</td>
<td>1949-2006</td>
<td>USA</td>
<td>Causality</td>
<td>EC→GDP</td>
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</table>

Note: GDP→EC means that the causality runs from growth to energy consumption.  
EC→GDP means that the causality runs from growth to energy consumption.  
EC↔GDP means that bi-directional causality exists between energy consumption and growth.  
GDP→EC means that no causality exists between energy consumption and growth.  
VAR= vector autoregressive model, VEC= vector error correction model,  
ARDL= autoregressive distributed lag, ECM= error correction model.
<table>
<thead>
<tr>
<th>Authors (Year)</th>
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<th>Country</th>
<th>Methodology</th>
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<td>GDP→EC (Indonesia)</td>
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<td>EC→GDP (Pakistan)</td>
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<td>GDP→EC (Malaysia, Philippines, Singapore)</td>
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<td>Korea</td>
<td>VECM, variance</td>
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<td>Glasure and Lee (1997)</td>
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<td>Co-integration,</td>
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<td>India, Indonesia</td>
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<td>EC→GDP (Philippine, Thailand)</td>
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<td>EC→GDP (Argentina)</td>
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<td>GDP→EC (Brazil, India, Indonesia, Mexico, Poland, South Africa, US, UK, Canada)</td>
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<td>GDP→EC (Algeria, Congo DR, Egypt, Ghana, Ivory Coast)</td>
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<td>EC→GDP (Gabon, Zambia)</td>
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<td>GDP→EC (Benin, Congo RP, Kenya, Senegal, South Africa, Sudan, Togo, Tunisia)</td>
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<tr>
<td>Lee (2006)</td>
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<td>Granger causality</td>
<td>EC→GDP (Belgium, Netherlands, Canada, Switzerland)</td>
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<td>GDP→EC (France, Italy, Japan)</td>
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<td>EC→GDP (Sweden, USA)</td>
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<td></td>
<td>GDP→EC (Germany, UK)</td>
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<td></td>
<td></td>
<td>(Bahrain, Kuwait, UAE,</td>
<td>GMM</td>
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<td>Oman, Qatar, Saudi</td>
<td>BVAR models,</td>
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<td>Co-integration</td>
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<td>Francis et al. (2007)</td>
<td>1971-2002</td>
<td>Haiti, Jamaica, Trinidad</td>
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<td>EC→GDP (in short run for three countries)</td>
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<td></td>
<td>and Tobago</td>
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<td>EC→GDP (in long run for Trinidad and Tobago)</td>
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<td>GDP→EC (in long run, Haiti and Jamaica)</td>
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<td>(Iran, Kuwait, Saudi</td>
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<td></td>
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<td>Ecuador Venezuela)</td>
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<tr>
<td>Lee and Chang (2007b)</td>
<td>1965-2002</td>
<td>22 Developed countries,</td>
<td>Panel VARs and</td>
<td>GDP→EC (developing countries)</td>
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<tr>
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<td>1971-2002</td>
<td>18 Developing Countries</td>
<td>GMM</td>
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<tr>
<td>Mahadevan and</td>
<td>1971-2002</td>
<td>20 energy importers and</td>
<td>Panel error correction</td>
<td>GDP→EC (developed countries)</td>
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<tr>
<td>Asafu-Adjaye (2007)</td>
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<td>model (ARDL) bounds</td>
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<td>Chiou-Wei et al. (2008)</td>
<td>1954-2006</td>
<td>Asian countries and USA</td>
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<td>GDP→EC (Cameroon, Cote d’Ivoire, Nigeria, Kenya, Togo)</td>
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<tr>
<td>Lee et al. (2008)</td>
<td>1960-2001</td>
<td>22 OECD countries</td>
<td>Panel co-integration,</td>
<td>GDP→EC (Taiwan, Hong Kong, Malaysia, Indonesia)</td>
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<tr>
<td>Huang et al. (2008)</td>
<td>1972-2002</td>
<td>82 Low-, middle- and</td>
<td>Panel VAR, GMM model</td>
<td>GDP→EC (middle- and high-income countries)</td>
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<td></td>
<td></td>
<td>high-income countries</td>
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<td>GDP→EC (low-income countries)</td>
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</tbody>
</table>

**Table 2**

Study survey of empirical studies on energy consumption and economic growth nexus for multi-country studies
<table>
<thead>
<tr>
<th>Authors (Year)</th>
<th>Period</th>
<th>Country</th>
<th>Methodology</th>
<th>Results</th>
</tr>
</thead>
</table>

**Note:**
- GDP→EC means that the causality runs from growth to energy consumption.
- EC→GDP means that the causality runs from energy consumption to growth.
- EC↔GDP means bi-directional causality exists between energy consumption and growth.
- GDP~EC means no causality exists between energy consumption and growth.
Table 3
Study survey on electricity consumption (ELC)- growth nexus

<table>
<thead>
<tr>
<th>Authors (Year)</th>
<th>Period</th>
<th>Country</th>
<th>Methodology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yang (2000)</td>
<td>1954-1997</td>
<td>Taiwan</td>
<td>Granger causality</td>
<td>ELC→GDP</td>
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<tr>
<td>Ghosh (2002)</td>
<td>1950-1997</td>
<td>India</td>
<td>Granger causality</td>
<td>GDP→ELC</td>
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<td>Jumbe (2004)</td>
<td>1970-1999</td>
<td>Malawi</td>
<td>Granger causality, ECM</td>
<td>GDP→ELC (Granger causality) ELC↔GDP (ECM)</td>
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<td>Ho and Siu (2007)</td>
<td>1966-2002</td>
<td>Hong Kong</td>
<td>Co-integration, VECM</td>
<td>ELC→GDP</td>
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<td>Hu and Lin (2008)</td>
<td>1982-2006</td>
<td>Taiwan</td>
<td>Co-integration, VECM</td>
<td>GDP→ELC</td>
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<tr>
<td>Yuan et al. (2008)</td>
<td>1963-2005</td>
<td>China</td>
<td>co-integration, VECM</td>
<td>ELC→GDP</td>
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<tr>
<td>Odhiambo (2009a)</td>
<td>1971-2006</td>
<td>Tanzania</td>
<td>ARDL Bounds testing</td>
<td>ELC→GDP</td>
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<td>Abosedra et al. (2009)</td>
<td>1995-2005</td>
<td>Lebanon</td>
<td>Granger causality</td>
<td>ELC→GDP</td>
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<td>Ghosh (2009)</td>
<td>1970-2006</td>
<td>India</td>
<td>ARDL bounds, co-integration, VECM</td>
<td>GDP→electricity supply</td>
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<td>Odhiambo (2009b)</td>
<td>1971-2006</td>
<td>South Africa</td>
<td>Granger causality</td>
<td>ELC→GDP</td>
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</tbody>
</table>

Note: GDP→ELC means that the causality runs from growth to electricity consumption.  
ELC→GDP means that the causality runs from electricity consumption to growth.  
ELC↔GDP means that bi-directional causality exists between electricity consumption and growth.  
GDP~EC means that no causality exists between electricity consumption and growth.
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<tr>
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<th>Mean Effect Size</th>
<th>Std. Dev. of Effects</th>
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<td>Nature of Data</td>
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<tr>
<td>Developed</td>
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<td>0.364</td>
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<tr>
<td>ANOVA Results:</td>
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</tr>
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<td>Confidence</td>
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<td>+95% CI : 0.455</td>
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<tr>
<td>Interval</td>
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<td>Short Run</td>
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<td>Long Run</td>
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<td>0.227</td>
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<td>ANOVA Results:</td>
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<td>Single Energy</td>
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<td>ANOVA Results:</td>
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<tr>
<td>Confidence</td>
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<td>+95% CI : 0.378</td>
</tr>
<tr>
<td>Interval</td>
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</tbody>
</table>

**Table 4**

Meta Analysis Results

**References**


Karanfil, F., 2009. How many times again will we examine the energy-income nexus using a limited range of traditional econometric tools?. Energy Policy, 36, 1191-1194.


ABSTRACT

In Ghana, to improve maternal healthcare a nationwide health insurance and free antenatal and delivery services have been introduced. Using the delays model, this paper discusses the role of socio-cultural factors in the use of clinics. The administrative capital was purposively sampled in addition to two randomly selected communities. The study targeted women who gave birth between September 2007 and September 2009. Proportionate stratified random sampling technique was used to select 246 respondents.

It was found out that there was no association between attendance at clinics for antenatal care and residence but there was a significant relationship between attendance at clinics for postnatal care and residence. A significant relationship between supervised delivery and level of education was established. In spite of the interventions attendance at clinics for antenatal and postnatal care is low. The Ghana Health Service should pay particular attention to the socio-cultural environment to promote safe motherhood.

Key words: socio-cultural, maternal health, ante/postnatal, Ghana, health service.

INTRODUCTION

The importance of maternal health to the quality of life, level of productivity and life expectancy of women in development cycles is recognised (United Nations Development Programme, 2004). It constitutes a critical input into economic growth, poverty reduction and long term socio-economic development (United Nations Development Programme, 2007). Maternal health, however, remains a major developmental issue 20 years after the Nairobi Conference on Safe Motherhood, and almost a decade after the 2000 World Summit, (Bawah, 2008). Recent global estimates by the WHO (World Health Organisation), UNICEF (United Nations Children's Fund) and the World Bank indicate that close to 600,000 women die annually from pregnancy-related complications, 99% of which occur in the less developed world. In sub-Saharan Africa, one out of every 13 women dies of pregnancy-related causes during her lifetime as compared to one in 4,085 women in more developed countries (McAlister and Baskett, 2006). It is estimated that one in 45 women in Ghana has a risk of dying from pregnancy-related causes in her lifetime (WHO, 2008).

In Ghana, efforts to improve maternal health include building of maternal and child health clinics, training of traditional midwives, development of safe motherhood protocol for all levels of health institutions, the establishment of national health insurance scheme and free antenatal and delivery services (UNDP, 2007; Ghana Statistical Service, Ghana Health Service and Macro International, 2008). In spite of the attempts being made to improve maternal health, supervised delivery and postnatal clinic attendance remain low even though antenatal clinic attendance is generally high. For instance, according to Ghana Statistical Service, Ghana Health Service and Macro International
(2008) 96% of pregnant women used a health facility at least once in their last pregnancy but about 45% of births occurred at home and, one in every four women delivered did not receive postnatal care as recommended. According to Thaddeus and Maine (1990), socio-cultural factors mediate to influence the use of maternal and child health clinics and the handling of pregnancy. It is estimated that between 60% and 90% of deliveries are assisted by Traditional Birth Attendants in Africa is due to adherence to culture (Nyanzi, 2008). Gender roles also influence decision making during the pregnancy-postpartum period (Magadi and Curtis, 2003; Nwokocha, 2007; Furuta and Salway, 2006). This paper therefore discusses the role of socio-cultural factors in the use of maternal and child health clinics using the delays model.

THEORETICAL ISSUES

This paper which is part of M.Phil. Thesis adopts the delays model to explain how the socio-cultural environment mediates to influence the use of health facilities by women in the various stages of maternal process. The model has been used to explain the social and cultural factors responsible for maternal death (Thaddeus and Maine, 1990; 1994; WHO, 2001; Senah, 2003).

The position of the delays model is that the ability of health system to effect rapid intervention is mediated by socio-cultural factors. These factors in the views of Thaddeus and Maine (1990:1994) create three delays for pregnant women in an attempt to access health services. WHO (2001) considers recognition of problem as the first delay and a major issue which causes delay in accessing health facilities and therefore recognised four delays. The delays model considers the society as a critical role player in the promotion of health and reduction of maternal morbidity and mortality. Medical anthropologists have emphasised that the concepts of ‘health,’ ‘sickness’ and ‘problem’ are all cultural constructs which may be reinterpreted to mask the element of medical danger. All these rest on lack of knowledge to recognise the problem (WHO, 2001). These cultural constructs lead to instances where some pregnant women regard small amount of blood discharge as a normal cleansing process (WHO, 2001; Senah, 2003). In many societies there are established norms about child birth, pain and bleeding associated with pregnancy and delivery that women are expected to experience. In Bolivia, some indigenous groups see bleeding as a normal cleansing process and this condition may lead to protracted excessive bleeding (WHO, 2001). According to Senah (2003) in Ghana, it is a norm that the pain of onset labour must be borne with stoicism until the foetus is due for expulsion. This non-recognition of obstetric emergency situation resulting from cultural reconstructions can be fatal.

The decision to take appropriate action is the second delay normally called the delay two (WHO, 2001). Where a problem has been recognised and emergency situation appreciated, there is a considerable delay in taking appropriate action. This delay is normally attributed to ignorance about where to locate the appropriate facility or lack of money to access the services of these facilities (Thaddeus and Maine, 1990; WHO, 2001). This normally occurs in the rural areas especially, where women are generally poorer and their decisions are influenced by their husbands, family and other community members including TBAs. Consequently, emergencies may find their way to traditional midwives, spiritual homes or shrines. Another aspect of this delay is that, in the event of obstructed labour, women are made to confess their alleged marital infidelity with the belief that
such a confession may lead to the expulsion of the foetus. In the northern regions of Ghana, a local herbal preparation, known as Kalugotim is normally administered in obstructed labour. This has caused many cases of ruptured uterus as it enhances labour contractions without a corresponding dilatation of the uterus (Senah, 2003).

When the decision to seek care has been made, there is also a delay in arriving at a health facility. This is delay three, which is normally caused by difficulty in transportation. Many villages have very limited means of transportation and poor roads especially in the rainy season when most feeder roads are not motorable. Thus, the distance factor, which is complicated by lack of vehicles, bad roads and high transport fares, may cause a delay in arriving at the facility, which may be several kilometres away from the community.

Delay within the facility is delay four which is the delay in obtaining care in the facility. WHO (2001) considers this as one of the most tragic issues in maternal mortality which could easily be eliminated. Often, women wait for many hours at the referral centres because of difficulties in obtaining blood supplies, equipment or an operating theatre. The facility finally accessed from the village may be private maternity home, an MCH clinic, a district or regional hospital, each of which has its own problems which may delay quick intervention. There are many private midwives who have no training in life-saving skills and the use of special life-saving instruments, and other modern obstetric techniques. Sometimes, the midwives for financial reasons, delay referrals, hoping that the parturient may deliver spontaneously. Besides, most private maternity homes do not have ambulances and other necessary equipment and medical supplies to handle obstetric emergencies. Senah (2003) observed that the MCH clinics are in no better conditions than the maternity homes; they are in no position to provide essential obstetric functions. The district and regional hospitals do not have specialists such as gynaecologists and obstetricians. They also lack blood and blood banks, ambulances and regular supply of water and electricity. Where these things are present, attitude of health professionals together with doctor-patient ratio may also delay quick intervention.

STUDY SETTING AND METHODS

The study was carried out in three communities in the Awutu-Senya District in the Central Region of Ghana. The district shares common boundaries with the Agona Municipality and West Akim District to the north, Ga South Municipality and Ga West Municipality to the east, Agona Municipality and Gomoa East District to the west, and the Gulf of Guinea to the south. The population of the district is 231,187, out of which 47.4% are males and 52.6% being females. The proportion of the population under 15 years is 42.2%, which is higher than the regional average of 33.3%. The proportion of the population between 15 years and 44 years is 42.9% which is also higher than the regional average of 39.8% (Ghana Statistical Service, 2002). A significant proportion of the population growth in the district is attributed to the rapid growth of Kasoa, a peri-urban community near Accra.

The district has seven (7) public health facilities of different levels, with two of them directly supported by Planned Parenthood Association of Ghana (PPAG). There are also 33 privately owned health facilities, which are mostly located in Kasoa. Currently, the district depends on the Korle-Bu Teaching Hospital, the Swedru Government Hospital and the Effutu Municipal Hospital for emergency services.
The administrative capital, Awutu-Berekum, was purposively sampled in addition to two randomly selected rural communities (Bewuanum-Mfano and Osae-Krodua). The study targeted women aged 15–49 years who gave birth between September 2007 and September 2009 in the district. Lists of names of pregnant women who had attended MCH clinics and those who gave birth in the clinics within the time frame in the selected communities were generated. Stratified random sampling technique was used to select 246 respondents from the chosen communities using the list as the sampling frame. Interview schedule was the main research instrument used for the collection of data on the last pregnancy of respondents. Data inputting was done using SPSS and the analysis was done using STATA version 11 software.

RESULTS

Antenatal care (ANC) is a major component of comprehensive maternal health care. It facilitates detection and treatment of problems during pregnancy and provides an opportunity to inform women and their families about their health and the danger signs associated with pregnancy (Ghana Statistical Service, Ghana Health Service and Macro International, 2008 and Ghana Statistical Service, Ghana Health Service and ICF Macro, 2009). Early and regular contact with a formal health care system during pregnancy can contribute to timely and effective use of services during and after delivery (Ghana Statistical Service and Macro International Incorporate, 1999: Ghana Statistical Service, Noguchi Memorial Institute for Medical Research and ORC Macro, 2004: 2008 and Ghana Statistical Service, Ghana Health Service and Macro International, 2009). Early ANC enables professionals to detect and monitor complications. Mothers were asked to indicate whether or not they sought ANC in their last pregnancy. It was observed that the use of ANC services was high, with 97.1% of women using the facility at least once in their last pregnancy. Out of this, 54.6% of respondents sought care for the first time within the first trimester and 18.9% within the first month of pregnancy (Table 1). Five percent of the respondents, however, visited a health facility to give birth.

Majority (54.63%) of mothers at all levels of education initiated ANC within the first trimester. Mothers with tertiary educational background formed the highest percentage (70.59%), who initiated ANC in the first month, with those with secondary education recording the lowest percentage (10%). However, majority (61.43%) of mothers with secondary education and those who never had formal education (52.86%) initiated ANC within the first trimester after the first month. Apart from the 18.94% and 54.63% of women who attended ANC in the first month and after the first month within the first trimester respectively, the rest of the mothers could not meet the recommendation of the WHO and GHS of four visits with at least once in each trimester for those without complications. This implies that about 26.43% of mothers interviewed did not consult professionals within the first trimester. The situation becomes more serious with those who had complications or likely to develop them.

Majority (53.85%) of women (married, divorced and single) initiated ANC by the third month in their last pregnancy. Married women had the highest percentage (23.38%) initiating ANC earlier than the ‘single’ and divorced mothers. None of the ‘single’ mothers sought care within the first month. The divorced mothers recorded the highest percentage (65.22%) of first ANC visit by the third month. The timing for ‘single’ women was very poor. As high as 30% of them sought care after the first trimester only at the...
time they experienced complications, with 40% seeking care when the pregnancy was due. ‘Single’ mothers were more exposed to risks of maternal complications than their counterparts as they were less likely than their counterparts to seek care early. Investigation on religious affiliation showed that a higher percentage (54.55%) of women in all religious groups dominated by ‘other’ (71.43%), initiated ANC after the first month, within the first trimester. The Christians were more likely than their counterparts to initiate attendance. Again, 4.76% of Christians and 8.33% of Muslims waited until their pregnancies were due before they sought care.

Residential influences were also analysed. Both rural and urban mothers had majority (54.2%) of them initiating ANC after first month within the first trimester. Residential status of mothers did not show any significant impact on the timing of ANC especially, in the first month when rural and urban mothers recorded 20.63% and 20.51% respectively. However, majority (58.13%) of urban mothers initiated attendance after the first month in the first trimester, compared to their rural counterparts (46.15%). About 4.38% of urban mothers who had health facilities in their community did not make use of the facility until they were ready for delivery.

Considering ethnic groups, generally, majority of mothers from all the ethnic groups except the Gas initiated care within the first trimester after the first month, with the Ewes recording the highest percentage (69.03%). ‘Others’ constituting the indigenous Awutus and some other minor ethnic groups had a greater percentage (28.57%) initiating care in the first month within the first trimester. The Ewes however, recorded the least percentage (7.69%) of attendance in the first month of pregnancy. The Gas formed the highest percentage (12.50%) of women who did not seek ANC until they were ready for delivery.

Table 1: Timing of ANC by education, marital status and religion

<table>
<thead>
<tr>
<th>ANC by education</th>
<th>Never</th>
<th>Secondary</th>
<th>Tertiary</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within first month</td>
<td>24.29</td>
<td>10.00</td>
<td>70.59</td>
<td>18.94</td>
<td>43</td>
</tr>
<tr>
<td>Within first 3 months</td>
<td>52.86</td>
<td>61.43</td>
<td>5.88</td>
<td>54.63</td>
<td>124</td>
</tr>
<tr>
<td>When I experienced complications</td>
<td>12.86</td>
<td>17.86</td>
<td>5.88</td>
<td>15.42</td>
<td>35</td>
</tr>
<tr>
<td>When I was due</td>
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<td>5.00</td>
<td>5.88</td>
<td>4.85</td>
<td>11</td>
</tr>
<tr>
<td>Can’t tell</td>
<td>5.71</td>
<td>5.71</td>
<td>11.76</td>
<td>6.17</td>
<td>14</td>
</tr>
<tr>
<td>N</td>
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<td>17</td>
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<table>
<thead>
<tr>
<th>ANC by marital status</th>
<th>Married</th>
<th>Single</th>
<th>Divorced</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within first month</td>
<td>23.38</td>
<td>-</td>
<td>4.35</td>
<td>20.51</td>
<td>48</td>
</tr>
<tr>
<td>Within first 3 months</td>
<td>53.73</td>
<td>30.00</td>
<td>65.22</td>
<td>53.85</td>
<td>126</td>
</tr>
<tr>
<td>When I experienced complications</td>
<td>13.43</td>
<td>30.00</td>
<td>21.74</td>
<td>14.96</td>
<td>35</td>
</tr>
<tr>
<td>When I was due</td>
<td>5.47</td>
<td>-</td>
<td>-</td>
<td>4.70</td>
<td>11</td>
</tr>
<tr>
<td>Can’t tell</td>
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<td>40.00</td>
<td>8.70</td>
<td>5.98</td>
<td>14</td>
</tr>
<tr>
<td>N</td>
<td>201</td>
<td>10</td>
<td>23</td>
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<table>
<thead>
<tr>
<th>ANC by religion</th>
<th>Christian</th>
<th>Moslem</th>
<th>Others</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within first month</td>
<td>20.11</td>
<td>16.67</td>
<td>-</td>
<td>19.09</td>
<td>42</td>
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</tbody>
</table>

69
<table>
<thead>
<tr>
<th>Within fist 3 months</th>
<th>52.91</th>
<th>62.50</th>
<th>71.43</th>
<th>54.55</th>
<th>120</th>
</tr>
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<tbody>
<tr>
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<td>14.29</td>
<td>15.00</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>When I was due</td>
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<td>8.33</td>
<td>-</td>
<td>5.00</td>
<td>11</td>
</tr>
<tr>
<td>Can’t tell</td>
<td>5.29</td>
<td>12.50</td>
<td>14.29</td>
<td>6.36</td>
<td>14</td>
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</table>

### Table 2: Timing of ANC by residence

<table>
<thead>
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<th>Timing of ANC</th>
<th>Urban</th>
<th>Rural</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within first month</td>
<td>20.63</td>
<td>20.51</td>
<td>20.59</td>
<td>49</td>
</tr>
<tr>
<td>Within fist 3 months</td>
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<td>46.15</td>
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<td>129</td>
</tr>
<tr>
<td>When I experienced co</td>
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<td>21.79</td>
<td>14.71</td>
<td>35</td>
</tr>
<tr>
<td>When I was due</td>
<td>4.38</td>
<td>5.13</td>
<td>4.62</td>
<td>11</td>
</tr>
<tr>
<td>Can’t tell</td>
<td>5.63</td>
<td>6.41</td>
<td>5.88</td>
<td>14</td>
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<td>N</td>
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### Table 3: Timing of ANC by ethnic groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Akan</th>
<th>Ewe</th>
<th>Ga</th>
<th>Others</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing of ANC</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within first month</td>
<td>22.08</td>
<td>7.69</td>
<td>12.50</td>
<td>28.57</td>
<td>21.08</td>
<td>47</td>
</tr>
<tr>
<td>Within fist 3 months</td>
<td>50.65</td>
<td>69.23</td>
<td>25.00</td>
<td>57.14</td>
<td>52.91</td>
<td>118</td>
</tr>
<tr>
<td>When I experienced co</td>
<td>16.88</td>
<td>19.23</td>
<td>12.50</td>
<td>2.86</td>
<td>14.80</td>
<td>33</td>
</tr>
<tr>
<td>When I was due</td>
<td>4.55</td>
<td>3.85</td>
<td>12.50</td>
<td>5.71</td>
<td>4.93</td>
<td>11</td>
</tr>
<tr>
<td>Can’t tell</td>
<td>5.84</td>
<td>-</td>
<td>37.50</td>
<td>5.71</td>
<td>6.28</td>
<td>14</td>
</tr>
<tr>
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<td>8</td>
<td>35</td>
<td>223</td>
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</table>

### Table 4: Logistic regression on timing of ANC

<table>
<thead>
<tr>
<th>Observation</th>
<th>Categories</th>
<th>Odds ratio</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence</td>
<td>Urban (ref)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>0.86</td>
<td>0.35–2.11</td>
</tr>
<tr>
<td>Education</td>
<td>No education (ref)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>2.75**</td>
<td>1.12–6.73</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>0.06***</td>
<td>0.01–0.34</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married (ref)</td>
<td>1.00</td>
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<tr>
<td></td>
<td>Single</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Divorced/Separated</td>
<td>3.22</td>
<td>0.39–26.39</td>
</tr>
<tr>
<td>Religion</td>
<td>Christian(ref)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moslem</td>
<td>8.61*</td>
<td>0.87–84.98</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Akan (ref)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ewe</td>
<td>2.13</td>
<td>0.35–13.06</td>
</tr>
<tr>
<td></td>
<td>Ga</td>
<td>3.719</td>
<td>0.22–62.67</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>1.09</td>
<td>0.29–4.21</td>
</tr>
</tbody>
</table>

–Perfect prediction
As noted in the analysis, location or the distance factor did not make any impact on timing of ANC as the odds for both rural and urban women were not statistically significant. Though both were statistically significant in their odds for timing of ANC, mothers with tertiary background registered a higher significance level \((p \leq 0.001)\) than those with secondary background (Table 3). Mothers with secondary education were about 46 times more likely than those with tertiary education to seek ANC early with an odds ratio of 2.75. The higher odds ratio for mothers with secondary background may be attributed to the sample size as their number was more than those with tertiary education. The odds for marital status were statistically insignificant. Apart from the Moslems who had an odds ratio of 8.61 which was statistically significant at 95% confidence level, other religious affiliations had no effect on timing of ANC. Despite the fact that percentages in Table 2 show that the Ewes were more likely than other ethnic groups in seeking ANC within the first trimester, the odds show that the various ethnic groups were statistically insignificant.

The results of logistic regression show that rural mothers with odds ratio of 0.39 were more likely than their urban counterparts to seek PNC within 48 hours after delivery, and this was statistically significant \((p \leq 0.05)\). At a higher significant level with odds ratio of 2.97 mothers with secondary education were nine times more likely than those with tertiary background to receive PNC (postnatal care) within 48 hours (Table 3). Divorced/separated mothers were likely to attend postnatal clinic with odds ratio of 0.13 and statistically significant. Those belonging to other religious groups (odds ratio of 14.89) were about 9 times more likely than the Moslems (odds ratio of 1.64) to receive postnatal care at a significance level of 0.05. The odds for the various ethnic groups were not statistically significant. The Gas were about three times more likely than the Ewes and about five times more likely than those in other ethnic groups to receive PNC within 48 hours.

Postnatal care (PNC) within the first forty-eight hours after delivery is critical for detecting and monitoring potential complications (Ghana Statistical Service and Macro International, 1999 and Ghana Statistical Service, Ghana Health Service and ICF Macro, 2009). According to the Ghana Health Service (2008) and Ghana Statistical Service, Ghana Health Service and Macro International (2008) and Ghana Statistical Service, Ghana Health Service and ICF Macro, 2009), the incidence of postpartum haemorrhage which is the leading cause of maternal mortality could be reduced if mothers seek PNC within the critical period after delivery (within 48 hours).

On residential basis, rural mothers (72.7%) were more likely than urban mothers (59.1%) to seek PNC within 48 hours after delivery. The timing for PNC was very poor, especially for respondents in the urban community. More than half of women in both rural and urban communities did not seek care on second day after delivery. Thus, only 31.82% and 47.73% of urban and rural mothers respectively sought care on the second day after delivery. According to the data, 30% of urban mothers and 20.45% of rural mothers sought care a week after delivery.

In all, 65.7% Akans, 50% Gas, 47.1% Ewes and 69.1% constituting other ethnic groups attended PNC within 48 hours after delivery. The Akans formed the highest percentage (65.7%) of mothers who used PNC facilities on the second day after delivery (critical period). A high percentage of women from all ethnic categories sought PNC a week after delivery, with the Ewes recording the highest percentage (41.18%). However,
the Akans formed the least percentage (24.49%) of women who sought PNC a week after delivery.

Majority of women at all levels of education attended postnatal clinic within 48 hours after delivery, with mothers with tertiary education background as the highest (83.3%), and mothers with secondary background recording the least percentage of 56.1%. A higher percentage (37.58%) of women at all levels of education sought PNC on the second day after delivery. Mothers with tertiary education (66.67%) were more likely than their counterparts in seeking PNC on the second day after delivery. In all as high as 25.50% of women at all educational levels did not seek PNC until a week after delivery. This was dominated by mothers with secondary education (29.59%).

PNC attendance within 48 hours was high for all women (married, single and divorced). The single mothers had the highest percentage (100%) of those who sought care within 48 hours, whilst the married recorded the least percentage (59.4%). PNC attendance on the second day after delivery recorded the highest percentage (36.60%). Single mothers had the highest percentage (100%), whilst the married women had the least percentage (33.33%). About 29.55% of married women sought PNC a week after delivery.

Even though most mothers sought care on the second day after delivery, 25.71% of them sought care a week after delivery. Muslims formed the religious group with the highest attendance (38.89%) on the second day of delivery, with women in ‘other’ religious groups constituting 33.33% as the least percentage. Again, majority (66.67%) of women in ‘other’ religious groups delayed seeking PNC till a week after delivery.

**Table 5: Timing of postnatal care**

<table>
<thead>
<tr>
<th>Observation</th>
<th>Categories</th>
<th>Within 48 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence</td>
<td>Urban</td>
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</tr>
<tr>
<td></td>
<td>Rural</td>
<td>44</td>
</tr>
<tr>
<td>Education</td>
<td>No education</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>12</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
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<td>Single</td>
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</tr>
<tr>
<td></td>
<td>Divorced/Separated</td>
<td>20</td>
</tr>
<tr>
<td>Religion</td>
<td>Christian</td>
<td>120</td>
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<tr>
<td></td>
<td>Moslem</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Others</td>
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</tr>
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<td>Ethnicity</td>
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<td>99</td>
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<tr>
<td></td>
<td>Ewe</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Ga</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>29</td>
</tr>
</tbody>
</table>

Two dummy response categories; within 48hrs and after 48hrs
**Table 6: PNC by residence**

<table>
<thead>
<tr>
<th>Timing of PNC</th>
<th>Urban</th>
<th>Rural</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day of delivery</td>
<td>27.27</td>
<td>25.00</td>
<td>26.62</td>
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</tr>
<tr>
<td>Second day after delivery</td>
<td>31.82</td>
<td>47.73</td>
<td>36.36</td>
<td>56</td>
</tr>
<tr>
<td>After second day</td>
<td>10.91</td>
<td>6.82</td>
<td>9.74</td>
<td>15</td>
</tr>
<tr>
<td>A week after delivery</td>
<td>30.00</td>
<td>20.45</td>
<td>27.27</td>
<td>42</td>
</tr>
</tbody>
</table>

**Table 7: PNC by ethnic group**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Akan</th>
<th>Ewe</th>
<th>Ga</th>
<th>Others</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing of PNC</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day of delivery</td>
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<td>23.53</td>
<td>37.93</td>
<td>26.35</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Second day after delivery</td>
<td>40.82</td>
<td>23.53</td>
<td>50.00</td>
<td>31.03</td>
<td>37.16</td>
<td>55</td>
</tr>
<tr>
<td>After second day</td>
<td>10.20</td>
<td>11.76</td>
<td>25.00</td>
<td>8.78</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>A week after delivery</td>
<td>24.49</td>
<td>41.18</td>
<td>25.00</td>
<td>31.03</td>
<td>27.70</td>
<td>41</td>
</tr>
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<td>148</td>
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</table>

**Table 8: PNC**

**PNC by education**

<table>
<thead>
<tr>
<th>Day of delivery</th>
<th>Never</th>
<th>Secondary</th>
<th>Tertiary</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day of delivery</td>
<td>43.59</td>
<td>21.43</td>
<td>16.67</td>
<td>26.85</td>
<td>40</td>
</tr>
<tr>
<td>Second day after delivery</td>
<td>35.90</td>
<td>34.69</td>
<td>66.67</td>
<td>37.58</td>
<td>56</td>
</tr>
<tr>
<td>After second day</td>
<td>14.29</td>
<td>8.33</td>
<td>10.07</td>
<td>25.50</td>
<td>38</td>
</tr>
<tr>
<td>A week after delivery</td>
<td>20.51</td>
<td>29.59</td>
<td>8.33</td>
<td>25.50</td>
<td>149</td>
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</tbody>
</table>

**PNC by marital status**

<table>
<thead>
<tr>
<th>Day of delivery</th>
<th>Married</th>
<th>Single</th>
<th>Divorced</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day of delivery</td>
<td>25.76</td>
<td>30.00</td>
<td>26.14</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Second day after delivery</td>
<td>33.33</td>
<td>100.0</td>
<td>55.00</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>After second day</td>
<td>11.36</td>
<td>9.80</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>A week after delivery</td>
<td>29.55</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PNC by religion**

<table>
<thead>
<tr>
<th>Day of delivery</th>
<th>Christian</th>
<th>Moslem</th>
<th>Others</th>
<th>Total</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day of delivery</td>
<td>26.05</td>
<td>27.78</td>
<td>25.71</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Second day after delivery</td>
<td>37.82</td>
<td>38.89</td>
<td>33.33</td>
<td>37.86</td>
<td>53</td>
</tr>
<tr>
<td>After second day</td>
<td>8.40</td>
<td>27.78</td>
<td>10.71</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>A week after delivery</td>
<td>27.73</td>
<td>5.56</td>
<td>66.67</td>
<td>25.71</td>
<td>36</td>
</tr>
<tr>
<td>N</td>
<td>119</td>
<td>18</td>
<td>3</td>
<td>140</td>
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</tr>
</tbody>
</table>
Table 9: Logistic regression on timing of PNC

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Categories</th>
<th>Odds ratio</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence</td>
<td>Urban</td>
<td>0.39*</td>
<td>0.15–1.01</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
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<tr>
<td>Education</td>
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<td></td>
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<tr>
<td></td>
<td>Secondary</td>
<td>2.97**</td>
<td>1.04–8.51</td>
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<td></td>
<td>Tertiary</td>
<td>0.33</td>
<td>0.03–3.58</td>
</tr>
<tr>
<td>Marital status</td>
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</tr>
<tr>
<td></td>
<td>Single</td>
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<td></td>
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<tr>
<td></td>
<td>Divorced/Separated</td>
<td>0.13**</td>
<td>0.02–0.67</td>
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<tr>
<td>Religion</td>
<td>Christian</td>
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<td>1.64</td>
<td>0.37–7.15</td>
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<tr>
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<td>Others</td>
<td>14.89*</td>
<td>0.76–290.23</td>
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<td>Ethnicity</td>
<td>Akan</td>
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<td>0.34–3.92</td>
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<td>Ga</td>
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<td>0.28–29.86</td>
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<tr>
<td></td>
<td>Others</td>
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<td>0.17–1.92</td>
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</table>

Two dummy response categories: supervised and unsupervised deliveries

DISCUSSION

Researches indicate that education plays an important role in the promotion of maternal and child health during pregnancy and the post delivery period. Women with higher education are more likely to seek early healthcare than their counterparts with lower education (McAlister and Baskett, 2006; Ghana Statistical Service, Noguchi Memorial Institute for Medical Research, and ORC Macro, 2004; Ghana Statistical Service, Ghana Health Service and Macro International, 2008 and Ghana Statistical Service, Ghana Health Service and ICF Macro, 2009). They are supposed to have enough knowledge about how to better handle pregnancy and the need for medical services during the period (Jagdish and Cleland 1995; Varga, 2003; Magadi and Curtis, 2003). According to Preston (1989), literacy skills enable women to perceive and retain health information and actively relate with health workers, which enables them to adopt health-promoting behaviours that impact on them and their families. Ghana Statistical Service, Ghana Health Service and ICF Macro (2009) observed that education correlates positively with the number and timing of antenatal care and postnatal care attendances which agrees with the conclusion of Furuta and Salway (2006). Maternal education is positively associated with utilisation of Maternity care services (Addai, 2000; 1998; Celic and Hotchkiss, 2000).

Reports from the 2007 Ghana Maternal Health Survey and the 2008 Demographic and Health Survey indicate that women with secondary education and above initiate care seeking earlier and have higher attendance than their counterparts. Contrary to these findings, as high as 25% of mothers with secondary education initiated ANC after the first trimester – only at the time they experienced complications. The study observed that women at all levels had 25.5% who sought PNC after the critical period dominated by mothers with secondary education (29.59%). The Ghana Health Service (2008) and the Ghana Statistical Service and collaborators (2009) note that women who delay ANC and PNC attendance are highly exposed to risks of complications and infections, especially
postpartum haemorrhage which is the leading cause of maternal mortality and morbidity in Ghana and Africa.

Early initiation of ANC enables professionals to screen for risk factors and quickly intervene when the need arises. In the same vain, timely postnatal check-ups help to screen for infections and the possibility of bleeding after delivery. Investigations reveal that women who attended antenatal and postnatal care late resorted to the traditional midwives and herbalists/spiritual fathers to deal with complications. Addai (2000), on utilisation of maternal health care services contends that medical need is determined not only by the presence of physical disease but also by cultural perceptions of illness. In most African rural communities, maternal health care services co-exist with indigenous health care services, therefore, women must choose between the options. Irrespective of their levels of education, adherence to traditional beliefs may delay women in seeking care early (Senah, 2003; Nyanzi, 2008).

On the delays model Thaddeus and Maine explained that sometimes the parturient or the husband may have knowledge about a pregnancy problem but adherence to traditional beliefs may lead them to shrines and TBAs rather than professionals for treatment which would delay appropriate intervention. Thus, women who sought care from places other than the clinics were made to spend at least a week after delivery for purification before they sought medical care to avoid attacks from enemies who were responsible for their previous miscarriages. Confirming the observations of Senah (2003) and Arhin (2001) that until pregnancy becomes visible, it remains secret in Ghanaian society; the study found that some women delayed seeking antenatal care because they did not want people to see at the initial stages that they were pregnant. Some illiterate mothers explained in the IDI that they delayed seeking ANC and PNC because of the way the professionals discriminated against them in their last pregnancy. They claimed that women who speak English have always been treated in a special way by the professionals. One illiterate mother had this to share in the study;

I pity illiterate pregnant women who rush to the clinic for treatment because the place is the preserve for those who could speak English. In my previous pregnancy, even when I reported earlier than my literate counterparts they were attended to before me. No matter the kind of pain a woman goes through once she cannot speak English they consider her as a secondary human being. Due to this attitude I was not encouraged to seek professional assistance early in my last pregnancy and after delivery, but rather relied on herbs especially syringing for treatment of complications. I sought PNC at the time I knew delays would not cause any harm to me – after I and the baby have been treated with herbs for about a week. We always hear on the radio and television that every pregnant woman should report any problem at the early stages to professionals for speedy interventions but any time I attended the clinic I was disappointed in the professionals.

AbouZahr (2007) observed that when women are not treated well in a facility by professionals, she may not return to the facility the next time. Apart from the fact that it delays the woman to receive care, the facility loses its value in the eyes of the woman.

Divorced mothers were at a higher risk of complications and death than the married mothers. According to Kwast and Liff (1988), women who do not receive ANC and PNC are often poor, illiterate and unmarried with limited knowledge of maternity
care services. Again, Mekonnen and Mekonnen (2002) contend that marital status exert an influence in determining the timing of ANC and PNC attendance, with married women more likely to receive care on time from a health professional than unmarried women. According to Nwokocha (2007), in Africa where women are not economically empowered, single parent mothers do not have the necessary resources to access quality maternal health care services compared to their married counterparts since they depend on family heads. ‘Single’ mothers lack the opportunity for discussion about their health unlike the married women who could do that with their spouses. In this study married women recorded the highest percentage (23.38%) of those who sought care within 48 hours, with none of the unmarried women seeking antenatal care within the first month of the first trimester. Again, about 40% of single mothers sought care only at the time they were ready to give birth. However, 100% of single mothers in the study sought care within 48 hours, with the married women recording 59.4% - the lowest percentage.

The single mothers explained that even though they needed men to decide jointly with them, taking decisions alone was very quick and easy. Aside, they knew that staying alone was dangerous so they had to make sure they and their babies were given proper care to avoid any complications. Unlike the married, they were responsible for their own decisions. Thus, they did not require men to pay for the medical expenses. Some of the married women who delayed seeking postnatal care explained that even though they had the opportunity to discuss issues with their husbands, the men had the final say regarding where and when to seek care hence, the delays. Nwokocha (2007) and Senah (2003) observed that decisions concerning women’s health are normally taken by husbands or family heads.

Addai (2000), Mekonnen and Mekonnen (2002) observed that religious affiliation of a pregnant woman exert some influence on the utilisation of maternal health care services, which causes variation among women in different religious organisations. Using the 2003 Ghana Demographic and Health Survey, Gyimah, Bafour and Addai (2006) found religion to be a significant factor in the use of maternal health care services in Ghana, with Muslims and traditional women less likely to use such services compared with their Christian counterparts. A similar study conducted by Kwast and Liff (1988) found a significant variation in the utilisation of maternal health care services, with Orthodox/Catholic, Muslim and Protestant women exhibiting greater use of maternal health care services than women who follow traditional beliefs. In the study, Christian mothers were more likely than their counterparts to initiate ANC, whilst the Muslims were more likely than the Christians and members of other religious bodies to seek postnatal care. It was observed that some Christian mothers spent some time with their spiritual fathers during the critical period before seeking professional care. They had to seek divine protection for the children before the world set eyes on them. Those who were neither Christians nor Muslims also had spiritualists who performed some rites for them and their children. This normally lasted for a minimum of one week after birth, after which the women could visit the clinic.

The distance factor could not make impact on antenatal and postnatal care attendance. For instance, within the first month of the first trimester the rural and urban respondents recorded 20.63% and 20.51% respectively. However, urban mothers were more likely than their rural counterparts to make visit in the first trimester after the first month. On postnatal care attendance, rural respondents (72.7%) were more likely than...
their urban counterparts (59.1%) to seek care within 48 hours. More than half of women who had home delivery in both rural and urban communities did not use PNC services on the second day. These women were exposed to risks such as infections at the point of delivery and haemorrhage associated with child birth. Haemorrhage is the leading cause of maternal deaths in Ghana constituting about 34%. According to GSS et al (2008), postpartum haemorrhage is the commonest. In both the rural and urban communities there were shrines and spiritual centres with poor sanitary conditions where women sought care for delivery and post delivery services. These women definitely lack skilled assistance at birth, and in the event of any life threatening complication they may lose their lives because such cases are beyond the competence of the herbalists and spiritualists. Besides, potential complications cannot be screened for where births occur outside the facility.

Even though they formed majority of mothers who sought care in the first trimester after the first month, the Ewes were less likely than other ethnic groups to initiate ANC in the first month of the first trimester. On PNC attendance, the Akans formed majority of those who sought care on the second day after delivery, with the Ewes recording the lowest percentage. However, late PNC attendance was highest among the Ewes as 41.18% of them sought care a week after delivery. The Ewes were found to be strongly influenced by traditional beliefs which translated into the use of facilities during pregnancy and after delivery. Further investigations revealed that those who did not seek care in the first month did so for keeping the pregnancy secret. For those who sought PNC a week after delivery, they were kept in their homes or in the shrines by spiritualists for some rituals to be performed to protect the newborn. Once a woman sought help from an herbalist, she must accomplish all the demands of the herbalist to avoid any future misfortunes in her life or that of the child. One woman shared her experiences in the IDI;

> Normally in my hometown before a parturient consults a medical professional, permission must be sought from the family priest (Torgbui) who would find out whether it is safe to take the pregnancy out for people to see. Where he is not certain about the security of the pregnancy or foresees a danger, the pregnant woman must wait until it is safe before she makes any attendance at the clinic. As the Torgbui offers a protection to a woman during pregnancy, there are some principles that she is required to observe after delivery failure to honour which will lead to misfortune in the future life of the child. This may take the form of chronic sickness, bad luck or failure in life. To purify her and her child, the woman will be detained for not less than a week after delivery for the necessary rituals to be performed after which she could visit the clinic for professional care.

According to the women, it is immodest to show early signs of pregnancy until it becomes visible. Women who began ANC with herbalists, TBAs or started clinical attendance with different clinics were ridiculed by health workers for not beginning treatment with them. The government of Ghana is working hard to encourage institutional delivery and women who deliver at home to instantly seek PNC to avoid haemorrhage or any other complication associated with child birth. However, some of the women complained that, whenever they rushed to the facility after birth, they were rather insulted for having home delivery instead of commending them for the decision taken to timely seek professional care. To ensure quicker referrals of emergency cases by the TBAs and herbalists, the UNFPA recommends that the TBAs and herbalists be encouraged by the
professionals to serve as liaisons between the community and the health system. Counting on the emotional care given by the TBAs, Nanyi (2008) observed that pregnant women in Africa are always comfortable with them compared with the professionals. Nukunya (2003) on tradition and change explains that any scientific or modern technology can only be successful when it is taken through the culture of the people for which it may not be seen as imposition. Cannavan (2008) notes that safe motherhood policies in developing countries fail because the implementers fail to recognise the scientific limitations of the policies and the traditional philosophies underpinning the behaviour of people. Thus, people have reasons for consulting TBAs instead of professionals and the best people to promote the use of facilities by pregnant women are the TBAs. Therefore, neglecting them in the health delivery system may lead to failure of safe motherhood programmes because they have influence on the women at the local level.

According to the respondents the situation is worsened when a woman fails to produce an identification card to show that she attended ANC in that particular clinic. It is through counseling that people insure their health under the National Health Insurance Scheme (NHIS). To promote maternal and child health care in Ghana the government has taken the cost of antenatal and postnatal care so that pregnant women and nursing mothers respectively could be encouraged to seek professional care irrespective of their status. Some women claimed they were unduly delayed at the facility when they failed to produce health insurance ID cards. They also explained that the health workers were not satisfied with the conditions covering the health insurance scheme especially, where women are not supposed to pay any money to them. In this situation, poor care was given and the workers normally arranged with women who had money to give them preferential treatment at the expense of the poor. Almost every drug prescribed by the doctor was always not available at the dispensary and the nurses would quickly direct patients to a particular drug store or request money for the drug from the patients without the knowledge of the medical officers.

Despite the health insurance, the cost involved in dressing to appeal to the eyes of the health workers and colleagues at the clinic to command respect also delayed some women in seeking care, especially postnatal care which requires dresses and buying of some materials for both the baby and the mother.

CONCLUSIONS AND RECOMMENDATIONS

The study examined maternal health clinic attendance, specifically ANC and PNC attendance in the Awutu-Senya District of the Central Region of Ghana. Investigations revealed that the timing of antenatal care and postnatal care attendances was poor. Most delays in using maternal health care services occurred within the context of culture and tradition. Women spent at least a week with TBAs and herbalists before seeking ANC and PNC. Dehumanising care given to pregnant women and nursing mothers within the facility by professionals (nurses and midwives) was another barrier which prevented women from using maternal health care services in the study area. Male dominance was a serious challenge which delayed married women in seeking care.

It is recommended that the Ghana Health Service (GHS) pay particular attention to the socio-cultural environment in order to achieve the MDG 5. In-service training on human relations be regularly organised by GHS for health workers to improve upon how they relate with pregnant women so that pregnant women would be encouraged to use
maternal health care services during pregnancy and after delivery to promote safe motherhood. TBAs and herbalists be encouraged by professionals make timely referrals and to educate women on the need for timely antenatal and postnatal attendance to enhance timely interventions.

REFERENCES

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PREFERENTIAL TRADE AGREEMENTS, CORRUPTION AND FOREIGN DIRECT INVESTMENT: THE “EVERYTHING BUT ARMS (EBA) INITIATIVE”.

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ABSTRACT
Non-reciprocal preferential trade agreements (PTAs) are touted to be good catalysts for foreign direct investments (FDIs) into the beneficiary countries. The reason being that investors seek to take advantage of the benefits of such agreements (usually reduced tariffs). However, corruption and political instability in the beneficiary countries as well as the unilateral nature of these PTAs may influence the inflow of FDI. We assess the effects of the European Union’s nonreciprocal PTA for Least Developed Countries (LDCs) - the “Everything But Arms” (EBA) initiative on the inflow of FDIs into beneficiary countries in Africa taking into account corruption in the host country. Findings show that the EBAs did not have a significant effect on FDI inflows into EBA beneficiary countries from the EU with the most corrupt countries faring worse. However, FDI from the rest of the world into EBA beneficiary countries increased due to the EBA.

1. Introduction
The question in this paper is: Do non-reciprocal preferential trade agreements have a significant effect on FDI flows into the beneficiary countries especially from the preference granting country? In this paper, we empirically assess the effects of the European Union’s non-reciprocal preferential trade agreement, the “Everything But Arms (EBA) Initiative” for African LDCs on the inflow of FDI into the EBA beneficiary countries in Africa. At present, there are 48 countries that get duty free access to the EU market under the EBA of which 33 are within Africa. While the effects of reciprocal free trade agreements on the flow of FDI between member countries have been well documented, not much has been done on the flow of FDIs in the case of non-reciprocal PTAs. The reason for this may be because there are very few arrangements like
this and the few available haven’t been around long enough to allow for meaningful statistical analysis.

Globalization is often cast as the best way to increase world prosperity as countries trade based on comparative advantage. However, even among the most ardent supporters of globalization, it is recognized that under the current institutional arrangements, the benefits from globalization may be inequitably distributed. The poorest may actually lose from globalization (see for example (Kaplinsky, 2005), (Harrison, 2006)). Based on this recognition, a number of countries especially OECD countries have initiated programs intended to make poor countries share in the gains from globalization by integrating them into the world economy. Most of these programs are in the form of preferential market access to the markets of these developed countries or regions through some favorable tariff regimes. The most popular of these initiatives include the “Everything But Arms (EBA)” initiative of the EU which grants duty-free access to EU markets for Least Developed Countries (LDCs). Another is the African Growth and Opportunity Act (AGOA) which grants substantial market access to the U.S. markets.

Basically, these initiatives are intended to encourage exports from beneficiary countries to the markets of the preference-granting countries thus enhancing their growth and development prospects. The mechanism through which increased exports is to be realized under these initiatives is through increased domestic and foreign investment in the beneficiary country. Given the already low capital endowment of these beneficiary countries, it is often predicted that the generous nature of these trade arrangements coupled with their non-reciprocal nature will tend to attract FDI into the beneficiary countries as firms take advantage of these arrangements (Elliot, 2010).

Theoretically, the relationship between trade and FDI is not clear. Trade and FDI have been seen as two different ways of reaching foreign markets and thus may not be complementary (Blomstrom & Kokko, 1997). Firms or investors may reach foreign markets by sending their products there or setting up a company or branch in the foreign country to produce and sell the product in those markets. A firm may find it profitable to locate a plant in a foreign market for a number of reasons among which is the size of the market, the cost of transportation and the tariffs imposed on imported products entering the foreign country (the so-called tariff-jumping).

A few studies have confirmed tariff-jumping as the main reason for FDI flows into some industrial countries. High tariffs in the UK on imported goods explained FDI flows into the UK especially in the manufacturing sector (Dunning, 1958). Similar results and conclusions were made for Canada (Horst, 1972) and Australia (Brash, 1966). If FDI was indeed induced by higher tariffs on imports, then it will imply that the proliferation of preferential trade areas around the world will reduce the incentive to invest in foreign markets and thus reduce FDI flows around the world (Medvedev, 2012).

Apart from the fact that the studies supporting tariff-jumping as the determinant of FDI flows are dated, the global economy has changed in many significant ways in the past few decades. Changes in the form of advances in technologies that reduce transportation costs and expanding market sizes due to the proliferation of regional and preferential trade agreements most likely will affect the role that tariffs play in influencing FDI flows. In fact more recent studies that have looked at the relationship between trade openness and investment suggest that FDI flows are higher with higher degrees of openness. The North American Free Trade Area (NAFTA) has increased FDI flows in the region especially into Mexico and Canada (MacDermott, 2006). This result supports the results of other studies such as (Caves, 1996), (Goberman, 2002), (Markusen, 2002) which emphasize the complementarities between trade and investment due to increased
off-shore production based on factors that may make the destination countries attractive for those processes. In fact in a review of the determinants of FDI flows, openness to be the second most important determinant of FDI flows (Chakrabarti, 2001)

As noted above, two competing explanations have been put forward to explain FDI flows – the tariff-jumping/market access argument and the openness argument. In the case of reciprocal PTAs, increases in FDI are most likely explained by the reasons associated with the openness argument. On the other hand, in the case of non-reciprocal PTAs such as the EBA, increases in investment can be explained by both the tariff-jumping argument and the openness argument and in this particular scenario, openness and tariff jumping explanations to FDI flows will be complementary. For instance under the EBA, firms that want to jump-tariffs but do not want to (or cannot) set-up production processes in the EU for whatever reason have an incentive to set-up those processes in an LDC or an EBA beneficiary country. For instance, neighboring countries’ producers can relocate to nearby EBA countries to take advantage of the EBA. Also, EU investors that were interested in relocating some processes to an LDC but were deterred because of tariffs when accessing EU markets can now do so provided the other conditions for firm location warrant it and these investors will still have duty-free full access to the EU market. Investors in EBA-beneficiary countries also now have access to a larger market that will encourage them to put more of their investments in the local economy. All these actions suggest that theoretically, all things being equal, a non-reciprocal PTA such as the EBA has the effect of increasing net FDI inflows into the EBA beneficiary countries, first from EU investors, secondly from the rest of the world and thirdly from domestic investors.

While the argument is made that the flow of FDI into EBA beneficiary countries is likely to increase under the EBA initiative, other factors in the host country may affect the actual flow of FDI into these countries. Important among these factors is the level of corruption, the level and strength of democracy and the level of resource endowments in the host country. Even though democracy enhances FDI inflows, this relationship is true only if the share of minerals and oils in total exports is less than some critical value (Asiedu and Lien, 2011). This underscores the importance of resource endowments in determining FDI flows in the sample of countries they analyzed. For this paper, our main interest is on determining whether the EBA has had an effect on FDI flows into the beneficiary countries and whether corruption influences how much FDI goes into an EBA beneficiary country.

The rest of the paper is organized as follows. In section 2, we present a brief background of the “Everything But Arms” Initiative. This is followed by section 3 which presents a description of the data and variables employed in our analysis. Section 4 outlines the empirical methodology and presents the results. The final section discusses the results and concludes with some policy recommendations.

2. The Everything But Arms Initiative: Background

The WTO’s Most Favored Nation’s principle (MFN) is the overarching principle guiding trade in goods and services among WTO member countries. The principle obligates WTO member countries to give equal treatment to the imports of all other WTO member countries no worse than the treatment given to the imports of their "most favored" trading partner. Essentially, the principle requires member countries to treat imports from other countries equally with respect to tariffs, quotas etcetera.

Recognizing that even though free trade is good for economic development not all countries benefit equally from it, the United Nations Conference on Trade and Development (UNCTAD) in 1968 created waivers for the MFN principle for some countries. In 1971, following the lead of
the UNCTAD, the WTO created a more formal system of exemptions under the Generalized System of Preferences (GSPs). The GSPs is an exemption from the MFN principle thus allowing countries to lower tariffs on poorer countries without having to lower tariffs on richer countries.

The European community was the first to implement a GSP in 1971. The EBA is part of the European Union’s GSPs. The EU’s EBA initiative grants non-reciprocal duty free access to the EU market for all imports from LDCs with the exception of Arms. The initiative came into effect in March of 2001. According to the mandate of the EU on the EBA, the initiative is aimed at promoting the socioeconomic development of LDCs. At the time of its inception, the Commissioner of trade of the European Union, Pascal Lamy touted the importance of the initiative in the development of the poorest countries of the world in terms of its potential to boost the exports of beneficiary countries while at the same time enhancing their incomes. In his words,

“It’s a worldwide first. At the end of the day, we will have 100 per cent access, with no exclusions, except of course for arms. We have delivered on our fine words. This sends a signal to the rest of the world that we are serious about getting the most disadvantaged to share in the fruits of trade liberalization.” (EC Council of Ministers, 2001)

The EBA initiative is different from many other non-reciprocal trade arrangements in the sense that the mandate grants access to the EU market for an unlimited period of time provided the beneficiary country remains an LDC and recognized as such by the United Nations (UN). This unlimited program length feature of the EBA provides investors with greater certainty of market access to the EU market and thus has the potential to stimulate long-term investments in LDC productivity. When a country is disqualified by the UN from the list of LDCs, the country in question is automatically withdrawn from the initiative. However a transitional period of three years could be considered by the EU commission. It must also be noted that while being an LDC is a necessary condition to participate in the EBA, it is not sufficient to guarantee acceptance into the initiative by the EU. For instance, beneficiary countries are still expected to meet some basic socio-political conditions such as good governance, the rule of law and the respect of human rights in order to continue to benefit from the initiative. In principle, countries that are found to be in violation of these rules could be unilaterally withdrawn from the initiative. At this point in time, no beneficiary country has suffered that fate.

Since the EBA is embedded in the EU’s GSP, it automatically adopts most of the rules governing that system including domestic content requirements. Under this rule, inputs used in exports to the EU are expected to originate from within the EBA area or from the EU. Some inputs used in the production process can come from outside the EBA or EU but this should not be more than 10 percent of the export value of the product. In addition to this is the rule allowing for temporary suspension of preferences should the EU observe “massive increases in imports of products originating in the LDCs in relation to their usual levels of production and export capacity”. This clause was discussed in the context of abating fraud but the general formulation of the clause does not make this intention clear.

Finally, for certain products such as sugar, rice and banana, the EU has quantitative restrictions as to the amount that can enter the EU market in any given year. Once that quota limit is reached, additional exports can only enter the EU market at higher tariff levels.

While the EU’s EBA initiative introduces a degree of certainty beyond that of similar programs with its 100 percent product coverage and unlimited program length, some of the very rules that govern the initiative can introduce significant uncertainties that will discourage
investment into EBA-beneficiary countries. For instance the program may not have time restrictions but membership is tied to being an LDC. Significant investments (aimed at taking advantage of the initiative) that fast tracks development will invariably render those countries ineligible for the EBAs provided they graduate out of the LDCs. So even though the EBAs are supposed to encourage investment, increasing investment will be like shooting one in the foot as that will render the country not qualified.

Secondly, the inflexible rules of origin embedded in the EBA initiative could also be a huge disincentive to investors. Compared to similar initiatives, the EBA was ranked as one of the programs with the lowest flexibility in terms of its rules of origin clause (Elliott, 2010). The wording and operation of this clause could act as a huge disincentive to large scale investments especially in countries that exported little to the EU market before the EBA. It may also limit investment intended to diversify the export portfolio of beneficiary countries all because of its trigger clause that says such as significant increases in exports to the EU by the beneficiary country beyond what was the case before the EBA will trigger a review.

Thirdly, quotas on some products such as banana may also serve as a disincentive to invest in these products because higher levels of investment are directly tied to the probability of reaching these quota limits which will subsequently lead to higher tariffs imposed by the EU.

In conclusion, while the EBAs offer a lot of opportunities for FDI flows into the beneficiary countries, it also comes with some rules that introduce uncertainties into the decision to invest in these countries and thus could possibly have no effect on FDI flows into these countries.

3. Data and variables

For the majority of our empirical analyses, we use panel data covering 48 African countries for the period 2000 to 2010. The sample period is restricted to these years and countries because of availability of data. There are 54 countries in Africa and out of these, 33 are officially LDCs which are a part of the 48 LDCs that currently benefit from the EBA initiative. The 33 LDCs in Africa are all part of our sample. With the exception of dummy variables and ratio variables, all other variables are in natural logarithms. Data on GDP, foreign direct investment, imports and exports, natural resources, gross fixed capital formation were all obtained from the World Bank’s World Development Indicators. EU FDI into African countries, EU GDP were obtained from Eurostat. Corruption Perception Indices (CPI) were obtained from Transparency International.

1. **Dependent variable: FDI to GDP ratio**

   The dependent variable used in the analysis is net FDI flows into each of the 48 African countries. Following the literature, the measure of FDI used is the value of FDI relative to GDP. We use two complementary measures of FDI. The first is the net FDI flows (from the world) into each country as a percentage of the receiving country’s own GDP. The second looks at a “residual measure of FDI” which partials out EU FDI flows into each of the countries in our sample and then takes the ratio of this residual FDI to GDP ratio as the dependent variable. This latter measure allows us to consider the effects of the EBA on FDI flows from other parts of the world apart from the EU.

2. **Control Variables:**
   
   **i. EBA**

   EBA is a dummy variable which equals 1 if a country is a beneficiary of the EBA at time \( t \) and zero otherwise.
ii. **Corrupt**

Bardham (1997) defines corruption as the use of public office for private gains. Since corruption can hardly be measured directly, most measures are indices that try to capture the perception of corruption in the system. The corruption index used in our analysis is the “Corruption Perception Index (CPI)” by Transparency International (TI) which is available since 1995. This index reflects the level of perceived corruption in a country and not actual corruption since the latter is difficult to measure. In constructing the corruption perception index, corruption is viewed as the misuse of public power for private benefit. The index has a scale ranging from 10 to 0. A score of 10 means a country is perceived as not corrupt while a score of 0 means the country is perceived as highly corrupt. To make the interpretation of results easier, we reconstruct the corruption index by rescaling the data. We do this by subtracting the reported CPI from 10 and this rescaled variable is interpreted directly: higher values imply higher levels of perceived corruption and vice versa.

iii. **EU GDP**

This measures GDP from the EU. The idea is that a richer EU will lead to more income available for investment into other countries, especially markets that they can produce cheaper and export back to the EU market.

iv. **Relative GDP**

The effect of GDP on FDI is well documented and does not need any further motivation here. Many studies find that larger economies tend to attract more FDI because of market size. Do more economically dominant countries in our sample tend to disproportionately attract FDI irrespective of their EBA status? Our measure of GDP is couched in terms of market size. We take each country’s GDP as a ratio of total sample GDP to assess the relative importance (or market size) for that country.

ii. **Open**

Open is an index of trade openness of country \( i \) at time \( t \). It is the ratio of the sum of imports and exports to GDP.

iii. **Distance**

Distance is the distance measured between the EBA beneficiary country and the geographic center of the EU. Investments from the EU into African countries are expected to be affected by distance especially if those investments are made to produce and export to the EU market. Even for non-EU countries, distance to the EU from an EBA beneficiary country will be equally relevant if the EBA and access to the EU market is the driving force behind such investments. If FDI is made with the purpose of taking advantage of cheaper resources and then exporting the products to the FDI originating country or other distant markets, then distance will be expected to have a negative effect on FDI. On the other hand, if FDI is made to take advantage of local markets or to jump tariffs, then distance will be a positive determinant of FDI. Since our data on FDI does not tell what exactly the FDI is used for, the sign of distance in our analysis is a matter of empirical evidence. Distance is calculated using the great-circle method with Belgium taken as the center of the European Union and obtained from Andrew Rose.

4. **Estimation Procedure and Results**
   i. **Estimation Procedure**
The generic model we estimate is

\[ FDI_{it} = \beta eba_{i,t} + \gamma \text{Corrupt}_{i,t} + \theta eba_{i,t} \times \text{Corrupt}_{i,t} + \sum_{n} \sum_{i} \text{Other Controls}_{i,t} + \sum_{i} \text{Country Fixed Effects} + \sum_{t} \text{Time Fixed Effects} + \sum_{i} \text{Country} \times \text{Time} + \sum_{i} \text{Country} \times \text{Time}^2 + \varepsilon_{i,t} \]

As mentioned earlier, the variable EBA is a dummy set equal to 1 if a country is an “EBA” beneficiary at time t and 0 otherwise. The co-efficient \( \beta \) is interpreted as the average rise in FDI that can be attributed to EBA membership. “Corrupt” measures the effect of corruption on FDI flows and the interaction between “Corrupt” and “EBA” tells the joint effect of being an EBA beneficiary and corruption on FDI inflows into the country. In addition to some controls, the model includes both country and time fixed effects to control for existing differences between countries and to control for time specific differences. In some of the models, we also include country specific trends to allow for unobserved factors that influence FDI flows into a country to trend linearly and quadratically over time. Equation (1) could be estimated using OLS on the pooled cross sectional data. However, OLS estimates of EBA will be biased in the presence of an omitted variable that is correlated with EBA. Also tests for heteroscedasticity and autocorrelation using the Breusch-Pagan/Cook-Weisberg test indicated the presence of the two in our model thus making the OLS estimates less reliable.

To gain efficient and consistent estimates, we estimate model (1) using a system Generalized Methods of Moments estimator (GMM). The presence of first order autocorrelation and heteroscedasticity means that the GMM estimator that uses an instrument list and a heteroscedasticity-robust weighting matrix is generally more efficient than OLS and reduces finite sample biases. However, to determine whether the system GMM is appropriate for our data, we test for over-identifying restrictions (relevance of instruments) using the Sargent test. We also test for second order serial correlation. In both cases, the null hypothesis is that the relevant assumption is met. Failure to reject the null hypothesis in either case provides support for the model.

We carry out our analysis of the system GMM in two ways. The first approach directly applies system GMM to variations of Model (1). However, given the many control variables and the small sample size, we sacrifice of degrees of freedom which could affect our estimates and tests. As a result and to check on the robustness of our results, we also estimate the system GMM after partialling out the effects of country and year specific fixed effects as well as country specific linear and quadratic time trends. The procedure we adopt involves first running OLS on model (2) (or variants of it depending on which time variables are included). The important thing here is to make sure that all estimations do not include any other variables apart from country and time specific fixed effects and country specific time trends.
Model (2)

\[ FDI_{it} = \beta + \sum_i \text{Country Fixed Effects} + \sum_t \text{Time Fixed Effects} \]
\[ + \sum_i \text{Country} \times \text{Time} + \sum_i \text{Country} \times \text{Time}^2 + \varepsilon_{i,t} \]

We save the residuals from model (2) and then using those residuals (which in effect are the country time and trend demeaned FDI), we run a system GMM controlling for the variables of interest and other variables that could possibly bias our estimates.

Model (3)

\[ RESFDI_{it} = \beta e^a_{i,t} + \gamma Corrupt_{i,t} + \theta e^a_{i,t} \times Corrupt_{i,t} \]
\[ + \sum_n \sum_i \text{Other Controls}_{i,t} + e_{i,t} \]

where RESFDI are the residuals from model (2). Given that the OLS estimates of Model (2) are super-consistent, we can expect to get reliable estimates from Model (3).

ii. Results and Analysis

In Table 1, we present a summary of the data used in our analysis. Mean FDI from the EU to sample countries is about a third of the mean of FDI from the rest of the world to sample countries. Further examination of the sample revealed that the bulk of EU FDI flows into Africa is concentrated in very few countries, especially, South Africa, Ivory Coast, Egypt, Morocco, Nigeria and Angola. The majority of the countries actually experienced negative net FDI flows between them and the EU. This suggests some form of reverse FDI flows where FDI rather moves from poorer countries to richer countries.
Table 1 presents results using system GMM on Model (1). Two measures of FDI were used. The first uses a ratio of “total” net FDI inflows to GDP including those of the EU. The second use net FDI inflows into the country after we partialled out the effect of EU FDI on total FDI flows into the specific country in our sample. This is what we term Residual FDI - remainder of total FDI after partialling out EU FDI.

First, consider the results for the first two models presented in Table 2 above. GMM1 estimates the effect of EBA and corruption on FDI inflows into the country after controlling for only country and time fixed effects and without controlling for other variables that could possibly affect FDI. We also did not control for country specific time trends in GMM1. The results indicate that the effect of EBA in attracting FDI is negative albeit insignificant at the 5 percent significance level. This result is surprising as the EBA is not supposed to have a negative effect on FDI. On corruption, we find that more corrupt countries generally are less attractive for FDI. However, when we interact “EBA” and Corruption, the results suggest that more corrupt EBA countries significantly fared better and attracted more FDI. While there may be cogent reasons for this (such as corruption greasing the wheels of government), we interpret these results with a grain of salt given that the model could be suffering from omitted variable bias. For instance, for a country to qualify for the EBA, they must be below a certain income and development level. Therefore, such variables will be correlated with EBA and their omission could seriously bias the results. In GMM2, we attempt to mitigate this bias by controlling for these factors while also allowing for country specific linear and quadratic trends. The co-efficient of EBA is now found to be positive but still insignificant. Corruption is still negatively significant in determining FDI inflows. The co-efficient on EBA and corruption is also negative which means that more corrupt EBA countries fared even worse...
when it comes to attracting FDI into their countries despite access to the EU market. The results in GMM2 appear to us to be more reliable under the circumstances.

**Table 2 – GMM Results without demeaning data**

<table>
<thead>
<tr>
<th>World FDI to GDP Ratio</th>
<th>Residual FDI to GDP Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBA</td>
<td>-40.8236</td>
</tr>
<tr>
<td></td>
<td>(24.0448)</td>
</tr>
<tr>
<td>CPI</td>
<td>-6.7449</td>
</tr>
<tr>
<td></td>
<td>(1.8738)</td>
</tr>
<tr>
<td>EBA*CPI</td>
<td>7.0237</td>
</tr>
<tr>
<td></td>
<td>(3.3006)</td>
</tr>
<tr>
<td>Other Controls</td>
<td></td>
</tr>
<tr>
<td>Relative GDP</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>4.0783</td>
</tr>
<tr>
<td></td>
<td>(3.0067)</td>
</tr>
<tr>
<td>Distance</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>-6.6463</td>
</tr>
<tr>
<td></td>
<td>(5.1026)</td>
</tr>
<tr>
<td>Open</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>0.0888</td>
</tr>
<tr>
<td></td>
<td>(0.1097)</td>
</tr>
<tr>
<td>FDI to GDP ratio (lag)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>0.7558***</td>
</tr>
<tr>
<td></td>
<td>(0.1352)</td>
</tr>
<tr>
<td>Year Effects (F Statistic)</td>
<td>Yes</td>
</tr>
<tr>
<td>Country Effects (F-Stat)</td>
<td>Yes</td>
</tr>
<tr>
<td>Linear Country Trend</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Quadratic Country Trend</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Constant</td>
<td>-45.1463***</td>
</tr>
<tr>
<td></td>
<td>(12.1268)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>361</td>
</tr>
<tr>
<td>Number of countries</td>
<td>48</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>21</td>
</tr>
<tr>
<td>Hansen's J Test of Over identification (P value)</td>
<td>0.4889</td>
</tr>
</tbody>
</table>

For GMM3 and GMM4, (i.e. using the residual FDI flows after partialling out EU FDI into the respective countries), the results closely mirror those from GMM1 and GMM2, at least, qualitatively.

All the other control variables have the expected sign; the sign on distance warrants special mention. Distance is found to be negatively related with FDI. This could suggest that FDI flows into these countries are not to take advantage of domestic markets but rather to produce and export to foreign markets. In other words, tariff jumping may not be the reason for FDI flows into the sample countries. This is consistent with our reasoning as to why non-PTA could be attractive to FDI for the EBA beneficiary country.

In Table 3, we present a summary of the results for Model (3) for comparison purposes. The results in Table 3 are obtained after taking out the effect of country and time specific fixed effects and also country specific time trends from our FDI data. In other words, this allows some
form of demeaning of the FDI flows of the country and time specific fixed effects and trends. For GMM5 and GMM6 (i.e. the estimations that did not partial out EU FDI from total FDI), the results are similar to the corresponding models in Table 2, at least qualitatively for most of the variables. Considering GMM6, EBA has a positive but insignificant effect on FDI flows into EBA beneficiary countries while corruption has a negative significant effect on FDI. The interaction between EBA and Corruption also has the expected sign.

Table 3 – GMM estimation with partialled out time and country fixed effects and Trends

<table>
<thead>
<tr>
<th></th>
<th>World FDI</th>
<th>EU FDI Partialled Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GMM5</td>
<td>GMM6</td>
</tr>
<tr>
<td>EBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-22.0463 (14.4338)</td>
<td>32.5466 (24.9158)</td>
</tr>
<tr>
<td></td>
<td><strong>25.9933</strong> (9.5256)</td>
<td><strong>25.9180</strong> (8.9243)</td>
</tr>
<tr>
<td>CPI</td>
<td>-5.2392*** (0.6105)</td>
<td>-4.0500*** (1.1316)</td>
</tr>
<tr>
<td></td>
<td><strong>-3.1713</strong> (0.6383)</td>
<td>-0.7341 (0.5141)</td>
</tr>
<tr>
<td>EBA*CPI</td>
<td>3.6077 (1.9098)</td>
<td>-3.6044 (3.2608)</td>
</tr>
<tr>
<td></td>
<td><em>-3.2521</em>* (1.3097)</td>
<td><strong>-3.8239</strong> (1.1601)</td>
</tr>
<tr>
<td>Other Controls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rel GDP</td>
<td>No</td>
<td>0.5704 (2.0112)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.2625 (0.3661)</td>
</tr>
<tr>
<td>Distance</td>
<td>No</td>
<td>7.2383 (3.9211)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-2.8834* (1.1686)</td>
</tr>
<tr>
<td>Open</td>
<td>No</td>
<td>0.3292* (0.1608)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.0045 (0.0830)</td>
</tr>
<tr>
<td>FDI-GDP Ratio (Lag)</td>
<td>No</td>
<td>0.1652 (0.0924)</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Country FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Linear Country Trend</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Quadratic Country Trend</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Trend Constant</td>
<td>-33.8502*** (4.3387)</td>
<td>38.9986 (39.4195)</td>
</tr>
<tr>
<td></td>
<td><strong>-20.7373</strong> (4.2716)</td>
<td><strong>-24.5235</strong> (15.8750)</td>
</tr>
<tr>
<td>No. of Obs</td>
<td>361</td>
<td>359</td>
</tr>
<tr>
<td>No. of Countries</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>No. of Instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hansen's J Test of Over identification (P value)</td>
<td>0.5382</td>
<td>0.4499</td>
</tr>
</tbody>
</table>

Standard errors in parentheses *p<0.05, **p<0.01, ***p<0.001

For Model (8), we find that the results even though qualitatively similar to the corresponding model in Table 2 (i.e. model 4), there are quantitative differences especially for EBA, Corruption and the interaction between EBA and Corruption. The estimated co-efficient on EBA is positive and significant suggesting that EBA beneficiary countries experienced significant increases in FDI flows from the rest of the world apart from the EU for the period. This may or may not be as result of the EBA but rather as a result of external factors. Also, GMM8 indicates that EBA countries that are more corrupt experienced significant falls in FDI
thus faring significantly worse compared to those less corrupt. All other variables have the expected sign in our estimations of GMM8.

5. Conclusion and Recommendations

In this paper, we set out to examine the effect of the EUs everything but arms initiative on the inflow of foreign direct investment into the EBA beneficiary countries. The main aim of the EBA initiative was to integrate LDCs into the world economy so that they could share in the prosperity that comes with globalization. The channels through which this was supposed to happen was through trade, increased productivity and evidently increased investment both locally and from abroad i.e. foreign direct investment. Theoretically, the non-reciprocal nature of the EBAs predicts that FDI will flow into the EBA beneficiary countries and not flow out of the country all things being equal. Our empirical analyses above suggest that the EBA did not significantly increase FDI flows especially from the EU into EBA beneficiary countries. This result is however not too surprising if you look at some of the provisions of the EBA. Of particular importance are the provisions on “rules-of-origin”, quotas on some products and the unilateral nature of the whole EBA initiative.

There are number of reasons that could possibly explain the inability of the EBA to attract FDI into the EBA beneficiary countries. The first is the unilateral nature of the initiative. The EU has the right to kick out any country if it "feels" that it has violated some socio-economic standards and regulations. These rules include political disturbances in the beneficiary countries. Political disturbances in LDC countries are not a rarity. Therefore, investors may be skeptical to invest in these LDCs.

Secondly, the EBA is only available to a country as long as a country remains on the list of LDCs. However, to take full advantage of the EBA also automatically implies that a country stands the chance of jumping into the developing countries’ list. Therefore, if an investor puts investment in an EBA beneficiary country because of the EBA initiative and realizes that the country is taken out of the list of LDCs and thus lose the EBA privilege, it may prevent investment in that country in the first place.

Thirdly, the stringent rules of origin also make it difficult for most LDCs to take advantage of these EBAs. Even if a firm decided to set a plant in an EBA beneficiary country, it may find that it will not be able to completely exploit the benefits of the initiative because most of these countries are so dependent on other non-EBA countries for the source of their inputs. In that sense, the investor may not have any reason to invest in the EBA country despite the initiative.

Finally, the quotas that were introduced on certain products such as sugar, rice and banana as explained in the main paper also serve as a disincentive for firms to invest in EBA countries because of the uncertainty with exhausting the quota limits and only to realize that the majority of your exports are now subject to tariffs.

For the EBA initiative to actually be able to attract the needed investment, the uncertainty that surround the initiative vis-à-vis rules of origin, unilateral nature of the EBA, and the quotas should be eliminated. For instance, with regards to the unilateral nature, the EU could make agree to an independent body to address concerns of violations or wrongful denial of access to markets. Without this provision, firms do not feel they have any opportunities to be heard in cases of abuse.
References


THE ROLE OF THE MEDIA IN CONFLICT RESOLUTION
AND MANAGEMENT IN NIGERIA

Olanike S. Odewale*

Abstract

The prevalence of conflict in the world and particularly in Africa has been a major source of concern to individuals, families and the society at large. People have become apprehensive about the negative consequences of conflict, due to the way and manner it erupts in our society. At the global level, nations of the world are concerned about conflict and its effects to the extent that the negative impact of conflict in one country is shared by others. The press is an important institution in every society, and whichever of these or other roles it finds itself performing at any time matters a great deal in the life of a people. One particular news story, or an editorial, or a personal commentary published in a newspaper could serve as a mirror or reflector of an aspect of the social reality, and at the same time contain some ingredients of motivation, and even of conciliation as well, all of which could combine in some way to affect the level of knowledge, attitudes, and actions of people in determining the course of any event. In crisis situations when the routines have been disrupted and when people's nerves and tempers also are likely to have been frayed, leading to a highly charged social atmosphere, the role of the mass media can easily be very decisive in helping to escalate the crisis or to assuage the tempers and bring the crisis under control. In practically every country in the West African sub-region today, there are spontaneous and longstanding crises or conflicts which if unattended, could jeopardize the corporate existence of the nation, and disturb the political stability of the region. This paper will examine the role of the media in conflict management in Nigeria. The paper will consider how well media have covered conflicts and what they are doing to manage the conflicts. Finally, the paper will recommend how a vibrant and strong national media can contribute to political stability.

Keywords: Conflict, Media, Management, Nigeria, Resolution

1. Introduction

One sure way of keeping in touch with our contemporary world is through the media. Communication is a vital component of our lives and existence and no society has been known to exist without it. The role of the media in any society ranges from that of the mirror, the conciliator, the shaper of issues and events and many more depending on the situation at any particular point.

In normal times when much of life's processes can be substantially observed in their regularized routines, the power and importance of the media continue to exist unhindered. Even though the press as a social institution has been around for many centuries in most nations of the world, the question as to how the press goes about performing its function of providing information to people continues to be asked with a great deal of interest and anticipation. The
question continues to be asked because despite the various constraints, the press usually has the
ability to determine what to report, when to report it, how to tailor the information, and where it
will be published. This is concrete evidence of the power of the press.1

Certain factors that influence the press in the performance of its functions include the
prevailing political systems and political culture, the level of economic strength and
independence enjoyed by the press, the ownership structure, and the level of professional
education and training of journalists, the nature of the audience, the importance of the event in
relation to the interest of the audience, the time of the occurrence of the event and the status of
the particular medium in relation to other media with which it competes for the attention of the
audience. When a mass medium is sufficiently strong economically to assert its independence,
the tendency is for it to apply moderation, balance, and constructive analyses of events as a
contribution to the resolution of conflicts.2 This paper will consider whether the Nigerian press
coverage of conflicts reflect any bias that could have contributed to the management of such
conflicts? What roles have they played and what positions and sides have they taken in reporting
conflicts, which may make or mar the management and resolution of such conflicts?

2. Conflict, Conflict Resolution and Conflict Management

Most definitions of conflict embody an element of struggle, strife or collision and in this
way distinguish conflict from competition. Conflict has been described as a state of tension
which exists when one party perceives its goals, needs desires or expectations are being blocked
by another party.3

Lewis described conflict as the struggle over values, claims to status, power and scarce
resources in which the aims of the opposing parties are not only to gain the desired values but
also to neutralize, injure or eliminate rivals.4 Conflict may occur within groups, communities and
nations and these conflicts may be triggered by ethnic, racial or religious differences as well as
differences in attitudes, beliefs and values.5

Conflict could either be good or bad depending on the outcome of the resolution or its
management. If the outcome of a conflict is positive, then it is good but if the outcome is
negative, it is bad conflict. It is noteworthy that the outcome of a conflict need not be a win-lose
outcome. The resolution and management of a conflict could produce a win-win outcome.

Conflict resolution can be regarded as any process that resolves or ends conflict via
methods which can include violence or warfare. Alternatively, it can be viewed as a non-violent
process that manages conflict through compromise, or through the assistance of a third party who
either facilitates or imposes a settlement or resolution. Conflict resolution processes are many
and varied and can be seen on a continuum ranging from collaborative, participatory, informal,
non-binding processes (such as mediation, conciliation, third party negotiation) to adversarial,

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Media Review, Vol. 8, No. 1, 1994, p.27
2 Ibid
3 Ade Abolurin, ‘Democratisation, Conflict Management and the Amnesty Question in Nigeria’, Ibadan, John
5 Ade Abolurin, above note 6

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fact-oriented, legally binding and imposed decisions that arise from institutions such as the courts and tribunals.6

Conflict management is based on the principle that all conflicts cannot necessarily be resolved, but learning how to manage conflict can decrease the odds of unproductive escalation. Conflict management refers to the measures that limit, mitigate and/or contain a conflict without solving it. The process involves acquiring skills related to conflict resolution, self awareness about conflict modes, conflict communication skills and establishing a structure for management of conflict in the community.7

One of the first steps in conflict management is to recognize that a conflict situation exists. One should not ignore it and count on it disappearing by itself. The biggest problem in developing the institutions of conflict control is that of catching conflicts young. Conflict situations are frequently allowed to develop to almost unmanageable proportions before anything is done about them, by which time it is often too late to resolve them by peaceable and procedural means.8 Avoidance in a particular situation might conceivably be the best answer, but this step should be made only after conflict is explicitly recognized and alternative ways to manage it are examined.

3. Media Coverage of Conflicts in Nigeria

Lack of information can, at any stage of a conflict, make people desperate, restless and easy to manipulate. The ability to make informed decisions strengthens societies and fosters economic growth, democratic structures and the positive outlook on the future.9

The media does not need justification for its existence. Its service to society is justification in itself. Media cannot only help to distribute information but also counter hate-speech and create an environment of balanced opinions and information equilibrium. For the media, it can be problematic to find a balance between preventing harm caused by speech and protecting individual expression. Being able to find this balance however is important especially in conflict situations. Responsible journalism does not just re-publish press releases but is truly concerned with a truthful, balanced and fair account of events. In order to achieve this, journalists have to stay clear of judgmental representations and describe reality without embellishment.

In Nigeria, the media often “dichotomize and dramatize” conflicts, thereby inflaming passions which tended to further worsen situations.10 By its very constitution, proprietorship, mode of operation and sustenance, the Nigerian press is akin to being a little sensational, gossipy, and manipulative in the treatment of conflict stories, if only to stay in the market. This is evidenced by their screaming headlines, scandal and gossip stories, and in some cases, pedestrian use of language. Since it is unfashionable in the journalistic turf to report events and issues in such a manner as may be seen to be expressly biased, there is the need to develop measures by which to raise the credibility of the Press in Nigeria, define a mode of operation for her and position her to effectively articulate the issues inherent in the country.11

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7 Ibid
The surveillance and interpretive roles of mass media are critical to conflict reporting in Nigeria. In its surveillance function, the press plays the role of an observer, which is “a necessary component for enforcing economic, political, cultural and even moral stability” in the polity. In this role, the media highlight aspects of society – events, people and issues – which they gather as information and report as news.  

Although most news information are immediately consumable since they are made up mainly of poetic materials, that is things that are redundant, because they derive from the material culture and are easily comprehensible, there are also abstract issues that pertain to argument or that are complex and requiring interpretation. Hence there is the need for the interpretation function of the mass media, which is fulfilled by editorials, commentaries and opinion articles.  

It is noteworthy that the very nature of conflict constitutes a bane to objective reporting. Conflict, especially when it gets violent, affects the editor’s judgment of news value. Violent conflict has an inherent capacity to invade the newsroom. As Niblock noted that the selection of one story against another is determined by the intrinsic newsworthiness of the story and that is a function of just how eye-catching and attention-grabbing the event depicted will be on the page. By such value judgment, the news media establishes a culture of fear which they perpetuate by portraying a vast array of threats. Hence, such value judgment of news is not beneficial to effective solution-oriented conflict discourse because it leaves out important perspectives that could lead to conflict resolution giving priority to gory behavioural aspects. Such portrayal presents and shapes a negative perception of risk among members of the news audience and creates a sense of helplessness when it does not cover aspects that the general public hopes for and for a possible solution.  

Further, in the attempt to manage and control news flow and win public opinion, the forces involved in a conflict engage in the ‘embedding’ of reporters such that the reporters report the news with such emotional intensity that it is totally impossible to remain the detached reader and this, in turn, has the potential of compromising objectivity and balance in conflict management. Also, due to the cost implication and security of entering into the actual conflict areas, journalists are constrained to complete the story from the city angle leaving out crucial on-the-scene aspects.  

Another factor that affects the manner and mode in which conflicts are reported is the prevailing culture of corruption and patronage. The media takes on the forms and coloration of the social and political structures within which it operates. A poor democratic structure characterized by bribery, looting and embezzlement of public funds, a situation that media practitioners are sufficiently acquainted with and are effectively positioned to participate in, will have a telling effect on the practice of objective conflict reporting. This is so because the press is only a reflection of the society in which it operates. Under such an environment, objective conflict report is compromised.

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13 Ibid  
15 C.I Eti, above note 11  
16 Ibid
4. The Media Role in Conflict Resolution and Management

In some circumstances, media can act as an advocate for groups that do not ordinarily have access to media. It is more common to see images of demonstrations from distant countries in which demonstrators have gone through the trouble of writing signs and slogans in English, in the hope of getting their message across to an international audience. Another way of doing this is by orchestrating dramatic events designed to catch the attention of sensation seeking international media.17

The media play a crucial role in a democratic system’s self-correcting mechanism, and while public information may have dramatic consequences for any democratically elected government per se, it does not threaten the political system. In a non-democratic system the political structures and institutions are often more personally dependant on those who hold key decision-making positions.

What constitutes news is always the result of a selection of certain facts and the overlooking of others. The news media bring some features of reality to our attention, placing them in the light, whereas most of the rest is kept in the dark. The number of events and social dynamics that could be news is difficult to fathom and cannot be summarized in a couple of minutes, seconds or even hours a day. And it is important to remember that the accumulated glimpses, given in the reports of the international media portray the world, as it should not be, rather than how it is. Particularly, international television media often focus on events and actor behaviour, while rarely explaining the attitudes, perceptions and socio-economic reasons leading up to a violent event.18

In most situations of rising tension, before a conflict has passed the threshold to violence, the media has little interest or use for these news stories. It is usually after some sort of trigger event, like an exodus of refugees or a massacre, that is also sufficiently photogenic and dramatic, that the media takes notice. As such violent conflicts seem to irrupt from out of nothing, a complete lack of rationality, which would make it equally impossible to see the way out of a violent confrontation. This may be one of the reasons explaining the common tendency to view violent conflict as something more or less inevitable and constant, like a natural catastrophe. Once the media does show interest in a conflict, it is unfortunately usually when the critical preventive moment has passed.19

The media in the violent phase of a conflict can exert positive pressure and have negative consequences. In one conflict that received considerable media attention, parties in the conflict repeatedly fired on themselves in order put pressure on international decision-makers. In these circumstances, accurate reporting is essential, but often due to a lack of time and accessibility, it is difficult to verify information. One aspect that this reflects is that parties who are willing to shoot at themselves for the cameras are probably also more dependant on, and vulnerable to, media pressure. Contrary, to some of the negative effects on peace processes, with the eyes of the international media fixed on the parties in a conflict, actors may be more reluctant to break agreements.20

Two specific functions of the news media in a political structure are essential to conflict prevention and democratic development. One is as a medium of communication between elected governments and their constituents, and the other, is as a guardian of transparent and accountable

18 Ibid
20 Ibid
politics. Particular to any stable and representative state is the importance of creating a legitimate government, in the eyes of the greater majority of its citizens. The media play an active role in determining who is given access to this process and in defining what is legitimate.21

When a conflict is violent it is very difficult to promote most societal developments, including media development. When media interventions in conflicts have taken place, it is usually directly after cessation of violent behaviour. These periods are particularly volatile and a completely independent media (if one actually exists) can be very vulnerable. Groups have not been disarmed and the memory of violence and injustices are far from resolved. In other words, media’s role as an important actor in conflict management is very different during and directly after the violent phase of a conflict.

5. Recommendations

The media, at any given point, determine what issues are important in a society and this gives the media the power to determine what the people should be thinking mainly because a higher percentage of any given society places high reliance on media information. With this in mind, the media is expected to raise conflicts to the plane of discussion and should do everything possible to see that the public gets the right information that will enable them take an informed decision.

The choices or decisions made by a journalist covering a conflict could determine the course of the conflict. As the reporter of the conflict, others would rely on the reporter’s perspective and opinion; hence such opinions must be fair and balanced. In fulfilling its critical role, the media needs to avoid the risk of oversimplification of conflict by classifying opposing views into the two extremes of good or bad, inferior or superior. The mass media should approach conflict reporting with the understanding that there are far more than two sides to every story. Hence there is the need to be careful against representing the image of conflict as a two-sided tug of war, but rather as the image of a prism with many facets that are at once interconnected and distinct and also change with the angle of light and the angle of the viewer.22

An independent media that represents all different parts of society can serve as a safety valve to ensure that communication does not break down completely. To do this effectively, media have to be editorially and economically independent. One cannot assume that economically independent media will automatically lead to an active civil society and editorially independent media.23

News media have the capacity to give credible information in order for the people to make well-informed choices and this role is paramount. However, particularly in the short-term, directly prior to and after violent phase of a conflict, it is equally important that the media should encourage tolerance and a willingness to solve conflicts at all levels without resorting to violence. Media intervention initiatives such as peace broadcasting have this as a primary goal for intervention. Among others, the horrifying experiences in Rwanda and former Yugoslavia point towards the need for peace broadcasting under certain circumstances and to the importance of adhering to professional journalistic standards and ethics. Such initiatives can also function as a complement to media coverage that concentrates exclusively on dramatic, negative events.

largely ignoring background history and news of constructive behaviour. They can also have an important alternative influence because peace broadcasting specifically targets parts of society through, among others, cultural programmes.24

However, because the very purpose of peace broadcasting is to influence people’s attitudes, there is an inherent risk that these media can be perceived as propagandistic. This suggests that, in a long-term perspective, peace broadcasting should not be seen as an alternative to replace credible and independent news media as a source of information.

Journalists should not allow their personal views and emotions as well as ethnic, religious, political and ideological sentiments to influence their reports on conflicts as such may call to question the credibility of the reports and put their lives at risk. In all cases the principle of fairness and accuracy should apply. Also, journalists should have adequate knowledge of the history, politics, geography, etc of the country, region or area where they are covering conflicts and as such they should be sensitive and cautious in reporting events that are capable of inflaming passions.

6. Conclusion

In today’s conflicts, media have a pivotal role to play, as an arena and as an actor in the political system. Influence of the media is closely related to the conflict dimensions pertaining to the communication of attitudes and perceptions that influence legitimacy and credibility in any political system. These dimensions are particularly important in weak states and democratic transitions, where a transfer of power has to be made from certain elites groups to include all actors in civil society. However, most conflicts occur in domestic political settings where there are signs that the means of mass communications continue to increase in importance, suggesting that continued efforts are needed to understand the role of national media in violent conflict. International and national media have very different roles to play. However, in terms of media intervention, there are indicators that under certain circumstances international and national media may be able to complement each other. While international media has the most important potential influence in conflicts in the violent phase, and at a decision-making level, national initiatives are most effective for long-term, sustainable conflict management in pre and post conflict phases. International media can have an effect on elite decision-making, but these cases are marginal and only under particular circumstances and for short time periods.

National media and media initiatives that aim to operate within a country have more potential in terms of sustainable conflict management, particularly in the pre-violent and the post-violent phases of a conflict. Unlike international media, national media is part of a society and, therefore, has the means and potential to play an active and sustainable role. It can either act as a catalyst in escalation to violence or to long-term sustainable conflict management and societal development, meaning that caution and insight is needed. More importantly, media has the potential to play a constructive role in conflict management and prevention, by encouraging democratic principles, supplying credible information, and acting as a guardian of transparent politics.

THE BLACK MARKET FOR KIDNEYS: ASSESSING THE CHALLENGES

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ABSTRACT

Over the last decade there has been a substantial increase in the black market for organs, particularly for kidneys. The illegal trade of kidneys has become extremely difficult to detect and eventually to eliminate with serious economic, social, political, and ethical implications. Unfortunately, the economic literature on this phenomenon, particularly the one coming from the conventional market-based approach, emphasizes the price, quantity and regulation aspects with little attention to the political dimensions of the organ trade as well as the biological compatibility between the organ donors/sellers and patients. The main scope of our investigation is to provide, based on empirical evidence, a more comprehensive understanding of the relation between the legal and the black market and to suggest policies to address the challenges posed by this complex trade that affects many lives.

THE LEGAL MARKET FOR KIDNEYS: EMPIRICAL EVIDENCE

In developed countries, the rise in diabetes, high blood pressure and heart problems have resulted in a high demand for kidney transplants. In these countries, however, the supply is only based on donation of live and cadaveric organs and this has produced severe shortages. In the case of the USA, as the graph below clearly shows, over the whole period 1990-2013 the number of patients on the waiting list for kidneys increased very rapidly, while the number of transplants remained almost constant.

Additional evidence for the USA confirms that kidney is the most wanted organ: the demand for a kidney in the waiting list represents 82.2 per cent of the total demand followed by liver with 12.5 per cent and heart with 3.2 per cent. According to the U.S. Department of Health and Human Services, currently there are approximately 123,850 people waiting for an organ transplant in the United States alone (US Department of Health and Human Services-Organ Procurement and Transplantation Network). Many of them, roughly 4,500 Americans, die every year still waiting for an organ transplant (US Department of Health and Human Services-Organ Procurement and Transplantation Network).
THE ILLEGAL MARKET FOR KIDNEYS: EMPIRICAL EVIDENCE

Currently the most traded organs in the black market are kidneys: they account for almost 75% of the overall trade (US Department of Health and Human Services-Organ Procurement and Transplantation Network). This phenomenon is usually explained by the strict regulations as well as the severe shortage of kidneys in developed countries. The black market for kidney can effectively be represented by the graph below.

One can immediately see that the importing countries are mainly from the developed world while the exporting countries are all in the developing world. More specifically, the recipients typically come from the USA, Canada, Australia, Japan, Saudi Arabia, and Oman.
while the donors come from China, India, Latin America, Eastern Europe and South Africa. As the graph also shows, there is a substantial difference in incomes and age between the two participants. The typical recipient is approximately twenty years older and his income is 110 times higher than that of the typical donor.

The procedure commonly used for the transplant is defined as transplant tourism. It means that a patient from a developed country travels overseas to purchase an organ for personal transplant. The actual transplant procedure is not necessarily done in the exporting country but can be done in a third country. As the figure below shows, over the 1990-2004 period, a common place for transplant was Malaysia, where the local kidney supply was augmented as a result of kidneys coming from India and China.

![Kidney transplants in Malaysia](Source: Bulletin of the World Health Organization)

The growing supply of kidneys coming from these two countries can be explained by the high level, as well as the widespread poverty, of their population. People sell their organs because they desperately need money for themselves and their family. One should add that in the case of China many of the kidneys also come from executed prisoners. Recently, the Chinese Government announced that, effective January 1, 2015, the country will cease its use of the organs of executed prisoners for transplantation purposes. Given China’s record, this claim, while welcome, has been met with considerable skepticism (Hosenball and Park, 2015).

Apparently the price of a kidney in the black market can reach 200,000 dollars but very little goes into the pockets of the actual donors; they usually get between 3000 and 5000 US dollars (Campbell and Davidson, 2012). In addition, no doctor cares for them after the transplant and some of them spend a great part of the money received for post-transplant complications. Most of the gain goes to the doctors and hospital administrators, the middlemen, and the traffickers (Campbell and Davidson, 2012). In many cases, behind this long supply chain for kidney transplant, lurks the presence of organized crime.

**POLICY CHALLENGES**

Given the serious shortage of kidneys in developed countries, the obvious policy goal will be to increase the supply of organs. However, the way in which this increase can be reached creates enormous controversies because it encounters scientific, practical and ethical obstacles.
The first and undisputed strategy should be to increase donations of live as well as cadaveric organs. This not only implies active promotion for organ donations but also possible legal and medical changes in the current system of procurement.

An additional but very controversial strategy, suggested by several economists will be to remove the restriction on buying and selling organs, thereby legalizing monetary incentives for organs. This will expand the market for potential donors beyond the present quantity of donors and consequently could close the gap between demand and supply. The policy of making the buying and selling of organs legal will result in redistributing some demand from the black market to the legal sector of the market for organs. This, in turn, will produce additional advantages like a superior quality of the pre and post- care surgery, a reduction of the time spent in the waiting list, a reduction of the negativities associated with alternative treatments, like utilizing dialysis, and a speedier recovery allowing for individual productivity to return (Becker and Elias, 2007).

The fundamental idea of market economists is that selling parts of the body expands human freedom. If individuals believe that selling an organ can improve the quality of their life and their family, the government should not interfere. In addition, the free market can coexist with donation thus everybody is free to decide based on their values/belief.

This rosy picture of the introduction of free market for kidneys faces the following three challenges. First, the introduction of monetary incentives can increase the supply but this will not necessarily reduce the shortage. In the case of kidneys, the concept of shortage is quite different from that commonly used in economics in which the matching between demand and supply is one to one. Here, we are dealing with a biological shortage in which the matching is not one to one. In practice, the matching procedure requires the passing of three tests. The first is the matching of the blood type between the donor and the recipient. The second test is the HLA (Human Leucocyte Antigen), which is a protein located on the surface of the white blood cells. Each person has six antigens – three from each biological parent. Except in cases of identical twins and some siblings, it is rare to get a six antigen match between two people, especially if they are unrelated. The chance of a perfect match between two unrelated people is about one in 100,000. The third and final test is the cross-matching test in which blood from the donor and recipient are mixed. If the recipient cells attack and kills the donor cells, the cross match is considered negative and the pair is not compatible. Passing these three tests will minimize the risk of rejections. Over time two important phenomena have helped to reduce the shortage of kidneys: advances in immunosuppression and the associate decrease in acute rejection and the expansion of the deceased donor kidney pool to include kidney previously considered unsuitable (mostly of older donors). The new antirejection drugs are so effective that there is not a statistical difference in success rates between zero match and 5 out of 6 match. There is, however, a benefit in having a perfect match 6 out of 6 antigens since it results in a significantly longer survival of the donated kidney.

Second, a free market for organs would not determine the organ procurement but also its allocation based on what we can define as the “high income effect”. In this case, the possible outcome would be, within the developed countries, a two-tier system in which the wealthiest will
have the healthy and living organs from the private market while the rest of the potential recipients will be in the public sector waiting for the donation of cadaveric organs (Crowe, Cohen, and Rubinstein, 2007).

Third, considering the existing state of the black market, the introduction of a free market for organs in developed countries will produce a south-north substitution effect: the organs of the poor from developing countries will be substituted with those of the poor from developed countries.

CONCLUSIONS

In this paper, we analyzed the legal and illegal market for kidneys and assessed the main policy challenges related to the introduction of price incentives for organs. The main results can be summarized as follows.

The developed countries, in which the market for kidneys is greatly regulated and strictly based on donation, are facing severe shortages. This phenomenon is at the origin of the growing black market for kidneys in which the buyers are the wealthy middle-aged from the developed countries, while the sellers are the young and poor from developing countries. In this context the controversial policy recommendation of introducing money incentives in developed countries encounters three main challenges: a biological shortage, the ‘high income’ effect, as well as a north-south substitution’ effect.

REFERENCES


Campbell, D., & Davidson, N. “Illegal kidney trade booms as new organ is ‘sold every hour” The Guardian, May 27, 2012


“Organ Procurement and Transplantation Network.” Data.

ENERGY CONSUMPTION AND ECONOMIC GROWTH: A STUDY OF CALIFORNIA, OREGON, AND WASHINGTON

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ABSTRACT

This paper explores the relationship between energy consumption and economic growth in California, Oregon, and Washington. In order to account for the idiosyncratic nature of each state’s economy a partial equilibrium model, representing the supply and demand for energy within each state, is applied. Tests of Granger causality between energy and economic variables are performed in the context of a vector error correction model (VECM) to determine the nature of causality between these variables. In California, declines in energy consumption are predicted to have negative growth impacts. Oregon’s economic growth is not led by changes in energy consumption; declines in energy consumption are not expected to lead to decreases in growth. In Washington, the supply of energy leads economic growth. Our results suggest that sub-national analysis will facilitate a deeper understanding of the role energy consumption plays in economic growth.

Introduction

Economic growth becoming decoupled from energy consumption is an intriguing possibility. If efficiency gains could be leveraged by an economy such that growth no longer required increases in aggregate energy consumption a host of energy related issues could be addressed without adversely impacting growth. For example, the management of negative externalities associated with the burning of fossil fuels could be approached in a growth neutral manner, the macroeconomy would no longer be susceptible to recession from oil price shocks, and so on. As high income economies continue to become more energy efficient and services contribute more to their national income it is plausible that economic growth has become decoupled from energy consumption. Trends alone are insufficient to understanding the relationship between energy consumption and economic growth.

As Bartlett and Gounder (2010) discuss, economic theory does not offer a definitive answer on the role of energy consumption in economic growth. A special issue of Ecological Economics in 1997 highlights the divide in prominent economic schools of thought (see Daly, 1997; Solow, 1997; Stiglitz, 1997). Scholars writing from the perspective of the ecological economics school tend to emphasize the limitations of growth dictated by scarcity (see Georgescu-Roegen, 1974; Stern, 2003). The neoclassical school emphasizes the role of technology in averting the negative consequences of declining nonrenewable resources. Efficiency gains allow for the possibility of continued economic growth even in the presence of non-renewable resources (Solow, 1974). It comes as no surprise that these schools have
drastically different predictions of the growth impacts of energy conservation. To date, empirical studies have done little to bridge the gap between these schools; by and large these studies are inconclusive (see Keppler, 2007; Lee, 2005; Payne, 2010; Zachariadis, 2007).

While there are numerous studies of the role of energy in the United States’ macroeconomy little attention has been paid to state level economies. A variety of factors suggest that the relationship between energy and economic activity at the state level may differ from the macroeconomy. First, across states, endowments of energy sources and the contribution of energy intensive industries to gross state product (GSP) vary tremendously. Second, states often construct energy policy independent of federal level decisions (Bryne et al. 2007). Third, while states mirror the macro level trend of increased efficiency, the variance of efficiency is increasing (Metcalf, 2008).

This study analyzes California, Oregon, and Washington. Their selection is primarily motivated by the interconnectedness of their energy markets. The Western Interconnection (or Pacific Intertie) allows interstate transmission of electricity between them. California is the largest importer of electricity in the United States with much of it supplied by Oregon and Washington (EIA, 2009). This interconnectedness is important when analyzing aggregate energy consumption. Aggregate energy consumption is influenced by both local and global market conditions.

Granger causality tests are performed to determine the direction of causality between energy consumption and economic activity within each state. These tests are conducted by utilizing a vector error correction model (VECM). The VECM allows for both the supply and demand of energy within the state to be modeled. By accounting for both sides of the energy market, a robust set of causality channels are controlled for.

The study proceeds as follows. First, an overview of the relevant literature is presented. For the reader interested in a more thorough treatment, references for contemporary surveys of the literature are provided. The theoretical foundation for the study follows the literature review. Data applied in the study are also presented in this section. The empirical methodology and results follow. Summary of results and implications for future studies concludes the paper.

**Literature Review**

Kraft and Kraft’s (1978) study of the United States marks the beginning of empirical studies devoted to exploring the link between energy consumption and economic growth. This bivariate study finds evidence of Granger causality from gross national product to energy consumption. Causality is not found from energy consumption to growth. Based upon a single direction of causality between the variables the authors assert “energy conservation programs are a feasible policy tool without impairing economic activity” (p. 403). The intuition behind this claim is that because energy consumption does not Granger cause economic growth, decreases in energy consumption are not predicted to have adverse growth consequences. This finding, with its far reaching policy implications, sparked a literature that remains active to this day.

Since 1978, econometric techniques have evolved to account for data properties prevalent in time series. Testing and accounting for unit roots, as well as cointegrating relationships, have become standard practice. Belke, Dobnik, and Dreger (2011) outline the process by which Johansen’s (1991) technique came to be the standard multivariate cointegration procedure in non-panel settings. Tests based upon Granger (1969) remain the dominant tool for determining directions of causality between energy and economic variables.
Within the literature, the direction of Granger causality determines the categorization of the economy being studied by one of four hypotheses Payne (2009, 2010) refers to these as the ‘growth,’ ‘conservation,’ ‘feedback,’ or ‘neutrality’ hypotheses. The growth hypothesis is found when energy consumption leads output. In such an economy, declines in energy consumption are predicted to decrease economic growth. The conservation hypothesis applies when output leads energy consumption; in this scenario increases in energy consumption do not lead economic growth. As a result, decreases in energy consumption are predicted to be growth neutral. Evidence for the feedback hypothesis occurs when bidirectional causality is found between energy consumption and economic growth. The neutrality hypothesis holds when there is no Granger causality is found. We follow the literature and categorize California, Oregon, and Washington according to the aforementioned hypotheses. Based upon this categorization, the potential growth impacts of decreased energy consumption are then addressed.

Lee (2005), Keppler (2007), Payne (2010), or Zachariadis (2007) are extensive surveys of the studies which apply Granger causality tests to questions of energy consumption and economic growth. A striking feature of this literature is the lack of a consensus regarding whether increases in energy consumption are a necessary condition for economic growth. In response to a lack of consensus, Altinay and Karagol (2004) assert that there needs to be country specific studies. This call can be reasonably extended to the state level approach taken in this study. Stern (2000) and Zachariadis (2007) argue that model specification is leading to divergent results. They argue that studies based upon bi- or trivariate analysis likely suffer from model misspecification. In response, Zachariadis recommends applying partial or general equilibrium models, or production functions to adequately account for the channels by which energy impacts economic activity. By doing so, Granger causality tests are applied in an appropriate context. In light of these criticisms a partial equilibrium model, representative of each state, is applied in this study.

An additional explanation for the lack of consensus explored in this study is the scope of analysis. Within the United States, state level economies exhibit tremendous variation in their energy uses, sources, and needs. This variation manifests itself in a number of different ways. For example, the price elasticity of demand (for various forms of energy) has been found to be unique across states and regions as well as between rural and urban areas (see Bernstein & Griffin, 2005; Hosoe & Akiyama, 2009; Olatubi and Zhang, 2003). Different price elasticities of demand suggests that economic activity within states will respond differently to price shocks. The idiosyncratic nature of state’s economies is also manifested in the policy arena. Byrne, Hughes, Rickerson, and Kurdgelashvili (2007) highlight the differences in energy related policies at the federal, state, and local level.

Payne’s (2009) study of Illinois is one of the few analyses, which explicitly tests for the relationship between energy consumption and growth for an individual state. Increases in energy consumption are predicted to be necessary for employment to increase in the state. This is an important finding given the ability of Illinois policy makers to influence the state’s energy consumption. This study extends Payne’s methodology by incorporating a partial equilibrium approach and considering other states.

**Theoretical Model and Data Applied**

In order to address the specification issues raised by Stern (2000) and Zachariadis (2007) a partial equilibrium framework is applied. The market is conceptualized is not being for a
particular form of energy, such as electricity, but rather for total energy. It represents total energy supplied and demanded within the state; an agglomeration of each energy market within the state. This allows us to consider total energy consumption.

Energy demand is defined as:

\[ Q_D = \alpha_0 + \alpha_1 P_E + \alpha' X \]

where \( Q_D \) is the quantity of energy demanded, \( P_E \) is the price of energy, and \( X \) is a vector of demand determinants. Demand determinants include such factors as income, climate, population, industrial mix, and so on. The supply of energy at the state level takes the following general form:

\[ Q_S = \beta_0 + \beta_1 P_E + \beta' Y \]

where \( Q_S \) is the quantity of energy supplied, \( P_E \) is the price of energy, and \( Y \) is a vector of supply determinants. The \( Y \) vector would include such factors as input costs, energy stocks, and a measure of technology. A market in equilibrium requires (1) and (2) to be equalized at the prevailing market price. We now turn to the data used to represent the theoretical model.

The Energy Information Agency (EIA) provides all energy related variables. All energy variables are measured in billion BTU and are reported as annual measures from 1970 to 2009. The Bureau of Economic Analysis (BEA) provides all economic series. Throughout the study each variable is reported in natural logs. All price variables are expressed in 2000 dollars.

Energy consumption (\( Q \)) is the consumption of primary energy within a state. This variable also includes net interstate flows of electricity, which are not a primary form of energy. Sectors of the economy included in this measure are residential, commercial, transportation, and industrial. Of the states analyzed, Washington consistently is a net exporter of electricity while California a net importer. Over the data set Oregon is both a net exporter and importer. \( Q \) is used to represent the market clearing quantity from equations (1) and (2).

Two different price indexes are applied in estimations. The final price of energy (\( Price \)), measures the price of energy for the final consumer. It is measured in 2000 dollars per billion BTU. It serves as a proxy for the equilibrium price, \( P_E \) from equations (1) and (2). The equilibrium price corresponds to the amount of energy (\( Q \)), consumed within the state. Because \( Price \) and \( Q \) are observed we treat them as the equilibrium condition for (1) and (2). The second price variable applied is an index of primary energy (\( Primary \)). Primary energy consumption occurs when energy is consumed directly from its source. The use of coal to generate electricity is an example of primary consumption while the consumption of the electricity produced is secondary consumption. In this example, \( Primary \) represents the price of coal but not electricity. \( Primary \) is used as a measure of input costs for the production of energy; it represents a determinant of supply from \( Y \) in equation (2). It is important to note that both \( Price \) and \( Primary \) capture trends over time but do not account for in-state variation.

Gross state product (\( GSP \)) and manufacturing employment (\( Mfg \)) are used to account for demand side influences. These variables would be found within \( X \) in (2). \( GSP \) is used as a measure of both state level income and economic growth. It is the study’s primary variable of interest. \( Mfg \) is used to capture the importance of energy intensive sectors to the state’s annual output. By including \( Mfg \), tests of the energy-economy nexus are not limited to only consider economic growth. The relationship between energy and employment in the manufacturing sector can also be tested. The reader should be aware of a weakness in the \( Mfg \) series. The BEA switched from using the SIC to NAICS classification of industries in 1997. This switch has resulted in a modest change in the definition of the manufacturing sector. As a result of this
reclassification, a seamless series does not exist for manufacturing employment. In spite of this limitation, the BEA’s data remains the standard series to apply in studies such as ours.

**Estimation and Results**

A vector error correction model (VECM) is chosen as the estimator because it is able to facilitate the objectives of the study while accounting for the time series properties of the data. The previously discussed hypotheses on the relationship between energy and economy necessitate testing for two-way causality. Two-way causality violates a benchmark assumption of many estimators; namely explanatory variables being determined exogenously. In scenarios when this assumption is violated Sims (1980) calls for the application of vector autoregressive models (VAR). A VAR is embedded within a VECM. In order to account for the theoretically motivated supply and demand system, a simultaneous set of equations can be included in estimations. This set of equations is what makes a VAR a VECM. Next, we turn to formalizing the ways in which the VECM facilitates these issues and the subsequent results.

The VECM takes the general form:

\[
\Delta y_t = \alpha + \delta_j CE_{j,t-1} + \sum_{l=1}^{p} \Gamma_l \Delta y_{t-l} + \varepsilon_t
\]

where \( \Delta \) is the difference operator, \( y \) is a vector of the variables of interest, \( \alpha \) is a vector of constants, \( \delta_j \) is the speed of adjustment parameter, \( CE_j \) is the cointegrating equation(s), \( \Gamma_l \Delta y_{t-l} \) represents stationary variation in the variables of interest, and \( \varepsilon \) a vector of independent disturbances. The \( y \) vector contains the variables discussed in the previous section: \( Q \), \( GSP \), \( Price \), \( Primary \), and \( Mfg \). For each state, a system of five equations is estimated; each data series serves as both a dependent and independent variable. For the sake of brevity, the discussion of results will focus on estimations where \( GSP \) and \( Mfg \) are the dependent variable.

The cointegrating equations within the VECM represent the supply and demand relationships. Enders (2004) asserts “Equilibrium theories involving nonstationary variables require the existence of a combination of the variables that is stationary” (p. 320). Series possessing this property are termed “cointegrated.” In the context of this study, Ender’s claim is applicable to the existence of a stable supply or demand relationship. The cointegrating equations represent functions (1) and (2) respectively:

\[
Q_{t-1} = \delta_0 + \delta_1 Price_{t-1} + \delta_2 GSP_{t-1} + \delta_3 Mfg_{t-1} + \mu_{t-1}
\]

\[
Q_{t-1} = \gamma_0 + \gamma_1 Price_{t-1} + \gamma_2 Primary_{t-1} + \gamma_3 Mfg_{t-1} + \varepsilon_{t-1}
\]

where \( \mu \) and \( \varepsilon \) are independently and identically distributed (i.i.d.) error terms with mean zero. In the absence of cointegration, the supply (or demand) for energy would not have a stable relationship. \( Mfg \) is included in the supply curve, so that the system of equations may be properly identified. When estimated, each cointegrating equation is normalized on a unique variable and set equal to its respective error term. For example, the demand curve is normalized on \( GSP \). Because each error term’s mean is zero, this linear combination of nonstationary variables is stationary. The statistical significance of the speed of adjustment parameter, \( \delta_j \), determines whether the independent variable responds to disequilibrium within the respective cointegrating equation.

The augmented Dickey-Fuller (ADF) test is used to determine whether data are stationary. The ADF takes the form:

\[
\Delta y_t = \beta_1 + \beta_2 t + \delta y_{t-1} + \alpha_1 \sum_{i=2}^{m} \Delta y_{t-i+1} + \varepsilon_t,
\]

where \( \Delta \) indicates a lagged variable, \( t \) is a deterministic time trend, \( y \) is the variable being tested, and \( \varepsilon \) is the random error term. Results from the ADF test with drift and no trend are presented in
Table 1. Manufacturing employment in Washington is the only variable in which the test is inconclusive. The chosen level of significance dictates whether levels of the variable are stationary. In order to remain consistent with other studies in the literature, all series are treated as I(1). Within the VECM data will be first-differenced.

Table 1. Results of the Augmented Dickey Fuller test with drift and no trend.

<table>
<thead>
<tr>
<th>Variable</th>
<th>California</th>
<th>Oregon</th>
<th>Washington</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSP</td>
<td>-1.494</td>
<td>GSP</td>
<td>-0.903</td>
</tr>
<tr>
<td>ΔGSP</td>
<td>-2.856 *</td>
<td>Δ(GSP)</td>
<td>-4.047***</td>
</tr>
<tr>
<td>Q</td>
<td>-1.852</td>
<td>E_Con</td>
<td>-2.513</td>
</tr>
<tr>
<td>ΔQ</td>
<td>-5.031***</td>
<td>Δ(E_Con)</td>
<td>-5.830***</td>
</tr>
<tr>
<td>Price</td>
<td>-2.104</td>
<td>E_Price</td>
<td>-2.144</td>
</tr>
<tr>
<td>ΔPrice</td>
<td>-4.321***</td>
<td>Δ(E_Price)</td>
<td>-4.174***</td>
</tr>
<tr>
<td>Mfg</td>
<td>-0.008</td>
<td>Mfg</td>
<td>-2.562</td>
</tr>
<tr>
<td>ΔMfg</td>
<td>-3.643***</td>
<td>Δ(Mfg)</td>
<td>-3.362**</td>
</tr>
<tr>
<td>Primary</td>
<td>-1.903</td>
<td>Prim</td>
<td>-1.590</td>
</tr>
<tr>
<td>ΔPrimary</td>
<td>-4.582***</td>
<td>Δ(Prim)</td>
<td>-4.995***</td>
</tr>
</tbody>
</table>

Note: All series are expressed in natural logs. The difference operator is denoted Δ. Critical values are based upon MacKinnon (1996). Levels of significance at the 1%, 5%, and 10% are denoted ***, **, and * respectively.

The Schwarz and Akaike information criteria (SIC and AIC) are used to determine the optimal number of lags to apply in estimations. Both suggest the use of one lag (results not presented). Given that data are annual measures, this is an appropriate length.

Cointegration tests, based upon Johansen (1991, 1995), are used to determine the number of cointegrating relationships within the data. Per the SIC and AIC, one lag is applied in these tests. Results of the Johansen tests are presented in Table 2. The implied number of cointegrating equations in each state is sensitive to both the test statistic interpreted (trace or maximum Eigen), as well as the level of significance. The trace test does predict at least two cointegrating equations, at the 10% level, for each state considered. In light of these mixed results, we rely on
the theoretical foundation of the study, a partial equilibrium framework utilizing two cointegrating equations. The test do suggest at the minimum, a stable energy demand relationship in each state. The inclusion of a supply curve should not cause the model to be misspecified. The reader is cautioned to keep this limitation of the study in mind while considering the policy implications of the results.

Table 2. Results of the Johansen cointegration tests.

<table>
<thead>
<tr>
<th></th>
<th>Hypothesized Trace</th>
<th>Hypothesized Max-Eigen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of CE(s) Stat</td>
<td>No. of CE(s) Stat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r = 0</td>
<td>92.022 [0.000]</td>
<td>45.665 [0.001]</td>
</tr>
<tr>
<td>r ≤ 1</td>
<td>46.357 [0.069]</td>
<td>24.579 [0.116]</td>
</tr>
<tr>
<td>r ≤ 2</td>
<td>21.778 [0.311]</td>
<td>13.690 [0.391]</td>
</tr>
<tr>
<td>Oregon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r = 0</td>
<td>87.155 [0.001]</td>
<td>39.647 [0.009]</td>
</tr>
<tr>
<td>r ≤ 1</td>
<td>47.508 [0.054]</td>
<td>19.338 [0.389]</td>
</tr>
<tr>
<td>r ≤ 2</td>
<td>28.170 [0.076]</td>
<td>16.214 [0.213]</td>
</tr>
<tr>
<td>Washington</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r = 0</td>
<td>75.521 [0.016]</td>
<td>29.562 [0.150]</td>
</tr>
<tr>
<td>r ≤ 1</td>
<td>45.960 [0.075]</td>
<td>20.250 [0.324]</td>
</tr>
<tr>
<td>r ≤ 2</td>
<td>25.709 [0.138]</td>
<td>15.708 [0.242]</td>
</tr>
</tbody>
</table>
Notes: $P$-values are listed in brackets. They are based upon MacKinnon, Haug, and Michelis (1999). The number of hypothesized cointegrating equations is denoted with $r$. The null hypothesis of each test is the total number of cointegrating relationships within the data.

To determine the nature of the energy-economy relationship within each state results from Granger causality tests and statistical significance of the speed of adjustment parameters are considered. First, short run causality is ascertained via tests of the relevant first-differenced terms. Next, the speed of adjustment parameters are analyzed. Finally, we perform what Asafu-Adjaye (2000) as well as Oh and Lee (2004a) refer to as ‘strong’ Granger causality tests. These strong tests account for causality in both the short and long term. To do so, cointegrating equations are interacted with first-differenced terms. In order to keep the discussion concise, only results between the energy and economic variables will be addressed. Tests between economic variables, i.e. $GSP$ and $Mfg$ are not presented. Particular focus will be given to tests corresponding to directions of causality between energy consumption and economic growth.

Statistically significant results from the short run Granger causality tests of the first-differenced variables are presented in Table 4. The reader is reminded that series are calculated on an annual basis. There are multiple directions of causality in California and Washington, while little evidence is found in Oregon’s economy. In California and Washington, when energy variables Granger cause economic variables, it is through the price of energy rather than consumption levels. This finding fits with Hamilton (2011) and his extensive research of the impact of oil price shocks on the United States macroeconomy.

In California, our results suggest that both the final and primary price of energy lead changes in manufacturing employment in the state. The manufacturing sector is responsive to changes in both the final price and input price of energy. Given that many industries within the manufacturing sector rely on primary forms of energy, this is not a surprising result. Changes in $GSP$ are predicted to lead energy consumption. In the short run, energy consumption is driven by changes in aggregate economic activity in the state. California’s short run economic activity is impacted in numerous ways by changes in energy markets.

The results for Oregon suggest that there is relatively little causality between energy and economic variables in the short run. The only evidence of Granger causality is from $Mfg$ to energy consumption. Changes in manufacturing employment are predicted to lead changes in the state’s energy consumption. When manufacturing employment leads to higher output in the sector energy consumption should be expected to increase as a result. Relative to California and Washington, Oregon’s economy is relatively insulated from changes in energy markets.

Washington’s economy is linked to energy a number of ways. First, Granger causality is found from $GSP$ to both measures of price. Economic activity in the state impacts the price of energy in the short run. This result is potentially due to the state’s role as a net energy exporter. Of the states considered, it is the only one in which economic activity leads price changes. As in California, it is primarily the price variables and not energy consumption in and of itself that lead $GSP$ and $Mfg$. 

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Table 3. Short run Granger causality tests.

<table>
<thead>
<tr>
<th>Variable</th>
<th>California</th>
<th>Oregon</th>
<th>Washington</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔMfg</td>
<td>ΔPrimary</td>
<td>6.296**</td>
<td>3.413*</td>
</tr>
<tr>
<td></td>
<td>ΔPrice</td>
<td>5.962**</td>
<td></td>
</tr>
<tr>
<td>ΔQ</td>
<td>ΔGSP</td>
<td>6.872***</td>
<td>[0.009]</td>
</tr>
<tr>
<td>ΔGSP</td>
<td>ΔPrice</td>
<td>2.753*</td>
<td>[0.097]</td>
</tr>
<tr>
<td>ΔPrimary</td>
<td>ΔGSP</td>
<td>5.722**</td>
<td>[0.017]</td>
</tr>
<tr>
<td>ΔPrice</td>
<td>ΔGSP</td>
<td>5.945**</td>
<td>[0.015]</td>
</tr>
<tr>
<td>ΔQ</td>
<td>ΔPrice</td>
<td>4.638**</td>
<td>[0.031]</td>
</tr>
<tr>
<td>ΔMfg</td>
<td>ΔPrimary</td>
<td>3.770*</td>
<td>[0.052]</td>
</tr>
<tr>
<td></td>
<td>ΔPrice</td>
<td>4.604**</td>
<td>[0.032]</td>
</tr>
</tbody>
</table>

Notes: All series are expressed in natural logs. The difference operator is denoted Δ. Only significant results between energy and economic variables are reported. Values are Wald $F$-statistics with 1 degree of freedom. $P$-values are in brackets. Levels of significance at the 1%, 5%, and 10% are denoted ***, **, and * respectively.

Statistically significant speed of adjustment parameters can be found in Table 4. Speed of adjustment parameters capture whether the dependent variable responds to disequilibrium in either the supply or demand curve. Disequilibrium in the cointegrating equation occurs when the error term deviates from its mean of zero. For example, consider the case of positive disequilibrium. A negative speed of adjustment parameter indicates that the dependent variable would decreases in response. The cointegrating equation returns to equilibrium when the long
run relationship is restored. This is achieved through the adjustment of the variables within the system.

Table 4. Significant speed of adjustment parameters.

<table>
<thead>
<tr>
<th>Variable</th>
<th>CE_D</th>
<th>CE_S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>California</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔGSP</td>
<td>-0.120**</td>
<td>-</td>
</tr>
<tr>
<td>(-2.151)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔMfg</td>
<td>-0.300***</td>
<td>-0.222**</td>
</tr>
<tr>
<td>(-5.940)</td>
<td>(-2.197)</td>
<td></td>
</tr>
<tr>
<td>ΔPrice</td>
<td>0.804**</td>
<td>-</td>
</tr>
<tr>
<td>(2.018)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oregon</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔQ</td>
<td>0.162*</td>
<td>-</td>
</tr>
<tr>
<td>(2.798)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Washington</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔGSP</td>
<td>-</td>
<td>-0.102**</td>
</tr>
<tr>
<td>(-2.169)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔQ</td>
<td>0.123**</td>
<td>-</td>
</tr>
<tr>
<td>(2.010)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔMfg</td>
<td>-</td>
<td>-0.175***</td>
</tr>
<tr>
<td>(-3.273)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Notes: All series are expressed in natural logs. The difference operator is denoted $\Delta$. Table presents significant speed of adjustment parameters. $CE_D$ is the demand curve and $CE_S$ the supply curve. $T$-statistics are reported in parentheses. Levels of significance at the 1%, 5%, and 10% and denoted *, **, and *** respectively. Hyphens indicate insignificant terms.

The findings from the speed of adjustment parameters confirm and expand those of the short run Granger causality tests. Economic growth in California responds to disequilibrium in the demand for energy. Economic growth in the state slows when the quantity of energy consumed is “too large” relative to the long run demand curve i.e. there is an excess of consumption relative to the growth needs of the economy. In order to restore demand to its long run relationship energy consumption declines. The price of energy is predicted to have a positive relationship with positive disequilibrium in the energy demand relationship. Positive disequilibrium may be interpreted as a positive demand shock. This increase in demand corresponds to an increase in the price of energy in the state. The change in manufacturing employment responds to both sides of the market. Given the results from the short run tests, manufacturing employment in the state is sensitive to shocks in the price of energy. This is true regardless of which side of the market causes the price change. This confirms our expectation of the linkages between this energy-intensive sector and employment.

Just as with the short run tests, there is little evidence of linkages between economic growth and energy in Oregon. Neither speed of adjustment parameter is found to be significant in the growth equation. Of the variables within the system, only the growth in energy consumption is impacted by disequilibrium in the demand relationship. These results suggest that the consumption of energy within the state is a byproduct of growth rather than a leader of it.

The economic importance of the supply of energy for Washington’s economy is confirmed by the statistical significance of the speed of adjustment parameter. Both economic growth and manufacturing employment respond to changes in the supply of energy. A positive disequilibrium causes the growth of each to decline. Finally, energy consumption responds to changes in the long run demand for energy within the state. As in the short run tests, Washington’s economy is impacted more by supply than demand side considerations.

The speed of adjustment parameters can be interpreted as one manifestation of long run causality. In order to develop a robust understanding of the channels within the energy-economy nexus strong Granger causality tests are also considered. To perform these tests, speed of adjustment parameters are interacted with specific supply and demand determinants. For example, the demand equation’s speed of adjustment parameter is interacted with $Price$, $Q$, and $Mfg$ in turn. This allows for us to gauge whether particular determinants are more influential than others. Results from the $GSP$ equation are listed in Table 5.
Table 5. Strong Granger causality tests relative to economic growth

<table>
<thead>
<tr>
<th></th>
<th>Wald F-Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CE_D &amp;</td>
</tr>
<tr>
<td>Δ(Price)</td>
<td>4.721*</td>
</tr>
<tr>
<td></td>
<td>[0.094]</td>
</tr>
<tr>
<td>Δ(Q)</td>
<td>1.747</td>
</tr>
<tr>
<td></td>
<td>[0.418]</td>
</tr>
<tr>
<td>Δ(Mfg)</td>
<td>4.256</td>
</tr>
<tr>
<td></td>
<td>[0.119]</td>
</tr>
<tr>
<td>Δ(Primary)</td>
<td></td>
</tr>
<tr>
<td>Δ(Price)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>California</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td></td>
</tr>
</tbody>
</table>

Notes: All series are expressed in natural logs. The difference operator is denoted Δ. Tests determine whether interacted terms Granger cause GSP. CE_D is the demand curve and CE_S the supply curve. P-values are reported in brackets and chi-square statistics above. Levels of significance at the 1%, 5%, and 10% and denoted ***, **, and * respectively.

The results found in Table 5 confirm the previously discussed findings for California. The demand for energy interacted with Price and Mfg is found to Granger cause growth in the state. On the demand side, only the consumption of energy interacted with demand does not lead growth in the state. Considering results from the short run tests and speed of adjustment parameters, our findings suggest that energy consumption, in isolation, does not lead economic growth in the state. Rather, it is the manufacturing sector’s use of energy, or changes in the price of energy, that impact economic growth. The relationship between energy and California’s economic growth appears to be primarily driven by demand side considerations.

On the supply side, there is no evidence of Granger causality. While California produces large amount of domestic energy it also imports significant amounts. In 2009, the last year in the data set, its net imports of energy were roughly 5,400 trillion BTU (EIA, 2009). These imports include fossil fuels for use in the transportation sector as well as electricity for commercial and non-commercial uses. It is possible that supply increases may indirectly lead economic growth in
the state through the eventual demand side response. For example, supply increases which result in lower energy prices would be expected to have positive growth impacts in the long run.

Taking into account the full range of tests performed, California’s economy is classified by the feedback hypothesis. There is strong evidence of bidirectional causality between energy consumption and economic growth. Based upon the numerous channels by which energy leads economic growth in the state, adverse price shocks are expected to negatively impact growth. California’s economic growth is not decoupled from energy consumption in both the short and long run. Decreases in the consumption of energy are predicted to diminish economic growth in the state.

In Oregon, the strong tests do not find the presence of Granger causality from either side of the market to economic growth. None of the three statistical tests conducted in this study find evidence of energy variables leading economic growth. Increases in energy consumption in the state appear to be a byproduct of economic growth rather than a necessary condition for it to occur. In contrast to California, Oregon’s economy is categorized by the conservation hypothesis; decreases in energy consumption are expected to be growth neutral.

The strong tests confirm the importance of the supply of energy to Washington’s economic performance. Washington’s economy is classified by the feedback hypothesis. In contrast to California, this classification is due to supply factors. From Table 5, each of the interacted terms on the supply side impacts the state’s growth. From Table 4, supply’s speed of adjustment parameter is significant when GSP and Mfg are the dependent variable. Economic growth is Granger caused by the supply of energy in the state. Decreases in the supply of energy are expected to negatively impact growth. The energy economy hypotheses are typically applied to inform the growth impacts of energy conservation through demand responses. For Washington, the findings indicate that supply is integral to economic growth. It is more accurate to think of a decline in the supply, or production of energy within the state negatively impacting growth.

**Conclusion**

This study extends the literature on the relationship between energy consumption and economic growth by considering subnational economies. In this study state level differences were found that would have been overlooked from a macroeconomic perspective. We also extend the literature by utilizing cointegrating equations which represent both the supply and demand for energy within a state. In doing so a well-specified model is applied which allows for both short and long run Granger causality tests to be conducted.

Our findings suggest that in California, it is primarily through demand side factors that energy consumption leads economic growth. In order for California’s economy to continue growing, increases in energy consumption are required. The limited Granger causality found between energy consumption and economic growth in Oregon suggest that the state’s economy is relatively insulated form energy shocks. Economic growth without increases in energy consumption is predicted to be achievable. Washington’s economy is categorized via the feedback hypothesis. In contrast to California, supply side factors are causing this categorization. The tests performed in the study suggest that is primarily through the supply of energy that energy leads economic growth in this state.

The prospect of economic growth occurring without increases in energy consumption is quite alluring. This study has shown for California and Washington this idea is a false panacea.
but is may be possible for Oregon. In considering these findings the reader is reminded of some limitations of the study. First, the growth impacts of negative externalities have not been accounted for. Many sources of energy cause negative externalities at both the local and global level with negative growth consequences. Second, due to the nature of the data, intrastate considerations and substitution between energy sources are not addressed. In spite of these limitations the study has contributed to an understanding of the role of energy in economic life.

References:


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THE IMPACT OF OFFICIAL DEVELOPMENT AID ON ECONOMIC GROWTH IN SOUTHWEST ASIAN ECONOMIES

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PNC Bank National Association, USA

Law Siong Hook

University of Putra Malaysia, Malaysia

Wan Azman Saini Wan Ngah

University of Putra Malaysia, Malaysia

ABSTRACT

Many developing economies are receiving substantial amounts of official development aid inflows from almost last five decades. The outcomes associated with these aid inflows are however been scarce. Aid allocation to the countries with better quality institutions and committed governments is considered widely as the best solution. This study investigates the long-run relationship of the effectiveness of official development aid on economic growth by using a panel data set of South Asian countries - India, Bangladesh, Pakistan and Sri Lanka from the year 1984 to 2008. By using the recently panel unit root tests, pooled mean group and mean group panel estimation techniques, the study supports positive relation between official development aid and economic growth in South Asia. On the other hand, it is found that, institutions play a vital role in the effectiveness of aid-growth nexus. The empirical results also found that official development aid can be more benefited and effective in promoting economic development if the quality of institutions in this region tends to be better.

KEY WORDS

South Asia, Official Development Aid, Economic Growth, Pooled Mean Group, Mean Group and Panel Estimation Techniques.

INTRODUCTION

Official Development Assistance (ODA) is main source for developing nations to finance their economic and social development in South Asian Economies. However, it had not been effective in delivering its goals till now. Many studies had shown that ODA granted to developing nations in the form of grants, soft loans and technical assistance mostly had not impacted on poverty alleviation and even economic development of many Nations including South Asian countries. But on other hand many studies also show the significant relation of ODA with economic growth, nevertheless many countries are still low income or least developed countries. Are institutions, a hindrance in the effectiveness of ODA? The success of foreign aid in promoting
economic growth in developing nations is an issue of considerable controversy since Rosenstein-Rodan (1943) had supported the idea of aid to east and south Europe. Meier (1964, 1995) in texting book “leading issues in economic development” has advocated diminishing in the confidence of effectiveness of aid on growth in past few years. Leff (1969) and Griffin (1970) had analyzed its negative impacts of aid on growth. A paper by Burnside and Dollar (1997) was decisive on the point that a correlation exists between aid and economic growth, but it was conditional to a good policy environment. Fayissa and El-Kaissy (1999) agree with the Burnside and Dollar (1997) position but they had added few other variables to show the positive link between them and economic growth. Collier and Dollar (2001) investigated that “aid is conditionally effective”, with conditions including better policy environment, governance, rates of corruption and conflicts.

AID AS A FAILURE

There are many economics studies that have discussed the failure of this relationship between aid and growth. Some of the early studies on this is issue i.e. Mosley et al (1897) had investigated that it is impossible to find the significant relation between aid and economic growth of third World countries. Boone (1996) contributed that, aid has resulted insignificant to increase the growth rate and also it did not help to decrease the poverty in developing countries. Easterly et al (2003) reviewed the Burnside and dollar work again by adding some more data. They have found the positive relationship between aid and growth vanished away. It was further explained aid can buy growth this concept is all propaganda there is nothing like that it is only the ongoing mission of aid bureaucracies for their own interests Easterly (2003). In the self progress and productivity of the countries, aid can play a role of hindrance because some countries get used to for aid in solving their problems and eventually it will reduce the incentives for them to struggle from their available resources For example when a country knows on the basis of their performance that in future they will face a poverty so as based on their past attitude they will call for more aid in future and that will increase their burden, which will decrease their growth rate further in long run. This phenomenon is called “Samaritan’s Dilemma” Gibson et al (2005; Economist 1995).

POSITIVE IMPACT OF AID ON GROWTH BUT CONDITIONAL

Developing countries with better and sound economic policies with less corruption are benefited from their policies, and this is the environment where aid helps in accelerating growth. The economies that are integrated to large extend by distortion; aid in these economies is dissipated as an unproductive government expense. The two things are required for the effectiveness of aid, one is right timing of aid and other is right mix of ideas and money. If these two factors are appropriate then aid can be the midwife of good policies World Bank (1998). Papanek (1972) has seen the positive impact of aid on growth by using the framework of multiple regressions. The complex issues of aid and economic growth in aid-growth nexus have made policy makers to think seriously that, aid can help in positive economic development and also in poverty reduction from poor countries of the world. Then later it was found that, positive correlation exists between aid and economic growth if aid is applied in better policy environment Burnside and David (1997). The impact of aid on growth depends on the quality of economic policies and is subject to diminishing returns Isham and Kaufmann (1999) where as aid has a positive impact on growth in developing countries with good fiscal, monetary, and trade policies but has little effect in the presence of poor policies. Moreover, Good and sound policies have direct relation
with growth itself and they are considered to be an important factor for growth and development of the country but quality of policy has only a small impact on the allocation of aid. As it is suggest that aid would be more effective if it were more systematically conditioned on good policy Burnside and Dollar (2002). Aid is conditionally effective Collier and Dollar (2001), the conditions in effectiveness, is low rates of corruption and conflicts, good policy environment and good governance. The fungibility and effectiveness of aid most of the times requires strong institutions and commitments.

Aid affects growth, but take it that policy and the distribution of income within recipient countries are exogenous from the point of view of aid donors Collier and Dollar (2002) and should be allocated to countries with large extents of poverty and sound policies. Because good policies ensures that aid has positive effects on growth. In other words, they suggested that, the combination of those countries, that insure best policies and are most poor will result in positive effectiveness between growth and development aid if the aid is targeted to these countries in proper manner but at present, allocation of aid is partly as an inducement to policy reform and for a variety of historical and strategic reasons. This trend produces a pattern, which targeted aid to poor and week policy environments. The argument about the allocation of aid and the effectiveness of aid in good policy environment was appreciated by aid donor agencies and developed countries. A recent study of aid-growth effectiveness by Dalgraad et al (2004) has strongly supported the work of Collier and Dollar (2002). According to them aid inflows effects positively in long run productivity but the effect may depend upon the policies, structural characteristics of a country and the size of inflows. In general the aid plays vital role in expanding economics growth but the magnitude of effectiveness is dependent on the environment-related circumstances. But some other studies disagree with these studies and point out few draw backs in their work which have made this aid-growth a controversial issue for the donors and recipients i.e. Kellicks (1991) reported that sometimes aid had also supported to certain governments and developing countries with bad polices and infrastructure.  

**ASIAN ECONOMIES AND AID**

Asteriou (2008) investigated an aid-growth relationship in a cross country panel data studies based on the five south Asian countries including Pakistan, India, Bangladesh, Srilanka and Nepal by using pooled mean estimation techniques, mean group and pooled unit root tests. Study has found the long-term positive relation between aid and economic growth. Also supported the hypothesis, that aid has positive impact on growth. Islam (1992) examine the relationship between aid and economic growth for Bangladesh by covering the data from 1972-1988 using time series analysis. His results were weak positive relation between aid and growth. Some recent past studies on this issue have seen similar kinds of results in Pakistan. Shabbir and Mahmood (1992) have investigated that; aid has positive impact on economic growth of Pakistan. Azhar (1997) suggested that, aid has played an extremely vital role in the economic growth and development of Pakistan but on the other hand aid is continuously increasing the debt burden. This argument of increasing debt burden was also found by Shabbir and Mahmood (1992). Then again another recent study by Mohey-ud-din (2005) examined the similar kind of pattern in the case of Pakistan. According to him there is positive relation between aid and economic growth but negative relation of aid on debt burden.
Burke and Ahmadi-Esfahani (2006) have conducted the study on aid accelerating economic growth in three South East Asian countries including, Thailand, Indonesia and Philippines during past 30 years from 1970-2000. They have suggested on the basis of their analysis that, aid has insignificant impact on economic growth in these countries during these years and also their findings were valid before and in Asian financial Crises.

Years of aid and aid programs had not done much in improving the conditions of the Third World countries including South Asia. The South Asian region including India, Pakistan, Bangladesh and Sri Lanka are under developed and seeking huge amounts of ODA from developed nations for not only development purposes but for the budgetary support as well. Money is not only the solution in changing the destinies of these countries; hence for further improvements some other methods and techniques should be analyzed.

**METHODOLGY**

The framework will start with the Cobb-Douglas production function which also determines the output of each country. The function follows as

\[ Y_{it} = K_{it}^{\alpha} (A_{it}L_{it})^{1-\alpha} \]  

(1)

Real output in a country \( i \) at time \( t \), is denoted by \( Y_{it} \), \( K_{it} \) denotes capital stock of the country \( i \) at time \( t \), stock of labor in country \( i \) at time \( t \) is denoted by \( L_{it} \) and whereas labor-augmenting factor which is showing the level of efficiency and technology in country \( i \) at time \( t \).

Now there is an assumption considered here that \( \alpha < 1 \), which means decreasing returns to capital. Labor-augmented factors and labor are also being part of the following function:

\[ L_{it} = L_{i0} e^{n_{it}} \]  

(2)

\[ A_{it} = A_{i0} e^{g_{it} + \theta_{i}} \]  

(3)

Where \( n_{i} \) is exogenous growth rate of labor in country, \( g_{i} \) is exogenous growth rate of labor-augmented factors, \( V_{it} \) is a vector of official development assistance, and quality of institutions that can also results in affecting the levels of labor-augmented factors in a particular country and \( \theta_{i} \) is a vector of coefficients of these variables.

The variable (A) of labor-augmented factors is not only depended on \( g \), which is improvements in efficiencies, technological process as population grows but also depends on the level of flows of official development assistance, and the quality of institutions such as corruption, bureaucracy and law and order of a country. This is the neoclassical growth framework and in this framework the effects of official development assistance and institutions can only be transient on growth if it is assumed that \( \frac{dV_{it}}{dt} \) will be zero in steady state but where as it can be negative or positive in transition stage. But the level of \( V_{i} \) in the steady state can change across the countries, which further illustrate the variation in the level of per capita income in these countries. So the different countries may have different steady states depending on the level of aid and institutional development steady states.

So in the steady state, output per worker \( Y/L \) grows at rate \( g \), where as output per effective worker \( Y/AL \) is kept constant and evolves as follow:
\[ \frac{y_{it}}{L_{it}} = A_{it}(K_{it})^\alpha \]  

(4)

Now let

\[ y_{it} = Y_{it}/L_{it} \]

Now by taking log on both sides of eq. 4

\[ \ln y_{it} = \ln A_{it} + \alpha \ln k_{it} \]

And then putting the value of eq. 3 in above equation will get

\[ \ln y_{it} = \ln A_0 + (1 - \alpha)g_it + (1 - \alpha)\theta_1V_{1it} + \alpha \ln k_{it} \]  

(5)

This equation shows the evolution of labor productivity, as a function of vector of official development aid, and institutional variables, which can occurs change in exogenous growth rate of output, population growth rate and physical capital over time. This equation can be valid in both, inside and outside of steady state and this validation is considered to be an advantage in estimation, when using the static panel data techniques. The one biggest advantage of using this equation is that, assumption of saving behavior is not involved in this particular framework which is involved in most of the growth equations and can lead to some miss leading results. So equation (5) is the main estimating equation for this study as it provides the strong basis for estimation.

The functional form of vector \( V \) should be specified and error term will be added in equation (5) for estimating which follows as:

\[ \ln y_{it} = \ln A_0 + (1 - \alpha)g_it + (1 - \alpha)\theta_1V_{1it} + (1 - \alpha)\theta_2V_{2it} + \alpha \ln k_{it} + \mu_{it} \]  

(6)

Whereas \( V1 \) is an official development assistant variable, \( V2 \) is represents the quality of institutions, \( t \) represents the population growth rate factor and \( u_{it} \) is an error term. Equation (6) is also written in linear form.

The second functional form of vector \( V \) will be non-linear form and there will be addition of linear term which is in multiplication form, and illustrating the relationship between official development assistance and institution on growth which is follow as:

\[
\ln y_{it} = \ln A_0 + (1 - \alpha)g_it + (1 - \alpha)\theta_1V_{1it} + (1 - \alpha)\theta_2V_{2it} + (1 - \alpha)\theta_3(V_{1it}V_{2it}) + \alpha \ln k_{it} + \varepsilon_{it}
\]  

(7)

Where new error term \( \varepsilon_{it} \) has been introduce in this equation (7). Now equation (6) and (7) will be written in the reduce form and these equations provide the basis of empirical model. Which are presented below as Model (1) and Model (2).

\[
\ln y_{it} = \ln \beta_0 + \beta_1 \ln POPG_{it} + \beta_2 \ln ODA_{1it} + \beta_3 \ln INST_i + \beta_4 \ln k_{it} + \mu_{it}
\]  

(1)

\[
\ln y_{it} = \ln \beta_0 + \beta_1 \ln POPG_{it} + \beta_2 \ln ODA_{1it} + \beta_3 \ln INST_i + \beta_4 \ln k_{it} + \beta_5 \ln (ODA \times INST)_{it} + \varepsilon_{it}
\]  

(2)
Where,

\[ Y = \text{GDP per capita (Economic Growth)}, \quad \text{POPG} = \text{Population growth rate}, \quad \text{ODA} = \text{Official Development Aid}, \quad \text{INST} = \text{Quality of Institutions}, \quad K = \text{Real Gross Investment (Physical Capital)}, \quad \text{ODA} \times \text{INST} = \text{Interaction Term}, \quad \ln = \text{Natural Log}, \quad \mu \text{ and } \varepsilon = \text{Error terms}\]

Models (1) and (2) are the main models in which impact of ODA and its other components on economic growth will be tested individually in the first step and in the next step impact ODA along with institution will be investigated. First the presence of unit root will be tested by using The Im, Pesaran and Shin (IPS) Test and Levin Lin and Chu (LL) Test. Secondly the panel co-integration will be tested by using The Pedroni Tests to investigate if there will be linear combination between them and that is of lower order integration. Then finally above two set of equations will be estimated for long-run relationship between aid and economic growth by using (MG) Mean Group and (PMG) Pooled Mean Group estimators.

RESULTS AND DISCUSSIONS

The purpose of this section is to analyze and discusses the empirical findings obtained by using Pooled Mean group (PMG) and Mean group (MG) estimators. The section is divided into two parts. The first part examines the results associated with the impact of official development aid on economic growth. The second part explains the role of quality of institutions as mediating factor on the effectiveness of official development aid on economic growth of the South Asian countries.

DESCRIPTIVE ANALYSIS

The descriptive statistics in Table 3.1 shows the values of means, standard deviations, minimum and maximum for the variables of interest which are official development aid (ODA), institutional quality, interaction term on ODA & institutional quality and GDP per capita. The statistics are based on the data from 1984-2008 periods of four countries in South Asia. The institutional quality ranges from 0% to 0.56%. The GDP per capita shows level of variations ranges from -0.00016% to 1%. The share of ODA ranges from -0.18% to 1.78%. Finally, the interaction term ranges from 0.272% to 2.22%.

PANEL UNIT-ROOT TEST

The results in Table 3.2 confirm that LNGDP, LNODA, LNPOPG and LNODAINST are non-stationary at level I(0) whereas Levin Lin and Chu (LL) and The Im, Pesaran and Shin (IPS) tests also confirm that all variables are stationary at difference I(1). Hence Unit Root test results strongly suggest that all the variables are integration of order one or I (1). Since all the series are integrated in order I (1), thus it allows us to move to the next level which is the co-integration test.

IMPACT OF ODA ON ECONOMIC GROWTH (MODEL 1)

PANEL CO-INTEGRATION TEST

Table 3.3.1 provides the outcomes of co-integration test between GDP per capita (LNGDP) as dependent variable and population growth rate (LNPOPG), physical capital (LNK), institutional quality (LNINST) and official development aid (LNODA) as independent variables. The seven statistics are used in Pedroni test in which four are within group tests and three are between group tests which is shown in the results of above table with intercept and intercept & trend columns. The columns of within dimension shows the calculated values of four different
statistics based on estimators, which pool autoregressive coefficients across four countries for unit-root tests on estimated residuals and where as the columns with between dimensions contains computed values of three statistics in both intercept and intercept & trend based on estimators that, averages individually estimated coefficients for every individual or each country. The five statistics out seven in intercept column are significant at 1% and 5% where as four statistics out of seven are entering significantly at 1% in intercept and intercept & trend column. So therefore, the GDP per capita and all other independent variables are co-integrated for the panel of four selected countries of South Asia. From the results of the table 3.3.1, there is strong evidence for presence of co-integration in Model (1). Hence there is long-run relationship between GDP and all other independent variables that have been entered in the Model for the panel of four selected South Asian countries, which is economically meaningful in the sense that, these selected countries, met solvency conditions in long-run. Therefore, this result for panel co-integration test allows this study to move to next step of estimation for Model (1).

**POOLED MEAN GROUP (PMG) AND MEAN GROUP (MG)**

The table 3.3.2 provides the result of model (1) for the estimation of long-run and short-run relationships between linking parameters GDP per capita, official development aid (ODA) and all other variables. PMG column for long-run shows better and efficient results as it can be seen that all variables are having positive relation with economic growth and the most important part is all are entering significant at 1% and 5% which ultimately refers to positive long-run relation exists between GDP per capita and all other variables. But if we look at MG column only population growth (LNPOPG) is showing positive effects and is also significant at 5% where as all other variables including ODA have negative effects on economic growth and also are insignificant. The efficiency and consistency of PMG methods depends on few specific conditions. The first one is that, the explanatory variables are treated as exogenous and the residuals of regression should be serially uncorrelated. To fulfill this ARDL model has been included in this study with the one lag of GDP per capita, control variables and two lags for official development aid (LNODA) based on Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion. The two lag for LNODA is taken because, that is the main variable of interest and this study is focusing on the impact of ODA on economic growth of these four countries.

The second condition is the existence of long-run relation which refers to the coefficient of error-correction term that should be negative and should not be lower than -2. The table 4.4 reports the coefficient of error-correction term for both PMG and MG estimates are -0.862 and -1.268 which fulfills the above both conditions of being negative and lower than -2. But error-correction term coefficient value for PMG seems to be more consistence because it is lower than of MG. The further analysis on obtained values from both PMG and MG methods shows that in long-run, the GDP per capita is positively related to population growth, physical capital, institutional quality and official development aid and also highly significant in PMG estimates but in MG estimates except population growth rate every another variable is negatively related to GDP per capita and insignificant. So the concern estimated effect of ODA on GDP per capita in this table concludes that, the 1% increase in official development aid will results in 0.3% increase in GDP per capita which refers to increase in economic growth in long-run. The short-run columns for both PMG and MG estimates are providing opposite results. The concern coefficient of official development aid has a negative relationship with economic growth and also entering as an insignificant variable for both PMG and MG. The important thing to observe is that, all variables
are insignificant in short-run columns. But the interest in this study is to capture long-run relationship between economic growth and official development aid. The results seems like PMG estimators are more efficient then MG but to confirm that, which estimates are better there is a test called Hausman-type test for the comparison between pooled mean group and mean group and the Hausman test in table 3.3.3 also suggest that PMG is more efficient and consistence.

**EFFECTIVENESS OF ODA IN PRESENCE OF QUALITY OF INSTITUTIONS**

**(MODEL 2)**

**PANEL CO-INTEGRATION TEST**

The results in table 3.4.1 conclude that out of seven statistics four statistics in within dimension and between dimension for both intercept and intercept & trend are highly significant at 1%. These signs of significance in four statistics refers to the situation that, there exists a long-run relationship in these variables in this model among the panel of South Asian countries. After having found the existence of co-integration among these variables, it has become convenient to estimate the coefficients using panel co-integration estimator. For this purpose the study will employ Pooled Mean Group and Mean group estimators.

**POOLED MEAN GROUP (PMG) and MEAN GROUP (MG)**

Table 3.4.2 presents the results from PMG and MG estimators. The first important thing to observe in this table is that there is no single t-ratio in MG column for long-run is significant at any level although the positive sign of coefficient of interact term LN(ODA×INST) provides a highly positive relationship with GDP per capita in long-run but it insignificant where as the official development aid (LNODA) and institutional quality (LNINST) shows the negative signs but again they also are insignificant. So this study tries to emphasize on the results that are obtained from PMG estimates. The PMG column reveals that the official development aid (LNODA) and institutional quality (LNINST) variables contributes positively to GDP per capita as the values for both coefficients are 0.583 and 2.163 and both of these indicators are significant at 5% and 1% in long-run. However, the concern variable of interaction term between ODA and INST LN(ODA×INST) has negative effects on economic growth (LNGDP) at 1% significance ratio with the value of coefficient -1.526. It also shows the official development aid conditional on quality institutions reduces the economic growth in long-run. The sensitivity of the results may also depend upon the choice of lag as being ARDL model. This study has imposed one lag length for dependent and two lags all control variables but lag length of one for official development aid (LNODA) and two lag length for interaction term LN(ODA×INST). The best combination of lag length is selected on bases of Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion. The criteria for having long-run relation in PMG that, coefficient of error correction term should be negative and less than -2 is also satisfied.

The results reflects that 1% increase in official development aid along with institutional quality LN(ODA×INST) will decrease the economic growth which is (LNGDP) by 1.526%. The negative result of ODA in reducing economic growth in long-run when it is coupled with institutional quality is perverse for this sample of countries because these all selected four countries of South Asia seems like they have poor quality of institutions which is selected on the basis of three factors corruption, bureaucracy quality and law & order. So, on the basis of these results the quality of institution in aid-growth nexus is considered to very important because if country is embedded with better quality of institution aid will be more effective. The Hausman
Test in table 3.4.3 also suggest PMG will be more consistence and efficient where as MG will be not and vice versa.

Finally the robustness check by selecting different lag lengths which is ARDL (1, 1, 1, 1, 1, 1) and ARDL (1, 2, 2, 2, 2, 2) verify the impact of official development aid, institutional quality and interaction term on the economic growth of South Asia.

**CONCLUSION**

The major conclusions emerge from these finding are: first, the official development aid is found to have a positive long-run impact on economic growth in South Asia. Secondly, good institutional quality is found to be an important factor in aid-growth relationship because when institutional quality is being added as an interaction term with aid, the results lead to have negative relation with economic growth and lower the growth rate in long-run. Finally, the institutional quality plays vital role in the effectiveness of aid on economic growth of these countries. If these countries promote good quality of institutions they can be benefited more from this official development aid in promoting development and economic growth.

**POLICY IMPLICATIONS**

The findings on this paper clearly suggests that, official development aid has positive long-run impact in promoting economic growth of these South Asian countries because these are developing countries and they sometimes require this aid to even fulfill their budget deficits. The institutional quality is also considered to be most important as mediating factor for impact of aid on economic growth. The findings suggests that the aid inflows is not sufficient to promote economic growth of this region, there is a need of good designed policies for promoting the better quality of institutions, well trained people also to manage the inflows of aid and use them efficiently to achieve more real benefits associated with official development aid. Moreover, South Asian aid-recipients have to make the record of their policy implementation better by enhancing the capacity of organizations and institutions which are responsible for aid fund management. At the same time, economies with a better implementation record and performance need to get greater ownership of aid projects, and also should receive a larger share in total official development aid in the form of programme funding, and also longer-term commitments from the international donors as this is also likely to contribute to institution-building. On the other hand, countries with relatively poor institutions should receive more of their official development aid as project aid, especially if it is shorter-term in nature.

However, promoting good quality of institutions which refers to low the rate of corruption, improving the quality of bureaucracy and law & order situation of the country is not an easy task as it is long-term commitment but the governments and individuals by themselves of this region should take some initiatives in improving the quality of their institutions because these findings suggests that aid only cannot help in changing the destiny of this region, the mode of handling this aid is of more importance.

**DATA SOURCES**

The data set consists of Panel observations. Annual data on GDP per capita, Official Development Aid (ODA), Population Growth rate, Institutional Quality (which is measured by three indicators that are Corruption, Bureaucracy Quality and Law & order) and Real Gross Investment for South Asian countries including India, Bangladesh, Pakistan and Srilanka from the period 1984-2008 were employed in this study. The above indicators of institutional quality
are scaled from 0-6, where higher values indicates better institutional quality and vice versa. All data were extracted from World Bank (World Development Indicators 2008), Penn World Table and International Country Risk Guide (ICRG).

REFERENCES


**AUTHORS**

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*Wan Azman Saini Wan Ngah is Head of Economics Dept at University Putra Malaysia. He can be contacted at Economics Dept, University of Putra Malaysia, Serdang Selongor, Malaysia.*
Table 3.1 Summary of Descriptive Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional Quality</td>
<td>0.377243</td>
<td>0.137577</td>
<td>0.00000</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>0.721016</td>
<td>0.207297</td>
<td>-0.000162</td>
</tr>
<tr>
<td>Official development aid</td>
<td>0.934001</td>
<td>0.474668</td>
<td>-0.180518</td>
</tr>
<tr>
<td>Interaction term (ODA*INST)</td>
<td>1.311220</td>
<td>0.453107</td>
<td>0.272000</td>
</tr>
</tbody>
</table>

Table 3.2 Results of unit root test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levin Lin and Chu</th>
<th>Im, Pesaran and Shin t-Stat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intercept</td>
<td>Intercept and trend</td>
</tr>
<tr>
<td>LNGDP</td>
<td>-5.38490***</td>
<td>-5.64328***</td>
</tr>
<tr>
<td>LNODA</td>
<td>-2.04536**</td>
<td>-2.67667***</td>
</tr>
<tr>
<td>LNINST</td>
<td>-0.43279</td>
<td>0.88613</td>
</tr>
<tr>
<td>LNPOPG</td>
<td>-3.90193***</td>
<td>3.39512</td>
</tr>
<tr>
<td>LNKI</td>
<td>-0.33495</td>
<td>0.60726</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levin Lin and Chu</th>
<th>Im, Pesaran and Shin t-Stat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intercept</td>
<td>Intercept and trend</td>
</tr>
<tr>
<td>LNGDP</td>
<td>-7.03849***</td>
<td>-5.25998***</td>
</tr>
<tr>
<td>LNODA</td>
<td>-5.86488***</td>
<td>-1.67745**</td>
</tr>
<tr>
<td>LNINST</td>
<td>-5.36801***</td>
<td>-3.97587***</td>
</tr>
<tr>
<td>LNPOPG</td>
<td>-3.82307***</td>
<td>-2.00101**</td>
</tr>
<tr>
<td>LNKI</td>
<td>-7.01665***</td>
<td>-5.19548***</td>
</tr>
</tbody>
</table>

Notes: Figures in this table shows the t-statistics for Levin Lin and Chu (LL) and Im Pesaran and Shin (IPS) tests, which show significance at 1%, 5% and 10% denoted by ***, **, *, respectively.

Critical values for (IPS) at 1% for intercept are -2.46 and for intercept & trend are -3.09. At 5% for intercept is -2.18 and for intercept & trend is -2.80
Table 3.3.1 Results for Pedroni Co-integration for Model 1

<table>
<thead>
<tr>
<th>Pedroni Co-integration Test for Model (1)</th>
<th>Intercept</th>
<th>Intercept and Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With Dimension</td>
<td>Between Dimension</td>
</tr>
<tr>
<td>v-statistic</td>
<td>rho-statistic</td>
<td>pp-statistic</td>
</tr>
<tr>
<td>-0.27392</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes: The test statistics are normalized so that the asymptotic distribution is standard normal.
* Denotes rejection of the null hypothesis that is of non-cointegration at the 10% significance level, based on the critical value of 1.281.
** Denotes rejection of the null hypothesis that is of non-cointegration at the 5% significance level, based on the critical value of 1.644.
*** Denotes rejection of the null hypothesis that is of non-cointegration at the 1% significance level, based on the critical value of 2.326.
Table 3.3.2 Results of PMG and MG estimates of Model 1 (ARDL 1, 1, 1, 2, 1)

| Long-Run | PMG estimates | | | MG estimates | | |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|
| | Coefficient | S.E | t-Ratio | Coefficient | S.E | t-Ratio |
| $LNPOP_{it}$ | 0.659 | 0.220 | 3.00*** (0.003) | 1.571 | 0.791 | 1.99** (0.047) |
| $LNINST_{it}$ | 0.561 | 0.130 | 4.30*** (0.000) | -0.121 | 1.099 | -0.11 (0.912) |
| $LNODA_{it}$ | 0.305 | 0.150 | 2.03** (0.042) | -0.114 | 0.262 | -0.43 (0.665) |
| $LNK_{it}$ | 0.696 | 0.278 | 2.50** (0.012) | -0.660 | 1.597 | -0.41 (0.679) |
| **Error Correction coefficients** | -0.862 | 0.130 | -6.63 | -1.268 | 0.128 | -9.91 |
| Short-Run | | | | | | |
| $ΔLNPOP_{it−1}$ | -1.133 | 1.592 | -0.71 (0.477) | 2.925 | 3.236 | 0.90 (0.366) |
| $ΔLNINST_{it−1}$ | -0.791 | 0.843 | -0.94 (0.348) | -0.462 | 0.619 | -0.75 (0.455) |
| $ΔLNODA_{it−1}$ | -0.259 | 0.215 | -1.20 (0.228) | 0.093 | 0.353 | 0.26 (0.792) |
| $ΔLNODA_{it−2}$ | 0.076 | 0.113 | 0.68 (0.499) | -0.030 | 0.164 | -0.18 (0.856) |
| $LNΔK_{it−1}$ | 1.176 | 0.971 | 1.21 (0.226) | 1.171 | 0.815 | 1.44 (0.150) |
| Constant | -0.834 | 0.169 | -4.94 (0.000) | 0.653 | 3.429 | 0.19 (0.849) |

Notes: Estimators: pooled mean group and mean group. Sample: four south Asian countries, annual data 1984-2008.
***, **, *, denotes the significance of values at 1%, 5%, and 10%.
The values in ( ) are P-values.
Table 3.3.3 Hausman Test for Comparing PMG and MG for Model 1.

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>(b)</th>
<th>(B)</th>
<th>(b-B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNPOP_G_{it}</td>
<td>0.6599044</td>
<td>1.570611</td>
<td>-0.9107064</td>
</tr>
<tr>
<td>LNINST_{it}</td>
<td>0.5613064</td>
<td>-0.1211349</td>
<td>0.6824413</td>
</tr>
<tr>
<td>LNODA_{it}</td>
<td>0.3051067</td>
<td>-0.1135817</td>
<td>0.4186884</td>
</tr>
<tr>
<td>LNK_{it}</td>
<td>0.6957548</td>
<td>-0.6601622</td>
<td>1.355917</td>
</tr>
</tbody>
</table>

Table 3.4.1 Results for Pedroni Co-integration for Model (2)

<table>
<thead>
<tr>
<th>Pedroni Co-integration Test for Model (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
</tr>
<tr>
<td>With Dimension</td>
</tr>
<tr>
<td>v-statistic</td>
</tr>
<tr>
<td>-1.49911</td>
</tr>
<tr>
<td>-2.39298</td>
</tr>
</tbody>
</table>

Notes: The test statistics are normalized so that the asymptotic distribution is standard normal.
* Denotes rejection of the null hypothesis that is of non-cointegration at the 10% significance level, based on the critical value of 1.281.
** Denotes rejection of the null hypothesis that is of non-cointegration at the 5% significance level, based on the critical value of 1.644.
*** Denotes rejection of the null hypothesis that is of non-cointegration at the 1% significance level, based on the critical value of 2.326.
Table 3.4.2 Results of PMG and MG estimates for Model 2 (ARDL 1,2,2,1,2,2)

<table>
<thead>
<tr>
<th>Long-Run</th>
<th>PMG estimates</th>
<th>MG estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>S.E</td>
</tr>
<tr>
<td>LNPOPG_it</td>
<td>0.796</td>
<td>0.411</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>LNINST_it</td>
<td>2.163</td>
<td>0.622</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNO_it</td>
<td>0.583</td>
<td>0.262</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNK_it</td>
<td>0.188</td>
<td>0.334</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNODAINST_it</td>
<td>-1.526</td>
<td>0.517</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Correction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient</td>
<td>-0.805</td>
<td>0.131</td>
</tr>
</tbody>
</table>

| Short-Run    |                  |                  |              |                  |                  |              |
| ΔLNPOPG\_it-1 | 2.211             | 4.675            | 0.47         | 3.848             | 4.008            | 0.96        |
| ΔLNPOPG\_it-2 | -5.928            | 13.144           | -0.45        | -62.460           | 55.385           | -1.13       |
| ΔLNINST\_it-1 | -7.248            | 6.045            | -1.20        | 3.935             | 6.047            | 0.65        |
| ΔLNINST\_it-2 | 1.234             | 0.599            | 2.06*        | 0.323             | 0.925            | 0.35        |
| ΔLNO\_it      | -2.774            | 1.679            | -1.65        | 0.553             | 1.349            | 0.41        |
| ΔLN\_it-1     | 1.747             | 2.645            | 0.66         | 2.924             | 0.982            | 2.98***     |
| ΔLN\_it-2     | -1.118            | 1.003            | -1.11        | -0.809            | 0.484            | -1.67*      |
| ΔLNO\_it-1    | 7.310             | 4.730            | 1.55         | -2.626            | 4.909            | -0.53       |
| ΔLNO\_it-2    | -0.107            | 0.435            | -0.25        | 0.188             | 0.759            | 0.25        |
| Constant      | -0.551            | 0.118            | -4.66        | 6.455             | 9.455            | 0.68        |

Notes: Estimators: pooled mean group and mean group. Sample: four south Asian countries, annual data 1984-2008.
***, **, *, denotes the significance of values at 1%, 5%, and 10%.
The values in ( ) denotes the P-values.
Table 3.4.3 Hausman Test for Model (2)

<table>
<thead>
<tr>
<th>Variable</th>
<th>(b)</th>
<th>(B)</th>
<th>(b-B) Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNPOPG_{it}</td>
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<td>1.1158</td>
<td>-0.3194</td>
</tr>
<tr>
<td>LNINST_{it}</td>
<td>2.1626</td>
<td>-4.533</td>
<td>-6.6959</td>
</tr>
<tr>
<td>LNODA_{it}</td>
<td>0.5826</td>
<td>-2.937</td>
<td>-3.5189</td>
</tr>
<tr>
<td>LNK_{it}</td>
<td>0.1880</td>
<td>1.8672</td>
<td>-1.5258</td>
</tr>
<tr>
<td>LNODAINST_{it}</td>
<td>2.0553</td>
<td>7.4457</td>
<td>8.9716</td>
</tr>
</tbody>
</table>
ANALYSIS OF THE IMPACT OF ENTREPRENEUR’S CHARACTERISTICS ON THE PERFORMANCE OF SMEs IN SOKOTO METROPOLIS OF SOKOTO STATE OF NIGERIA

By

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ABSTRACT

The research analysed the impact of entrepreneurial characteristics on the performance of small and medium enterprises in Sokoto metropolis of Sokoto state of Nigeria. This is with a view to identifying those entrepreneurial characteristics and how they influence the performance of the SMEs in the study. Primary data, through structured questionnaire, were collected from the samples of 294 firms randomly selected from a population of 1710 registered SMEs in Sokoto metropolis. Two multiple regression models were used to analyse the data. Profit as a ratio of total assets (return on asset) and number of employees as a ratio of total assets were used as dependent variables and age of the entrepreneur, sex of the entrepreneur, level of education of the entrepreneur and number of training attended by the entrepreneur as independent variables. In the first model, the result shows that age, sex, level of training and level of education of the entrepreneurs in the study had a positive contribution to the Return on Asset of SMEs. However, only sex, education and training are some entrepreneurs characteristics that explain SMEs ability to employ more labour since they are found to be statistically significant in the model. The research therefore recommend adequate training and functional education for entrepreneurs in the State

Keyword: Performance, Small and Medium Scale Enterprises, Return on Assets, Employee Total Assets Ratio.
1.0 INTRODUCTION

Small and Medium Enterprises are increasingly playing a strategic role in economic growth and development in developing countries through their contribution in the creation of wealth, employment, and income generation. The dynamic arguments for the existence of SMEs have been stressed in terms of their being more innovative and constituting to the development of new firms. SMEs are increasingly taking the role of the primary vehicles for the creation of employment and income generation through self-employment, and therefore, have been tools for poverty alleviation. SMEs also provide the economy with a continuous supply of ideas, skills and innovation necessary to promote competition and the efficient allocation of scarce resources (Opondo 2003).

Entrepreneurship and SMEs development are important tools for long-term economic growth and development. For example, in the European Union (EU-27), SMEs account for 99.8% of all enterprises, out of these, 91.8% are microenterprises. SMEs provide jobs to 67.1% of all employees and participate with 57.6% of total added value (Schmiemann, 2008).

In Nigeria the sector has made some contribution to the economic development of the nation, but the contribution is far below the level achieved by countries like India, Malaysia, Indonesia and the United State of America. Nigerian SMEs remain underdeveloped arising from so many factors. Some blame the government for not making enough effort to help the SMEs to develop, others blame the enterprises for not having the necessary characteristics to develop while others felt that the entrepreneurs managing the enterprise are not competent enough to move the enterprises forward. There had not been research on this issue in Sokoto where 87% of the population earn less than one dollar a day (one hundred and sixtyNaira) according to the report of the National Bureau of statistics in 2012. It is against this background that this research, investigates the relationship between entrepreneur characteristics and the performance of the enterprises they managed in Sokoto metropolis, the Capital city of Sokoto state of Nigeria. The paper has six sections. Section one is an introduction, sections two is the review of the literature, section three deals with the theoretical framework and research hypotheses, section four is the methodology of the study, section five gives the result and discussion and section six provide the conclusions and policy recommendations.

2.0 Literature Review

This section reviews related literature on entrepreneur characteristics and its impact on the performance of small medium scale enterprises. Some of the issues discussed include the conceptual and theoretical framework, the review of empirical studies on entrepreneur characteristics and its impact on the performance of small scale enterprises.

2.1 Concept of Small and Medium Enterprise

There is no generally accepted definition of Small and Medium Enterprise. This is because of the nature of SMEs in different countries. The concept is therefore defined differently by different scholars in different countries (Ekpenyong and Nyonil, 1992). In countries such as USA, British and Canada SMEs are defined in terms of their annual turnover and paid employees. In Britain SMEs are defined as industries with annual turnover of 2 million pounds or less with fewer than 200 paid employees. In Japan SMEs are those in manufacturing, with 100 million Yen paid up capital and 100 employees and those in retail and service trade with 10 million Yen paid up capital and 50 employees.
In Nigeria SMEs are also defined differently by different scholars and according to the economic condition of the nation. For example, the definition by Ogun and Anyawu (1999) measure SMEs in term of capital, but the definition as in Ikenbe (2000) define SMEs in term of its assets while the definition by Kayode and Quartey (2000) defines SMEs in term of its number of employees. The Central Bank of Nigeria, in its Monetary Policy Circular number 22 of 1988 defined small scale enterprise as having an annual turnover not exceeding ₦500,000.00. In the 1990 budget, the Federal Government of Nigeria defines SMEs for the purpose of commercial bank loan as those with an annual turnover not exceeding ₦500,000.00 and for Merchant Bank loans as those enterprises with capital investment not exceeding ₦2,000,000.00 excluding cost of land or a maximum of ₦5,000,000.00 (Ogboru, 2007). But in 2006 the Central Bank of Nigeria under the Small and Medium Industry Equity Investment Scheme define SMEs as any enterprise with a maximum asset base of ₦200,000,000.00 excluding land and working capital and with a number of employees not less than 10 or not more than 300. This definition by Small and Medium Enterprise Equity Investment Scheme will be adopted in this research.

2.2. Theoretical Framework

O’Reilly et al. (1991) describe the external environment, organisation culture and individual factors related to the degree of optimism and pessimism that exist within a firm. Green et al. (2004) indicated that there is a positive link between entrepreneurial characteristics and level of performance. The literature indicates that an extensive range of variables that influence business performance that includes variables related to entrepreneur characteristics. The following model was adapted from the work of Olutunla and Obamuyi (2008).

**Figure 1:** Entrepreneurs’ characteristics and the Performance of SMEs adapted from Oludunla and Obamuyi (2008).
From the model above, the entrepreneur’s characteristics that include age, sex, education and training are expected to positively attract support and expertise that will influence the performance of SMEs by increasing the provision of quality and quantity of factors of production. This is expected to increase the performance of SMEs by increasing their profit and employment generation.

2.3 Empirical Literature

Entrepreneur’s characteristic played an important role in determining the success and failure of SMEs. Characteristic of entrepreneur referred to Demographic characteristics, such as age and gender, and individual background, e.g. Educationm, training and work experience. Several previous studies found that Entrepreneur’s characteristic had an impact on the performance of the enterprise he managed. Researches show that Majority of those who run SMEs are the ordinary people whose educational background is wanting. Hence, they may not be well equipped to carry out managerial routines for their enterprises (Ruth, 2011). Moreover, King and McGrath, (2002) suggested that entrepreneurs with more education and training are likely to be successful in business. Research by Sinha (1996) also revealed that 72% of the entrepreneurs that had a minimum level of technical qualification are successful, whereas most (67%) of the unsuccessful entrepreneurs did not have any technical background.

Age of entrepreneur played an important role in the success and failure of a business. Age signified maturity and experience many researchers have found a positive relationship between the age of the entrepreneur and the business success or failure. For example, Reynolds et al. (2000) found that individuals ranging from 25 to 44 years were the most entrepreneurially active. In another study on Internet café entrepreneurs in Indonesia, Kristiansen, Furuholte, & Wahid (2003) found a significant correlation between age of the entrepreneur and business success. The oldest (>25 years old) entrepreneurs were more successful than the younger ones. On the contrary, Sinha (1996) in his study in India revealed that successful entrepreneurs were relatively younger in age.

In the present business era training is viewed as an activity that could help SMEs create value and successfully deal with competition and environmental challenges. Enterprises that use innovative training practices are more likely to report better financial performance than their competitors who lack such training (Noe, 1998). Training also helps SMEs cope with the latest accounting systems, information technology, management concepts and production techniques (Jones, 2004).

It was reported that ninety percent (90%) of business failures are associated with “management inadequacy”, which consists of either management inexperience or incompetence (Perry and Pendleton, 1983). Hashim and Ahmad (2006) found that training facilitates SMEs expansion and enhances profitability, employment, productivity and competitive advantage.

The fastest growing sector among the SMEs is those of women entrepreneurs (Malaya, 2006). It is estimated that worldwide, women-owned firms typically comprise between 1/4 and 1/3 of the business population (NFWBO, 2001). Malaya (2006) reported that a report of the UNIFEM, in 1996 indicated that a proportion of female self-employed in manufacturing, trade and social or community and personal services to be 50-70 per cent in the Philippines and 42-66 per cent in Thailand. In addition, women
comprised more than half of the self-employed in manufacturing and trade in Indonesia and more than 60 per cent of the self-employed in manufacturing in Malaysia.

Feminist theory has been recognized to influence the thinking on what can explain the differences between women’s and men’s approaches to entrepreneurship. Many studies have found lower performance for women-owned businesses, giving rise to what has been termed as the “female underperformance hypothesis” (Du Rietz and Henrekson, 2000). Other researchers dispute this claim and suggested that women’s economic activities had been recognized as successful.

Reviews in Malaya (2006) revealed many similar characteristics between male and female, but also uncovered gender differences. It was found that women-owned businesses tended to be smaller in size, have less assets, are in low-income and employment informal sectors, particularly the service sector, possess lower expectations for future growth, and consequently report lower economic performance measures like sales, employment growth and profitability.

4.0 Methodology

The study was conducted in Sokoto State of Nigeria. Sokoto State is considered the poorest State in Nigeria, with about 87% of its population below the poverty line, according to the report of the National Bureau of Statistics in February, 2012. It is hoped that this research will help in formulating government policies that will improve the economic condition of the people of Sokoto State.

4.1 Population of the Study

The population of registered SMEs in Sokoto State stands at 1710 as of December, 2009 according to Sokoto State Ministry of Commerce and Industry.

4.2 Sample and sampling technique

Out of which 1710 registered SMEs in the State which are basically concentrated in the State capital, a sample of 294 SMEs was selected using the formula by Yamanis (1968) which was also used in Hussaini and Malami (2012), Usman (2012). And Yusuf (2013). The formula is as follows

\[
N
\]

\[
1 + N (e)^2
\]

\[
\frac{n}{n} = \frac{N}{1 + N (e)^2},
\]

Where:

\[
n = \text{Sample size}
\]

\[
N = \text{Population}
\]

\[
e = \text{Study error}
\]

The SMEs selected had met the definition by Small and Medium Industry Equity Investment Scheme, and have operated for 2 or more years. The data were collected for 5 year period from 2007 to 2011.
4.3. **Instruments for data collection**

A structured questionnaire was developed for data collection. Questions were asked on the profit, number of employees, total asset, age of the entrepreneur, sex of the entrepreneur, level of education of the entrepreneur, and amount of training attended by the entrepreneur.

4.4. **Technique for data analysis**

The study employs 2 multiple regression analyses to test the relationship between performance of SMEs and the entrepreneur’s characteristics. In the first regression, profit as a ratio of total asset (Return on Asset) is the dependent variable and age of the entrepreneur, sex of the entrepreneur, level of education of the entrepreneur, number of training attended by the interpreter are the independent variables. In the second regression number of employees as a ratio of total asset is the dependent variable and age of the entrepreneur, sex of the entrepreneur, level of education of the entrepreneur, number of training attended by the interpreter are the independent variables.

4.5. **Measure of Performance for SMEs**

A number of approaches are used to measure the performance of SMEs. These measures are categorized into two, the financial measures and the non-financial measures of performance. The financial measures include profits, revenue, return on investment, return on sale, and return on equity. The non-financial measures assess how well the external stakeholders are satisfied. The government, measure the performance of SMEs with its ability to generate more employment. On the customer, the performance of the firm is measured by the quality and availability of its products or services, and for the entrepreneur the performance of the SMEs is measured by its ability to provide more profit. For the purpose of this paper, one financial measure that is return on assets and one non-financial measure that is number of employee total asset ratio will be used. The choice of profit as a measure of performance is because the aim of every entrepreneur in establishing a business is to make profit. Therefore, to the entrepreneur the performance of the firm is for it to make high profits. The choice of number of employees as a measure of performance is considering the fact that the major objective of government intervention in support of SMEs is for the sector to employ millions of unemployed Nigerians. Therefore, to the government the performance of SMEs is its ability to employ many workers.

4.6. **Model Specification**

To test the performance of the SMEs using return on the asset as a proxy for performance the following model was estimated

\[ \text{ROA} = \alpha + \beta_1 \text{AGE} + \beta_2 \text{SEX} + \beta_3 \text{EDU} + \beta_4 \text{TRN} + e \]

Where:

- ROA = Return on Asset of SMEs,
- \( \alpha \) = autonomous constant term
- \( \beta_1 \) to \( \beta_4 \) = Parameter of the model,
- AGE = age of the entrepreneur,
- SEX = sex of the entrepreneur,
- EDU = level of education of entrepreneur,
- TRN = Number of training attended by entrepreneurs,
- e = error term.
To test the performance of the SMEs using number of employees as a proxy for performance the following model was estimated:

\[ \text{ROA} = \alpha + \beta_1 \text{AGE} + \beta_2 \text{SEX} + \beta_3 \text{EDU} + \beta_4 \text{TRN} + e \]

Where:
- ROA = Return on Asset of SMEs,
- \( \alpha \) = autonomous constant term,
- \( \beta_1 \) to \( \beta_4 \) = Parameter of the model,
- \( \text{AGE} \) = age of the entrepreneur,
- \( \text{SEX} \) = sex of the entrepreneur,
- \( \text{EDU} \) = level of education of entrepreneur,
- \( \text{TRN} \) = Number of training attended by entrepreneurs,
- \( e \) = error term.

Adapted from Olutunla and Obamuyi (2008).

5.0 Results of the study

Below is the result of the study. The result is in two categories. The first is the descriptive statistics result; it reported the demographic information of the respondent in the study. The second is the regression result that answered our research questions.

5.1. Descriptive Statistics Result

The descriptive Statistics result indicates that more than 82% of the respondents are married as against only 16.2% that are not married. The result is not surprising considering the fact that the tradition of the people of Sokoto State encourages early marriage even with the male children. Some parents marry for their male children at an early age of sixteen to seventeen years. The parents take care of the child’s wife till the time when the he is strong enough to take care of the wife. The result also indicates that more than 87% of the respondents are male as against only about 13% that are female. Furthermore the result also indicates that 18.7% of the respondents have not attended any formal education, 9% of the respondents attended primary school, 34% of the respondents attended secondary school and about 21% of the respondents attended a bachelor or master degree. The age of the respondent was between 22 and 71 years and their average age was 43.

5.2. Regression Result

Two models were developed and tested. In the first model return on asset (ROA) is the dependent variable while entrepreneurs, characteristics that include age, sex, education and training are the independent variables. Similarly, in the second equation employees total asset ratio (EAR) is the dependent variable and entrepreneur characteristics are the independent variables.
### 5.2.1. Regression Result using Return on Asset as a proxy for Performance

#### Table 1: Regression Result on impact of entrepreneurs’ characteristics on SMEs performance using Return on Asset as a proxy for Performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.5061</td>
<td>1.047</td>
<td>1.047</td>
<td>.3021</td>
</tr>
<tr>
<td>Age of Enterpreneur</td>
<td>0.290</td>
<td>0.026</td>
<td>1.095</td>
<td>.280</td>
</tr>
<tr>
<td>Sex of Enterpreneur</td>
<td>0.339</td>
<td>0.376</td>
<td>2.389</td>
<td>.037**</td>
</tr>
<tr>
<td>Education</td>
<td>0.687</td>
<td>0.329</td>
<td>3.917</td>
<td>.000*</td>
</tr>
<tr>
<td>No of Training</td>
<td>0.721</td>
<td>0.376</td>
<td>2.589</td>
<td>.048**</td>
</tr>
</tbody>
</table>

R\(^2\) = 0.59  
F = 2.10

Significant at 1 % (***) , 5% (**), 10 % (*)  
**Source:** SPSS Output Autor’s computation

From the result, the R\(^2\) = 0.59, meaning that 59% of the variation in the performance of SMEs (proxy by Return on Asset) is accounted for by entrepreneurs characteristics that includes; age of entrepreneur (β=0. 290), sex of the entrepreneur (β=0. 339), level of education of the entrepreneur (β=-0.687), and number of training attended by the entrepreneur (β=0. 721).

The coefficient of age of entrepreneur was positive even though statistically not significant. It implies that SME he managed by older the entrepreneur are likely to perform better than those managed by younger entreprenuers. The coefficient of gender (0.339) was found to be statistically significant at 5% with probability of (0.037). The result implies that enterprises managed by male entrepreneurs, on the average, more than those managed by their female counterpart by 72.1%.

The coefficient of education is 0.687 positive with a probability value of 0.000 which indicates that it is statistically significant at 1%. This implies that a unit increase in education of the enterprenuer will lead to an increase in Return on Asset of the SME by 68.7%. Therefore, we can conclude that the higher the level of education of the entrepreneur the higher the performance of the SMEs he managed. Furthermore, the result shows that education is strong determinate of SMEs performance.

The coefficient of training of entrepreneurs also carried a positive sign and stood at (0.721) and is statistically significant at 5%. This implies that a unit increase in entrepreneurial training on average tends to increase the entreprise return on asset by 72.1%. The result indicate that sex, education and training are the entrepreneurs characteristics that explaing his ability to generate more income to the enterprise in the study.
5.2.1. Regression Result using Employees total Asset Ratio as a proxy for Performance

Table 1: Regression Result on impact of entrepreneurs’ characteristics on SMEs performance using Employees total Asset Ratio as a proxy for Performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.506156</td>
<td>1.0474</td>
<td>0.302</td>
<td></td>
</tr>
<tr>
<td>Age of Enterpreneur</td>
<td>.359</td>
<td>0.026216</td>
<td>1.095</td>
<td>0.280</td>
</tr>
<tr>
<td>Sex of Enterpreneur</td>
<td>.299</td>
<td>366.487</td>
<td>2.735</td>
<td>.074***</td>
</tr>
<tr>
<td>Education</td>
<td>.546</td>
<td>0.351</td>
<td>3.266</td>
<td>.001*</td>
</tr>
<tr>
<td>No of Training</td>
<td>.340</td>
<td>1037.773</td>
<td>2.382</td>
<td>.012**</td>
</tr>
</tbody>
</table>

R² = 0.62
F = 2.10

Significant at 1% (*), 5% (**), 10% (***)

Source: SPSS Output Author’s computation

From the result, the R² = 0.62, meaning that 62% of the variation in the employment generation of SMEs is accounted for by age of entrepreneur (β=0.359), sex of the entrepreneur (β=0.299), level of education of the entrepreneur (β=-0.546), and number of training attended by the entrepreneur (β=0.340).

The coefficient of age of entrepreneur was not insignificant. It implies that may not be a determining factor for employment generation of SMEs in Sokoto metropolis.

The coefficient of sex of the entrepreneur (0.229) was found to be statistically significant at 10% with probability of (0.074). The result implies that male entrepreneurs, on the average, generate more employment than their female counterpart by 22.9%. The coefficient of education is positive (0.546) with a probability value of 0.001 which indicates that it is statistically significant at 1%. This implies that a unit increase in education will lead to an increase in employment by 54.6%. Therefore, we can conclude that the higher the level of education of the entrepreneur the higher the level of employment they generate.

The coefficient of training of entrepreneurs was statistically significant at 5% and carried a positive sign (0.340). This implies that a unit increase in entrepreneurial training on average tends to increase the entrepreneurs employment generation by 34%.

Conclusion and Policy Recommendations

From the findings above we can conclude that entrepreneurs characteristics play a vital role in the success of the enterprise they managed. The result shows that gender, education and training are some of the basic characteristics of the entrepreneurs that determine income and employment generation of the SMEs.

It is therefore recommended that policy makers should formulate policies that will compel relevant institutions to increase their support for SMEs especially in the area of training and human development. Relevant bodies should be instructed to organize
seminars and workshops to entrepreneurs of SMEs. This will greatly help in their growth and development. The federal and state government in Nigeria should continue to support youth self-employment. The inclusion of Entrepreneurship courses at both the secondary and tertiary institutions is a good step toward achieving success in this direction. The federal, state and local governments in Nigeria should support women entrepreneurship as this will increase women participation in business which will uplift their standard of living.

References


National Foundation for Women Business Owners (NFWBO, 1997). Women entrepreneurs are a growing international trend. [www.nfwbo.org/research](http://www.nfwbo.org/research)


U.S. PUBLIC UNIVERSITY ECONOMIC IMPACT STUDIES AND THE OPPORTUNITY COST OF STATE GOVERNMENT FUNDING, WITH EXAMPLES FROM TEXAS

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ABSTRACT

Economic impact studies often claim large gains to employment and output resulting from the operation of U.S. public universities. These reported economic gains are too large, due to a neglect to consider the decline in private sector economic activity that results from the higher state taxes required to fund public university spending. I perform economic impact studies for a hypothetical Texas public university and demonstrate that accounting for the negative effects of higher state taxes on private sector activity results in a significant reduction of the economic impact of public universities. I suggest that public universities should agree on a common framework for economic impact studies that includes the opportunity costs of taxpayer funding.

INTRODUCTION

In the United States it is quite common for public institutions of higher education to conduct economic impact studies that purport to show the beneficial economic impact of university-related expenditures on economic output and employment. Many of these studies, including those for large public Texas universities such as the University of Texas, Texas A&M University, and Texas Tech University, claim large positive effects--increases in output far larger than a university's operating budget, for example, and increases in employment well beyond the number of employees working at the university. These large positive impacts are the result of the multiplier effects inherent in the economic models used to generate the economic impact estimates; for each dollar of university-related spending, economic output increases by more than a dollar as the money is spent outside the university and ripples through the economy.

There is nothing nefarious about positive multiplier effects of increased spending in an economy; these effects have been features of short run models of economies since the days of John Maynard Keynes. What is missing, however, is an accounting of the economic impact as money is drained from the sources of the university-related expenditures. In particular, government funding comprises a significant proportion of public university budgets; to the extent that it is taxpayer dollars funding this spending,
we should expect an opportunity cost—a decline in consumer expenditures resulting from reduced household disposable income, as a portion of earned income is taxed away to fund university expenditures. These negative effects on consumer spending should also be accompanied by concomitant negative multiplier effects as the initial tax-induced reduction in consumer spending ripples through the economy.

To demonstrate the extent to which this opportunity cost of tax-financed university expenditure offsets the positive effects that are generally reported in these public university economic impact studies, we perform our own economic impact studies of a hypothetical university in the quite real U.S. state of Texas, using the IMPLAN model and its associated Texas economic data. One of our impact studies, unlike those of genuine Texas public universities, includes the opportunity cost associated with the higher taxes required to pay for a portion of university-related expenditures. We find, unsurprisingly, that this opportunity cost nullifies a significant portion of the positive economic impact of the university.

This paper proceeds as follows: We begin by discussing the traditional, ACE method of performing economic impact studies of universities. Next we expound upon the attributes of the modeling software used in most university economic impact studies—RIMS II, IMPLAN, and REMI—paying particular attention to the multipliers derived from this modeling software. Then we survey the results of several economic impact studies of Texas public universities, noting the extent of the positive multiplier effect, and how the negative, opportunity cost of higher taxes is ignored by these studies. Next we proceed with our own economic impact studies of a hypothetical Texas public university and measure the opportunity cost associated with higher taxes required to fund a portion of the university's expenditures. Finally, we suggest that to better inform taxpayers and voters and to insure inter-university comparability of economic impact studies, public universities should agree on a common framework for economic impact studies that includes the opportunity costs of taxpayer funding.

PUBLIC UNIVERSITY ECONOMIC IMPACT STUDIES: THE ACE APPROACH AND THE MULTIPLIER EFFECT

Conceptually there are a number of ways that a public university could try to measure its economic impact (Drucker and Goldstein, 2007), but by far the most prominent technique that is used in the U.S. was first promulgated by a 1971 report issued by the American Council on Education (Caffrey and Issacs, 1971); it has become known as the ACE approach (or the traditional approach) to undertaking economic impact studies of universities. The report adapted for universities a technique of economic impact analysis that is widely used and often applied to government projects such as highways and construction of public buildings—the use of input-output type models embedded in a social accounting matrix to estimate the direct and indirect impacts of spending on regional output and employment (where the region could be the local city, county, or Metropolitan Statistical Area, or a U.S. state). In the case of public universities, this spending includes all important university-related spending: payroll, operations, capital expenditures, construction, etc. Some universities also choose to include the direct and
indirect impacts of spending by visitors and of student spending on items not included in the university's operating budget, such as textbooks and off-campus housing.

This input-output approach to economic impact analysis allows universities to adopt widely available input-output software and data packages used for a multitude of other economic impact studies. The most popular of these software models include: RIMS II, from the U.S. Department of Commerce; IMPLAN, from the IMPLAN Group LLC (formerly MIG); and REMI, from Regional Economic Models, Inc. Although these software models have their differences (Lynch, 2000), in each of them there exists a direct effect of university spending on the economy—the explicit effect of the university's budget on economic output, and the explicit number of employees working for the university. In addition to this direct effect, an indirect effect multiplies the effect of university-related spending on the economy, as the increased spending ripples through parts of the economy beyond the university. Thus, for example, university payroll spending will create off-campus economic activity and off-campus jobs as university employees spend their earnings at grocery stores, restaurants, hair salons, etc. (and employees in these off-campus firms spend their money at other firms, and so on). Thus, it is argued, through these indirect effects on the economy, university-related spending supports economic activity and jobs in the regional economy beyond those directly on the campus. When the indirect and direct effect are summed, it is found that a university increases economic output by an amount greater than its operating budget, and increases employment in an economy by an amount greater than the number of people employed at the university; this is the so-called multiplier effect.

MULTIPLIER EFFECTS REPORTED FOR TEXAS PUBLIC UNIVERSITIES

To see the magnitude of multiplier effects reported in economic impact studies for public universities, we have gathered recent economic impact studies of several public universities in the state of Texas. The findings of these studies, and the implied multiplier effects of these findings, are displayed in table I. The "output multiplier" column of Table I shows the extent by which the universities' impact studies claim their impacts on economic output exceed their operating budgets; these multipliers range from a low of 1.4 for Sam Houston State University to a high of 4.8 for Tarleton State University. The "employment multiplier" column shows the extent by which the impact studies claim their universities' impacts on employment exceed the number of workers they directly employ; these multipliers range from a low of 2.4 for Texas Southern University to a high of 7.3 for Texas A&M University, Corpus Christi.
<table>
<thead>
<tr>
<th>University Name (and year of economic impact study)</th>
<th>Direct Effects</th>
<th>Total Effects (Direct + Indirect)</th>
<th>Implied Multipliers (Total ÷ Direct Effects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University's Operating Budget ($millions)</td>
<td>Number of University Employees (FTE)</td>
<td>Total effect on economic output ($millions)</td>
<td>Total effect on employment (FTE)</td>
</tr>
<tr>
<td>Prairie View A&amp;M University (2013)</td>
<td>$179</td>
<td>1,159</td>
<td>$554</td>
</tr>
<tr>
<td>Sam Houston State University (2009)</td>
<td>$241</td>
<td>1,485</td>
<td>$340*</td>
</tr>
<tr>
<td>Tarleton State University (2004)</td>
<td>$51</td>
<td>840</td>
<td>$311</td>
</tr>
<tr>
<td>Texas A&amp;M University, College Station (2013)</td>
<td>$1,709</td>
<td>11,581</td>
<td>$4,300*</td>
</tr>
<tr>
<td>Texas A&amp;M University, Corpus Christi (2013)</td>
<td>$148</td>
<td>991</td>
<td>$406</td>
</tr>
<tr>
<td>Texas A&amp;M University, San Antonio (2012)</td>
<td>$35</td>
<td>265</td>
<td>$130*</td>
</tr>
<tr>
<td>Texas Southern University (2012)</td>
<td>$266</td>
<td>1263</td>
<td>$542*</td>
</tr>
<tr>
<td>Texas State University (2007)</td>
<td>$365</td>
<td>2,610</td>
<td>$960</td>
</tr>
<tr>
<td>Texas Tech University (2010)</td>
<td>$602</td>
<td>5,973</td>
<td>$1,236*</td>
</tr>
<tr>
<td>University of Texas, Arlington (2012)</td>
<td>$472</td>
<td>3,780</td>
<td>$1,094</td>
</tr>
<tr>
<td>University of Texas, Austin (2013)***</td>
<td>$2,347</td>
<td>21,626</td>
<td>$5,800</td>
</tr>
</tbody>
</table>

(Although not the central topic of this paper, there are a number of reasons why the multipliers vary so much from university to university, including these: (i) differing sizes of the geographic area over which the impact is multiplied (see table 1a); (ii) different...
software packages used to estimate the impacts, and precisely how they are used; (iii) the extent to which spending is included in impact studies in addition to a university's operating budget, including student and visitor spending; and (iv) researcher error, including double-counting of expenditures (Ambargis, McComb, and Robbins, 2011).)

**TABLE Ia: GEOGRAPHIC AREAS**

Total effects on output and employment reported in Table I are for the following geographic areas:

<table>
<thead>
<tr>
<th>University Name</th>
<th>Economic Impact Area Results Reported in Table I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prairie View A&amp;M University</td>
<td>Texas</td>
</tr>
<tr>
<td>Sam Houston State University</td>
<td>Huntsville, Texas</td>
</tr>
<tr>
<td>Tarleton State University</td>
<td>Texas</td>
</tr>
<tr>
<td>Texas A&amp;M University, College Station</td>
<td>Brazos County</td>
</tr>
<tr>
<td>Texas A&amp;M University, Corpus Christi</td>
<td>Texas</td>
</tr>
<tr>
<td>Texas A&amp;M University, San Antonio</td>
<td>San Antonio Metropolitan Statistical Area (MSA)</td>
</tr>
<tr>
<td>Texas Southern University</td>
<td>Houston-Baytown-Sugarland MSA</td>
</tr>
<tr>
<td>Texas State University</td>
<td>Texas</td>
</tr>
<tr>
<td>Texas Tech University</td>
<td>Lubbock County</td>
</tr>
<tr>
<td>University of Texas, Arlington</td>
<td>Texas</td>
</tr>
<tr>
<td>University of Texas, Austin</td>
<td>Texas</td>
</tr>
</tbody>
</table>

(There is no consensus on the appropriate size of the geographic area to include in university impact studies, though it would be logical for Texas government to want to know the impact on the entire state. Ceteris paribus, larger geographic areas encompass more economic activity and imply greater economic impact, due to a larger multiplier effect; for example, Texas Tech University has a larger economic impact on the entire state of Texas than it does on its local area, Lubbock County, because some Texas Tech spending goes to businesses located outside Lubbock County.)

**ECONOMIC IMPACT ARMS RACE: AN INCENTIVE TO OVERSTATE IMPACT OF PUBLIC UNIVERSITIES?**

Public Universities compete with one another for government funding. In Texas each biennium, public universities send representatives to the state capitol to make their cases for state government funding. The economic impact studies of their universities buttress their cases of the benefits of public funding of their universities, so there is an incentive, subconscious or otherwise, to show as large of a positive economic impact as is possible. In addition, because the universities must compete for funding, an individual university that is conservative in its economic impact estimates (presenting results with low impact multipliers) may be at a disadvantage to another university that is more liberal in its economic impact estimates (presenting results with high impact multipliers). Thus an economic impact study arms race may result, with each university not wanting to fall behind its competitors in its claims of economic impact. Observe, for example, this sentence that is included in Texas Tech University's standard "About the Texas Tech University System" statement that appears on its website and on some marketing.
materials: "Whether it’s contributing billions of dollars annually in economic impact or being the only system in Texas to have a general academic institution, law school and health-related institution on the same campus, the TTU System continues to prove that anything is possible" (Texas Tech University, 2012).

Clearly it is in the best interest of state lawmakers and state voters to have non-biased estimates of the net benefits of all of the possible things that can be funded with state government funds, including public universities. In particular, public universities should not exclude the costs of their existence from their economic impact studies, including things such as: congestion; pollution; removing potentially taxable property from local governments; and the opportunity costs of the portion of the universities’ budgets that comes from state governments.

MEASURING THE OPPORTUNITY COST OF STATE GOVERNMENT FUNDING OF PUBLIC UNIVERSITIES

To the extent that public universities rely upon state government funding for a portion of their operating expenditures, there is a clear opportunity cost to this portion of expenditure. To the extent that higher taxes fund university spending, disposable personal income declines as those tax dollars are extracted from the state's citizens. This decline in disposable personal income results in a direct decline in consumer spending in the state, as follows:

\[
\text{Direct Opportunity Cost} = \text{State Tax Revenue used to fund Public Universities} \times \text{Marginal Propensity to Consume of State Taxpayers}
\]

This direct decline in consumer spending will lead to secondary, tertiary, and so on indirect declines in consumer spending, as the initial decline in consumer spending leads to additional declines in spending. (For example, if higher taxes cause a consumer to stop buying a monthly massage, then the masseur will be forced to reduce spending due to his reduced income.) Thus the direct decline in consumer spending will have multiplier effects that magnify the opportunity cost of the tax revenue used to fund public universities:

\[
\text{Total opportunity cost of state funding} = \text{direct opportunity cost} \times \text{consumer spending multiplier}
\]

It is somewhat ironic that the same software packages used by public universities to conduct economic impact studies--including RIMS II, IMPLAN, and REMI--have the capability to measure not only the impacts of increased spending but also to simultaneously measure the impact of a decline in spending that is associated with the increase in state taxes. For example, if a $100 million university operating budget is partially funded by $25 million in higher state taxes, these software packages can model the simultaneous impact of the $100 million increase in university spending and the
decline in consumer spending caused by the $25 million in higher state taxes. Thus one can include the opportunity costs of state government funding of public universities into an economic impact study that employs the ACE approach, without much additional effort.

USING IMPLAN TO MEASURE THE OPPORTUNITY COST OF STATE FUNDING: A STYLIZED EXAMPLE

To demonstrate how the opportunity costs of state government funding alter the economic impact results obtained using the ACE approach, we have created a hypothetical Texas university named Modest University with a $100 million operating budget and 1500 employees. We assume that Modest University receives $25 million in state government funding. (It is approximately true in Texas that on average, public universities receive 25% of their funding from the state government, in what is known as 'formula funding.' This amount does not include student financial aid.) We employ IMPLAN (version 3.1.1001.12), and real data supplied by IMPLAN representing the Texas economy in 2011 (the most recent year for which data is available as of the writing of this paper), to conduct two economic impact studies of Modest University:

Impact Study 1 uses the ACE approach to measure the impact of the $100 million operating budget, including the multiplier effects, on economic output and employment. In this impact study, we follow the exact methodology promulgated by IMPLAN Group LLC in its "Case Study 11: Impacts of a Public College" (IMPLAN Group LLC, 2009)

Impact Study 2 uses what we are calling a Modified ACE approach. In this approach we are simultaneously measuring the positive impact of the $100 million budget on output and employment with the negative impact of $25 million in higher taxes required to fund a portion of the university budget. We assume that the $25 million in taxes is levied on households and results in a $25 million reduction in disposable personal income. (We ignore any ‘excess burden’ effects of the taxes; regrettably these effects cannot be modeled using IMPLAN.) We model this $25 million reduction in disposable income using a methodology similar to IMPLAN Group LLC in its "Case Study 4: Using Groups and Household Final Demand Change" (IMPLAN Group LLC, 2013)

Because we are including the (negative) economic impact on taxpayers of the $25 million of tax-funded university spending in Impact Study 2, we should expect that the economic impact of Modest University will be lower under Impact Study 2 compared to Impact Study 1 (in which the negative effects of the taxes are not included). By measuring precisely how much lower the economic impact is in Impact Study 2 compared to Impact Study 1, we create a measure of the size of the opportunity costs of state government funding of Modest University.

Results of Impact Study 1 are displayed in Table II. The $100 million in Modest University spending results in a $183 million increase in economic output and a 2,125.2 increase in jobs in Texas.

Results of Impact Study 2 are displayed in Table III. As expected, the economic impact is smaller here because the negative impact of the $25 million in higher taxes is included. In this impact study, economic output increases by only $147 million
(compared to $183 million in impact study 1), and employment increase by only 1862.8 jobs (compared to 2,152.2 jobs in impact study 1).

**TABLE II: ECONOMIC IMPACT OF MODEST UNIVERSITY: ACE APPROACH**

*Impact Study 1: No adjustment for opportunity cost of state government funds*

<table>
<thead>
<tr>
<th>University Name</th>
<th>University's Operating Budget ($millions)</th>
<th>Number of University Employees (FTE)</th>
<th>Total effect on economic output in Texas ($millions)</th>
<th>Total effect on employment in Texas (FTE)</th>
<th>Output multiplier (output effect ÷ operating budget)</th>
<th>Employment multiplier (employment effect ÷ no. of university employees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modest University</td>
<td>$100</td>
<td>1,500</td>
<td>$183.237907</td>
<td>2,125.2</td>
<td>1.83</td>
<td>1.41</td>
</tr>
</tbody>
</table>

*Results generated using IMPLAN version 3.1. and 2011 economic data provided by IMPLAN Group LLC. Non-budgeted spending, such as visitor spending and off-campus student spending, is ignored.*

Table III: Economic Impact of Modest University: Modified ACE Approach

*Impact Study 2: Downward adjustment for opportunity cost of state government funds*

<table>
<thead>
<tr>
<th>University Name (and year of economic impact study)</th>
<th>University's Operating Budget ($millions)</th>
<th>Number of University Employees (FTE)</th>
<th>Total effect on economic output in Texas ($millions)</th>
<th>Total effect on employment in Texas (FTE)</th>
<th>Output multiplier (output effect ÷ operating budget)</th>
<th>Employment multiplier (employment effect ÷ no. of university employees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modest University (2013)</td>
<td>$100</td>
<td>1,500</td>
<td>$147.424485</td>
<td>1862.8</td>
<td>1.47</td>
<td>1.24</td>
</tr>
</tbody>
</table>

*Results generated using IMPLAN version 3.1. and 2011 economic data provided by IMPLAN Group LLC. Non-budgeted spending, such as visitor spending and off-campus student spending, is ignored.*

Table IV shows the opportunity costs of the $25 million in taxpayer funding of Modest University. The reduction in economic output caused by the higher taxes is $35.813 million--an amount that exceeds the $25 million tax levy due to the multiplier effects of these taxes mentioned above. The reduction in employment in Texas caused by the $25 million in taxes is 262.4 jobs.
TABLE IV: THE OPPORTUNITY COST OF STATE GOVERNMENT FUNDING OF MODEST UNIVERSITY

Negative Effects of the $25 million in taxes taken from taxpayers to fund the university

<table>
<thead>
<tr>
<th>Reduction in economic output in Texas ($millions)</th>
<th>Reduction in employment in Texas (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$183.237907 - $147.424485 = $35.813</td>
<td>2125.2 - 1862.8 = 262.4</td>
</tr>
</tbody>
</table>

SUGGESTION FOR PUBLIC UNIVERSITIES: DETENTE

If the purpose is truly to further the cause of informed decision-making, then economic impact studies should include not only the benefits of spending but also the opportunity cost of spending. (In this manner, economic impact studies would behave more in line with benefit-cost analyses or ROI analyses.) In the specific case of a public university, the opportunity costs of the sources of government funding, including state government funding, should be included in any economic impact study.

Yet it would be difficult for a single public university to include the opportunity costs of its government funding, if other public universities did not follow suit; this single university would seem to have an economic impact lower than its competitors for public finds, placing it at a disadvantage. Absent some grand bargain among universities in which all agree to adopt a standard framework for economic impact analysis which includes the opportunity cost of government funds, it seems inevitable that the impact study arms race will continue, and economic impact studies will exaggerate the benefits and ignore the costs of public universities.

We suggest a detente among public universities. After all, university administrators are generally ethical people of good will who wish to provide accurate information to interested parties. (And continued promulgation of exaggerated benefits may result in a backlash.) An agreement among all public universities to structure economic impact studies to include not only the benefits but also the costs of university-related expenditures would better inform politicians and voters, and remove undesirable pressures from researchers.

CONCLUSION

Economic impact studies are viewed as objective measures of the effects of public universities on society, but as currently formulated these studies can act more as marketing tools, in which benefits are emphasized and costs are ignored. Indeed, "marketing impact study" would seem a more apt description, given that these studies ignore the old adage from economics that 'there's no such thing as a free lunch.' In this paper we have shown how one cost of public universities--taxpayer funding by state governments--can be accounted for, using a moderately simple modification to the traditional ACE approach used in economic impact studies of public universities. We suggest that public universities abandon the arms race of competing claims to ever-larger positive economic impact and agree on a framework that more accurately reflects the true contribution of these fine institutions to the economy.
REFERENCES


Lee, J. (2013). The Economic Impact of Texas A&M University-Corpus Christi on Corpus Christi, the Coastal Bend and the State of Texas. Texas A&M University-Corpus Christi report.


Sam Houston State University (2009). The Economic Impact of Sam Houston State University. Report.

Sam Houston State University (2013). Summary of Estimated Budget Income Funds and Estimated Budget Expenses. Sam Houston State University report.

Smith, B. (2013). The Economic Impact of Texas Southern University upon the Houston Regional Economy. Texas Southern University report.


University of Texas at Austin (2013). The University of Texas at Austin: An Investment that Pays Off for Texas. Report.


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A RESEARCH FRAMEWORK FOR EVALUATING THE EFFECTIVENESS OF SOCIAL MEDIA IN BUSINESS ADMINISTRATION COURSES

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The use of social media as part of an instructional strategy has increased significantly in recent years. Instructors are using social media to communicate with students, extend learning beyond the class period, and enhance the learning environment by adding the richness of self-discovery. Understanding students’ perception and their usage pattern of social media provides significant insight into developing social media as an instructional platform. This study examined students’ expectations regarding faculty use of social media to extend the classroom and enhance the learning environment. Development of a research framework will allow comparison of studies across disciplines and courses.

Students prefer learning tools that increase the effectiveness of their educational experience. Social media is a family of such tools and includes platforms like Facebook, Twitter, YouTube, Instagram, and Snapchat. Traditional college students are digital natives; they grew up with social media connectivity and it is integrated into their daily lives. Like the old school pen and paper, the new technology may be used to record thoughts, create original work, view the work of others, and share ideas. In addition, the asynchronous orientation of social media extends the use of these tools to outside of the classroom.

Historically, learning has taken place in the classroom with homework to reinforce lecture out of the classroom. The new tools of social media may be used to expand the learning beyond the borders of the classroom, leaving classroom time for advanced topics and individual learning. The challenge is to identify and integrate best practices that are based on the expectations and preferences of students in order to create a holistic learning experience.

Literature Review
Barczyk and Duncan (2012) encourage the use of social media in the classroom, arguing for student learning to go beyond academic theory to include training on the tools they will be expected to use in the workplace. Social media creates an educational environment where students are empowered to take initiative, for example by leading the course dialogue. Social media tools are rich content. The tools are more than black and white ink on paper and include video, audio, pictures, and global resources. Barczyk and Duncan (2012) focused on replacing the classroom learning system (such as Blackboard or Moodle) with Facebook. Class materials which included YouTube videos, course related campus events, and course topics were posted on Facebook. Students engaged with material and each other on the group page to discuss material (p. 115). Social media increased students’ perception of learning, enriched the subject matter, and created a sense of ownership which leads to a higher level of satisfaction while training students in the professional use of Facebook (Barczyk & Duncan, 2012).

Another popular social media tool used in higher education is video. Roodt & Peier (2013) sought to identify whether the use of YouTube videos in the classroom had an effect on the engagement of students. In addition, the research looked at how students felt about the use of video in the classroom. Roodt & Peier (2013) concluded that the use of YouTube videos (student generated video, recorded guest speakers, assignments to identify videos related to topic and to show real life examples of classroom theory) had a positive effect on engagement and student learning.

In 2012, Stranger conducted a case study comparing two sections of the same course that were offered simultaneously. The first section was a traditional lecture-based class and the second section was delivered as a flipped classroom using social media. The flipped classroom students were introduced to content during non-class hours and lectures were changed to discussion-based discovery. The result of this study indicated that students in the flipped classroom were “more open to cooperation” and “group learning” (p. 190). The use of social media was favorably perceived by students because they were able to apply what they had learned. While most students achieved success with the flipped classroom, Strayer theorized that the flipped classroom was less task oriented and some students prefer the highly structured environment of the traditional classroom (Strayer, 2012).

Framework
Developing a standard framework for researching social media use in the classroom will aid in evaluation and replication of research across the academic spectrum. Different disciplines require different instructional styles and different combinations of social media tools. Modification of the project life cycle allows for the development of a Classroom Design Framework (Figure 1) for researching social media in higher education and the integration of best practices from different styles of instruction. In addition, this framework aids in evaluating the effectiveness of using social media to achieve course objectives.
The identification of the goals and objectives of using social media in the classroom begins the design process and provides a means to measure outcomes on which to assess student success and research hypotheses. First, the objectives are dependent upon the course structure, for example Quantitative classes (Operations, Statistics, etc.) as compared to qualitative classes (English, History, etc.). Second, students’ learning outcome influences the choice of social media, thus allowing the expansion of the classroom borders beyond the reading of the text and classroom interaction. Finally, the instructional method utilized (traditional lecture, online, hybrid, etc.) will influence the course. The combination of course structure, learning outcomes, and instructional method will influence the selection and use of the social media tools (YouTube videos, industry specific blogs, etc.).

The criticality of selecting the appropriate social media medium to enhance the learning experience cannot be overstated. Students in our study expressed the importance of utilizing social media and their preference for using social media in the classroom (Figure 2). The importance that students place on using social media, the interaction between the students, and
the use of social media must be considered in selecting a social media tool. The instructor’s use of appropriate social media allows students to increase learning and comprehension as students are encouraged to create original work, facilitate engagement with other learners, and communicate with instructors. As a result, students report that they are more engaged and successful in classes using social media as part of the instructional philosophy (Figure 3).

After executing the social media plan, the previously identified goals and objectives provide the measurable outcomes from which the social media plan is evaluated. The assessment provides specific results which can be used to improve the integration of social media into the classroom and ultimately improve the learning experience. Additionally, the use of the Classroom Design Framework allows for the identification, comparison, and replicability research.

**Operations Management**

The proposed social media Classroom Design Framework was studied in an Operations Management course. Operations Management is a senior level course for business administration students in the management concentration. The objective of this course is to introduce students to making management decisions based on numbers. The course is quantitative by nature and involves a variety of mathematical techniques. The instructional method is a flipped classroom where students learn the base mathematical method outside of class. The classroom time is used for discussion of higher level material and application of method. The hub for all information is the college user learning system, Moodle (which is similar to Blackboard or WebCT).

The students’ role is to learn material outside of class and be properly prepared to participate in class. The out-of-class requirements include reading the textbook, viewing professor generated videos, and completing a competency quiz prior to classroom discussion. The classroom experience is a collaborative experience, allowing the instructor to work individually with students to solve more complex problems, and to elaborate on practical examples of technique.

The social media tools selected for Operations Management were YouTube, which allows for short instructional videos and Google Forms (a free tool in Google Drive) for online quizzes. A review of third party instructional videos available on YouTube revealed traditional
hour-long lectures that have been video-taped. The course objective was to have concise videos. Course specific videos were filmed and posted on YouTube. The self-generated videos were designed to cover basic material (see Ed Dansereau YouTube channel for videos). The use of Google Forms cloud computing allows sharing of information to occur automatically between the professor and students. Google Drive (formerly Google Docs) shares documents on the cloud, automatically updating everyone on the distribution list when a revision is made. The spreadsheet within Google Forms simplifies grading for the professor, automatically saving data for evaluation, and the forms can be automated with the use of “if statements” and “absolute cell references”. This automation works best for multiple choice questions or lists of choices. After the assignment due date, the quiz answers were posted using iMovie for iPad or a PDF file so students were able to check their work. Making quiz answers readily accessible was an additional instructional aid for exam preparation. Quiz grades were posted on Moodle and the weekly format of the Moodle system was used as the hub for identifying social media assignment and links. Interestingly, many students chose to view videos and complete quizzes on smart phones.

The Operations Management course with social media was conducted in the fall 2013 semester with about 50 students in two classes were enrolled in the course. The grade distribution from the previous three years of Operations Management courses, about 200 students over 8 sections, were used to establish a baseline for comparing the resulting grade distribution for the Operations Management course integrating social media instruction. The same tests were administered to students with a few numbers changed and questions scrambled in order to remove variability.

The evaluation of the students’ grades was positive. The average grade increased by about 10 points from a D+/C- to a C+/B- average. The students achieved better results, especially on interpreting the numerical results and applying results to business situations, the main objective of course. In addition, the number of students dropping the course to avoid a failure decreased from 8.5% to 1 student. The number of lower grades with the social media enabled course can be explained by students sticking with the course rather than dropping out. In addition, an end of course survey was given to students with specific questions concerning social media use and the perceived learning. Students perceived an increase in learning due to social media (videos and quizzes) and felt positive about the new in-class instructional style.
Conclusion
This study proposes a Classroom Design Framework for integrating and evaluating the use of social media in the classroom with research data that is comparable across disciplines and delivery style. The students in our study expressed the importance of and their preference for using social media to extend the classroom and enhance the learning environment. The research data and results echo student perception. As a result of this extension and enhancement, students expressed that they were more engaged in classes using social media. More importantly, students felt that they were more successful in the class as a result of the integration of social media into the learning environment.

Study Limitation and Future Research
The limitations include the small sample size of classes. The research was conducted at a small college in northern New England with an average class size of 25 students. The pre-social media data was collected over three years but the post social media data was collected over a one-year period. The trends should be followed for coming years and expanded to other college settings. In addition, testing was limited to courses in business administration. Other majors should be tested. Another limitation is that the data was collected from a quantitative class; this study should be expanded to qualitative class styles.

Future research should be expanded to a variety of classes in other disciplines, online courses, hybrid courses, and moving classes away from course management systems (Moodle and Blackboard) to social media tools such as Facebook. Additionally, the use of experimental and control groups would enhance the validity of the study.

References

