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Zia Ur Rahman^{*}, Manzoor Ahmad[†], Umar Sultan[‡], Cai Hongbo[§],

THE DETERMINANTS OF EXPORTS BETWEEN PAKISTAN AND ITS
MAJOR TRADING PARTNERS: APPLYING THE GRAVITY MODEL
APPROACH

Abstract

This study seeks to identify relevant factors for Pakistan's bilateral exports within the framework of an augmented gravity model to analyze various determinants of Pakistan's exports to its fifteen major trading partners, which absorb almost 72.3% of Pakistan's total exports. Panel data from a thirteen-year period, covering the years 2003 to 2015, have been used. The aim of this study is to discover if the most common gravity model variables have similar effects on Pakistan's exports as they have for most of the advanced economies. The Hausman test reveals that the fixed effects model is the most appropriate model for our panel data analysis. Our estimated results show that the product of an exporting countries' GDP, exchange rate, foreign direct investment, SAARC membership and FTAs have significant positive impacts, while distance and terrorism have significant deleterious and negative impacts on Pakistan's exports. The study also found that an increase in the per capita GDP of an exporting partner has a negative effect and sharing a common language with an exporting partner has a positive, but statistically insignificant, impact on Pakistan's exports. The results of this study will be helpful to the Pakistani government in setting export policies.

JEL CLASSIFICATION: F00; F10; F14; C1

KEYWORDS: GRAVITY MODEL; EXPORT; GDP; EXCHANGE RATE; TERRORISM; FDI; PAKISTAN.

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1. Introduction

According to the export-led growth hypothesis, exports are important for a country's economic growth; and from the perspective of international trade theory, exports play a vital role in and are believed to be the engine for the economic growth of any country (Humayon, Ramzan, Ahmad 2014), (Naseeb, Muhammad, Bahadar 2011), (Nadeem, Azam, Islam 2012), (Sajjad and Mahmood 2014), and (Afzal Ali, n.d.). Although Pakistan is the 54th largest export economy in the world, its exports do not equal or exceed its imports; Pakistan's total exports were \$28.3 billion and its imports were \$47.4 billion, resulting in a trade deficit of \$19.1 billion (WDI,2016). The major reason for this deficit is that Pakistan's exports are based on primary commodities and semi-manufactured goods and less on manufactured goods. Fluctuating world demand for its exports, domestic political uncertainty, the impact of occasional droughts on its agricultural production, terrorism, severe energy shortfalls, and a lack of infrastructure have all contributed to the variability in Pakistan's trade deficit. Pakistan is the 4th largest producer and the 3rd largest consumer of cotton in the world (Channar et al. 2015). In 2016, Pakistan's top export products consisted of house linens (\$4.36 B), Non-knit men's suits (\$2.33 B), rice (\$2.03 B) and non-knit women's suits (\$1.12 B). Pakistan also exports leather and leather products, carpets and rugs, tents, synthetic textiles, surgical instruments, sports goods, ready-made garments, vegetables, fruits, fish, engineering goods, chemicals and pharmaceuticals products, footwear, animal casings, cement, paints, and varnishes, and manufactured and raw tobacco (Jacob 2017). Major export destinations are the United States, for which the total export share was 17%, followed by China at 7.8%, and Afghanistan at 6.7%; please see the last column of Table 1 that presents major export destinations by their % share of total exports in 2016.

Since 2000, Pakistan has implemented an export-led growth policy but achieving these goals requires that Pakistan increase its access to international markets for its goods and services (Gul and Yasin 2011). A free-trade policy would play a prominent role in achieving this goal; in addition, Pakistan must improve all important factors related to its exports. The aim of this study is to explore whether the most common gravity variables have similar effects on Pakistan's exports as they have for most advanced economies. The most important and imperative objective of a

developing nation is rapid economic growth, and exports are generally considered an engine for economic growth. This study aims to evaluate the main determinants of Pakistan’s exports by applying a gravity model approach. The main and overriding objective of this research is to empirically examine the determinants of Pakistan’s exports by using a gravity model approach and to suggest possible ways to expand exports.

Table 1. Pakistan’s Export by major trading Partners, 2003 to 2015 MSUS.

Country	Years			Share (%)
	2003-2007	2008-2011	2012-2015	
United States	18050.01	14388.5	14822.9	17
China	2016.31	4839.47	4459.99	7.8
Afghanistan	3766.72	7166.44	7698.75	6.7
United Kingdom	4622.04	4315.69	5906.84	7.6
Germany	3421.15	3892.66	4431.24	5.8
Spain	1939.33	1941.54	2678.09	4.1
United Arab	679.275	730.426	2687.91	3.8
Italy	2821.18	2677.35	5548.56	3.3
Bangladesh	1114.39	2373.75	2802.65	3.2
Belgium	1572.14	2001.28	2317.02	3.2
Netherlands	1949.66	1896.99	2428.38	3.2
Saudi Arabia	1767.95	1696.01	1890.71	1.9
France	1768.53	1444.31	1528.33	1.8
India	1197.66	1105.81	1455.24	1.7
Turkey	1504.59	2278.03	1449.52	1.2

Sources: <https://atlas.media.mit.edu/en/profile/country/pak/#Destinations> and wits.worldbank.org/.

The gravity model of trade, which has a long history in international and regional economics, is founded on Newton’s law of gravity, which was employed in international trade by (Tinbergen 1962) and (Poyhonen 1963). It posits that the total trade that flows between states increases with increases

in their economic sizes, based on their products, and decreases with the geographical distance between them (Helpman 1962) (Ok 2010). This trade model has proven, empirically, to be quite effective in international trade and has a remarkable and consistent history of success. The model was later augmented to take into account other factors for explaining trade flows among countries. Many researchers, for instance (Gul and Yasin 2011), (Doumbe and Belinga 2015), (Rahman 2009), (Tumwebaze Karamuriro 2015), (Tumwebaze Karamuriro 2015), and (Frede and Yetkiner 2017), in their empirical studies, have proven that GDP has a positive and significant impact on trade. Among the explanatory variables, the product of GDP serves as a proxy for the two countries' economic sizes, both in terms of production capacity and market size; larger countries with a greater production capacity are more likely to achieve economies of scale and increase their exports based on comparative advantage. While the exporting country's GDP represents the productive capacity of exporters, the importing country's GDP measures the absorptive capacity of importers (Unakitan and Aydin 2012). Therefore, an increase in production of the two countries' GDP is expected to increase exports. Most empirical studies, such as (Afzal 2006), (Doumbe and Belinga 2015), (Paper 2016), (Tumwebaze Karamuriro 2015), (Khan, Mughal, Ahmed, and Cai 2017), (Gul and Yasin 2011), (Zainal Abidin, Mohd Satar, Jantan, and Haseeb 2015), (Ekanayake Mukherjee, and Veeramacheneni 2010), (Alleyne and Lorde 2014), (Elshehawy, Shen, and Ahmed 2014), and (Binh, Duog, and Cuog 2010), and (Eita 2008), have used a gravity model approach and have found that increases in GDP production have significant positive impacts on exports in various countries.

An importing country's per capita GDP is a proxy for a country's prospective development and market potential. It is generally anticipated that a rise in the per capita GDP of an importing country will lead to greater demand for products from the exporter (Unakitan and Aydin 2012). There are numerous results concerning the relationship between the exports of a country and the per capita GDP of its importers. The different results, in regard to the variation in empirical outcomes, come from the fact that different countries export different products, and they are, consequently, influenced differently by the per capita GDP of their importing partners. (Tumwebaze Karamuriro 2015), (Doumbe and Belinga 2015), and (Khan, Khan et al. 2013) found, using the gravity model, that per capita GDP positively affects trade volume with a trading partner. In contrast, (Abidin, Bakar, and Sahlan 2013), (Zainal Abidin et al. 2015), (Bhavan 2016), and

(Metulini, Patuelli, and Griffith 2018), in their empirical studies, found that per capita GDP has negative effects on trade. (Unakitan and Aydın 2012) investigated Egypt's agriculture exports to its main exporters by applying the gravity model and found that per capita GDP was negatively correlated with total exports. Even though his study only covered Egypt's agriculture export products as compared to total exports, it is still a good example for Pakistan because agricultural products are Pakistan's main export. The distance between trading partners is considered a proxy for transportation costs, and it is one of the elementary variables of the gravity model. It is obvious that nations located far away from each other have greater transportation costs compared to countries that are closer to one another; consequently, they are inclined to trade less with each other. It has been proven by (Doumbe and Belinga 2015), (Rahman 2012), (Elshehawy et al. 2014), (Gul and Yasin 2011), (Paper 2016), (Binh et al. 2010), (Jiang 2013), (Taylor 2003), (Anderson 2011), (Tumwebaze Karamuriro 2015), and (Jiang 2013) that transportation costs have negative effects on exports.

Dummy variables, such as sharing similar languages, a common border, regional or economics blocs, and FTAs, have positive effects on exports. Foreign trade agreements, other regional integrations unions, common culture history and language, and a common border and proximity, all have expected positive effects on trade. FTAs have important factors that are widely used by many countries in order to boost trade between them or eliminate trading barriers among them. Various research and empirical studies, such as (Gul and Yasin 2011), (Elshehawy et al. 2014), (Ekanayake et al. 2010), (Tumwebaze Karamuriro 2015), (Alleyne and Lorde 2014), (Road 2004), (Eita 2008), (Tumwebaze Karamuriro 2015), (Jiang 2013), (Rahman 2009), (Binh et al. 2010), (Anderson 2011), and (Alam 2015), found positive impacts, for the above mentioned dummy variables, on export expansion.

In fact, some research indicates a positive influence for depreciation on exports, while some studies show no impact. The exchange rate has a great influence on exports of some developing countries (Chaudhary, Hashmi, and Khan 2016), as a fall in relative domestic prices due to exchange rate depreciation makes exports cheaper in international markets, resulting in increased demand for exports (Kafayat, n.d.), (Shi and Li 2017), (Temitope and Akani 2017), (Sokchea 2006), (Mahmood et al. 2017), (Humayon et al. 2014), (Tumwebaze Karamuriro 2015), and (Tran, Phi, and Diaw 2017). Other researchers such as (Unakitan and Aydın 2012), (Abidin et al. 2013),

(Mukhtar and Malik 2010), (Zainal Abidin et al. 2015), and (Tumwebaze Karamuriro 2015) found, in their gravity models, that the depreciation of home currency against the currencies of its trading partners will lead to improved trade balances and increased exports.

We augmented two new variables, FDI and terrorism, in the gravity model to see the impact on exports; this is a new contribution to existing research literature. A number of studies have been conducted to inspect Pakistan's export performance. To the best of our knowledge, no study has been undertaken incorporating terrorism and FDI variables into a gravity model to examine the extent of these variables' impact on the export performance of Pakistan. The role of FDI in promoting exports in developing nations is debated; some research has found positive results, while other research has found negative or insignificant results. The results depend, crucially, on the motive for such investments in these nations. If the intention behind FDI is to capture a domestic market, it may not contribute to export growth. On the other hand, if the motive is to take advantage of the country's comparative advantage, then FDI may contribute to export growth. Many studies, for instance (Kutan and Vukšić 2007), (Rahmaddi and Ichihashi 2012), (Ayaz, Yousuf, and Asghar 2013), (Anas 2011), and (Harding and Javorcik 2012), all found that FDI has a significant positive effect on upgrading exports.

Terrorism activities negatively affect exports, as there is human and capital flight from the country; human, capital, and infrastructure losses occur; industries shut down; and laborers hesitate to go to work. As such, there are numerous negative consequences associated with terrorism. However, there are only two studies that address the effect of terrorism on international trade, so our study is a new contribution to the research literature. (Oladimeji and Oresanwo 2014) conducted a study for Nigeria and discovered that terrorism has significant direct and indirect effects on international business. (Nitsch and Schumacher 2003) studied the impact of terrorism and warfare on international trade, observing that trade flows among more than 200 nations over the period from 1960 to 1993. Augmented gravity models were used and found that terrorism decreases the volume of trade; doubling the number of terrorist incidents, decreases bilateral trade by over 4 percent. (Haider and Anwar 1883), (Anwar, Arshed, and Economics 2016), (Hussain, Sajid, Sajid, and Khadim 2014) and (Battista, Fortuna, Maturo, Felice, and Serio, n.d.) found significant negative effects of terrorism on inward FDI. (MengYun et al. 2018) and (Aksoy and

Demiralay 2017) quantify the impact of terrorism on equity premiums and the stock market; their estimated results reveal that terrorism has a statistically significant negative impact.

By joining world trade organization (WTO) in 1995, Pakistan has substantially opened its trade to other economies, but similar to other developing economies, it has faced a trade deficit since its inception. In the era of globalization, exports play a very important role and are a measure of economic progress and growth. However, it is very essential to examine all important factors that enhance exports. This study aims to first discover the determining factors for exports and then to judge the extent that each determinant affects exports. Finally, the study will examine whether distance is an obstacle in export promotion. There is much research that has been done on this topic; however, different determinants are used and different results have been deduced because the researchers have used different methods and different time periods. The gravity model has gained much prominence in explaining trade patterns in emerging economies, especially in Asia and Latin America, because it provides a practical framework for analyzing changing patterns in global trade and for growing the trade of intra-developing economies. The gravity model has been chosen because it has been successfully applied in empirical trade (Nguyen 2010).

Therefore, this research seeks to examine the applicability of the gravity model in explaining the pattern of Pakistan's bilateral exports. Very little has been done in regard to explaining the recent pattern of Pakistan's exports by applying the gravity model of international trade. The gravity model has long been one of the most successful empirical models in economics. Incorporating the theoretical foundations of gravity into recent practice has led to a richer and more accurate estimation and interpretation of the spatial relationships described by gravity (Anderson 2011).

2. Data, Descriptions, and Methodology

2.1. Data Collection

The present study is based on secondary sources of data. The data has been collected from different sources covering the period from 2003 to 2015. The benefit of panel data is that it is a combination of cross-sectional and time-series observations, which increases the sample size, offers more degrees of freedom, gives more variability, and provides a chance to reduce

multicollinearity between variables. The data has been taken for annual averages. The data for most variables were collected from www.dataworldbank.org, and wits.worldbank.org. The data for distance were collected from www.distancefrom.net and www.indo.com/distance, which show the direct distance in km from the capital of Pakistan, Islamabad, to other exporting countries' capitals; some data for exchange rate were not available, so these data were calculated from www.imf.org. Data for terrorism were collected from the global terrorism database, <https://www.start.umd.edu/gtd>, which records all incidents regardless of doubts. Dummy data were taken from www.commerce.gov.pk/ and the Central Intelligence Agency (CIA) World Fact Book. Table 2.1, which follows, shows descriptive statistics.

Table 2.1. Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Ln export	208	-0.3335	1.09108	-2.4824	2.89103
Ln GDPs	208	6.68649	1.69948	1.52249	9.80016
Ln GDP PC	195	9.45967	1.65874	5.31641	10.9496
Ln FDI	200	9.78121	2.18665	3.5497	13.5063
Terrorism	208	145.563	372.336	0	2213
Ln Exc Rate	208	2.81267	2.44744	-4.63249	5.11414
Ln Distance	195	7.62678	2.14901	5.31641	9.33999

Source: author/s or institution (year).

2.2. Methodology

2.2.1. Specification of the Model and Conceptual Framework

2.2.1.1. Gravity Model

The basic gravity model was initially applied by Isaac Newton in physics, as expressed below:

$$GF_{ij} = G. m_i m_j / D_{ij}^2 \quad (1)$$

Where; GF_{ij} = the force of gravity between two particles, and m_i, m_j represents the multiplication of the masses of a pair of particles. D_{ij}^2 represents the square of a straight-line gap between the two particles. The gravity model derived for trade by (Tinbergen 1962) and (Poyhonen 1963) is expressed as:

$$Trade_{ij} = \alpha. \frac{m_i m_j}{Dist_{ij}} \quad (2)$$

The estimating equation follows the simplest form of the gravity model in linear form as:

$$LnTrade_{ij} = \alpha. \beta_1 m_i m_j + \beta_2 Dist_{ij} + \mu_{ij} \quad (3)$$

where m_i, m_j is the multiplication of the masses of a pair of nations i and j (a proxy for GDP) and $Dist$ represent the geographical distance between a pair of nations i and j , while α is constant, and μ is error term.

2.2.1.2. Empirical Model

The following augmented gravity model will be used for the empirical analysis of the data:

$$LnExp_{ijt} = \beta_0 + \beta_1 Ln(GDP_i GDP_j) + \beta_2 LnDst_{ij} + \beta_3 LnFDI_{ij} + \beta_4 LnGDPpc_j + \beta_5 LnExch_{ij} + \beta_6 Terr_{ij} + \beta_7 SAARC_{ij} + \beta_8 CommL_{ij} + \epsilon_{ij} \quad (4)$$

Exp stands for exports, which is the dependent variable. *GDP*, *FDI*, *GDPpc*, *Dst*, *Exch* denote gross domestic product, foreign direct investment, GDP per capita, distance, exchange rate, South Asian Association for Regional Cooperation, free-trade agreements, and sharing common languages, respectively; these are the independent variables. The dummy variable will take the value of 1 if it belongs to SAARC; otherwise, it is 0. FTA will take the value of 1 if Pakistan has agreements with other countries; otherwise, it is 0. Sharing common languages takes a value 1; otherwise, it is 0 if the trading partner has English as a common official language. The entire variable set has been taken in natural logs, except for terrorism and dummies, whereas, the variables β_1 , β_2 , β_3 , β_4 , β_5 , β_6 , β_7 , β_8 , and β_9 are parameters for exports with respect to the abovementioned independent variables, and ε_{ij} is an error term.

3. Presentation and Critical Discussion of the Results

This section presents the details of our results with estimations of our model originated on methodology. This section discusses Panel Unit Root tests, Breusch-Pagan Lagrange multiplier tests, the Hausman test and Heteroskedasticity test, and lastly, there is an interpretation of the results on the basis of the Hausman test of the estimated gravity equation.

3.1. Panel Unit Root Test

This test decides cointegrated associations among the variables. If no unit root is found in all the variables, i.e., they are stationary, then simple traditional estimation techniques may be used to estimate the associations among the variables. When the variables have a unit root, i.e., are nonstationary, a test for cointegration will be implemented. There are various kinds of panel unit root tests; however, in this study, we have used the Hadri method. This method assumes that the autoregressive parameters are common across countries. The Hadri method works out the null hypothesis of all panels; stationary and alternatives in some panels contain a unit root. When the p-value is less than 0.05, it means we cannot reject alternatives, so the pooled model is not appropriate. Table 3.1 in the Appendix represents the panel unit root test results. The P-value is less than 0.05, so we cannot reject alternative hypotheses, which can be stated as, H_a : Some panels contain unit roots.

3.2. Breusch-Pagan Lagrange Multiplier Test

The result for the Breusch-Pagan Lagrange Multiplier test specifies that a random-effects regression is significantly more relevant than a simple OLS regression (i.e., the null hypothesis of zero variances through entities is rejected). Please see Table 3.2 in the Appendix, which shows $\text{Prob} > \chi^2 = 0.0000$ means the simple traditional estimation is not appropriate and, thus, we proceed to the Hausman test.

3.3. Tests for Heteroskedasticity

The Heteroskedasticity test indicates no heteroskedasticity exists in this particular study's panel data (i.e., p is greater than 0.05). Quite clearly, the variance is constant, so there is no need for the "robust" choice. However, by using robust commands, the level of significance and the coefficient values do not change. $\text{Prob} > \chi^2 = 0.0728$ means that we cannot reject H_0 , but rather we can accept the constant variance. Table 3.4 in the Appendix represents the Heteroskedasticity test.

3.4. Hausman Test

The result of the Hausman test is presented in Table 3.3 in the Appendix and shows that the fixed effects model is more appropriate than the random effects model, as the probability value is less than 0.05 (i.e., the null hypothesis associated with a reliable random effects model is rejected, $\text{Prob} > \chi^2 = 0.0000$). However, time-invariant variables such as distance and common language are omitted in the fixed effects model, and their coefficient values will be derived from random effects model. The results of the fixed effects model are presented in Table 3.5 in the Appendix. On the basis of the Hausman test we have used the fixed effects model; the benefit of this approach is that it eliminates unobserved effects and permits an estimate of the impact of the explanatory variables on export outcomes within countries (over time) without a heterogeneity bias (Azevedo, Sartori, Campos 2018). The only problem in the fixed effects model is that it cannot estimate time-invariant variables, such as distance, and common language is omitted due to collinearity. Table 3.4 shows the results of estimations by both the random effects model and the fixed effects model.

Table 3.4. Gravity Model Estimation Results from Both Models.

Variables	Fixed Effects Model	Random Effects Model
Ln GDP i. GDP j	1.01424 (4.74)*	0.5251981 (4.92)*
Ln exchange rate ij	0.5004307 (4.05)*	0.5753362 (4.74)*
Ln FDI ij	0.066285 (2.68)*	0.0637136 (2.33)**
Ln GDP per capita j	-0.2924845 (-1.23)	0.0380597 -0.29
Terrorism ij	-0.0004274 (-3.62)*	-0.0003534 (-2.74)*
SAARC	0.5439669 (2.73)*	0.7151383 (3.28)*
FTA's	0.2725744 (2.02)**	0.4042211 (2.80)*
Common Language	-	0.3851571 (1.00)
Distance	-	-1.433326 (-6.04)*
Adjusted R ²	0.7145	0.701

Notes:*/**/** significant at 1%/5% /10% level. Z and t-statistics values are in parentheses.

Table 3.4 results indicate that under the fixed effects model, the dependent variable, Pakistan's export, has a statistically significant relationship with independent variables such as Pakistan's and the trading partner's GDP, FDI, exchange rate, terrorism, distance, SAARC, and FTAs because $P < 0.05$. In contrast, it has no statistically significant associations with the importing country's per capita GDP and common language because

$P > 0.05$. The details of the regression results for the gravity model with the fixed effects model is presented in Table 3.5 in the Appendix.

The coefficient of the GDP's sign is positive, as expected, and we can say that holding other variables constant, a 1% increase in Pakistan and partner GDPs will cause Pakistan's exports to increase by approximately 1.01424%. This result also corroborates the findings of (Doumbe and Belinga 2015), (Paper 2016), (Tumwebaze Karamuriro 2015), (Nguyen Viet 2015), (Zainal Abidin et al. 2015), (Alleyne and Lorde 2014) and (Gul and Yasin 2011) that show there is a positive association between exports and GDP. Similarly, the coefficient of distance is negative, as expected, and we can see that holding other variables constant, a 1% increases in the distance between Pakistan and an exporting partner will decrease exports by a considerable -1.433326%. This finding is consistent with the findings of (Doumbe and Belinga 2015), (Paper 2016), (Gul and Yasin 2011), (Eita 2008) and (Nguyen Viet 2015). Under the fixed effects model, time-invariant variables such as distance were automatically dropped (omitted due to multicollinearity). Since distance is one of the main variables of the gravity model, its effect should be considered in this study. Therefore, the coefficient of distance was taken from the random effects model estimation. This finding is supported by several research papers about the gravity model that state that a country far away from its trade partners tends to trade less and vice versa (i.e., transportation costs are higher). These results reveal that the main idea of the gravity model is that as the size of economies increases, export also increases, while geographical distance decreases exports.

The coefficient for the nominal exchange rate is found to have a positive effect, as expected. It means that an increase in the exchange rate or the depreciation of Pakistani rupees causes an increase in Pakistan's exports, which is supported by economic theories that Pakistani exports will be available at cheap prices. This result is also corroborated by many empirical studies, such as (Khan 1994), (Tumwebaze Karamuriro 2015), (Zainal Abidin et al. 2015), (Alleyne and Lorde 2014), (Kabuya 2014), (Shaygani, Abolhasani Hastiani, A. Ghaffari, Sadeghi Shahdani, and Fadaee 2015) and (Asst 2014). The coefficient of Foreign Direct Investment is positive and statistically significant, which is in accordance with the expectations of this research. This finding shows that, holding all other variables constant, a 1% increase in FDI causes an increase in exports of approximately 0.066285%. This finding is supported by (Dilanchiev 2012) in an augmented gravity model for Georgia. The sign for the terrorism coefficient was expected to be

negative and statistically significant, as a 1% increase in terrorism incidents may cause a reduction in exports of $-.0004274\%$; this finding is consistent with the findings of (Oladimeji and Oresanwo 2014) and (Nitsch and Schumacher 2003). This shows that terrorism activities negatively and significantly decrease the international trade and economic growth of a country.

The coefficient for the importing country's per capita GDP variable is negative but insignificant. It indicates that an increase in the importing country's per capita GDP causes Pakistan's exports to decrease. The p-value of this variable is more than 0.05, indicating that the importer's per capita GDP does not statistically explain the variable for exports. This result was consistent in different findings for different countries by different researchers such as (Tumwebaze Karamuriro 2015), (Bhavan 2016), (Zainal Abidin et al. 2015), (Metulini et al. 2018) and (Unakitan and Aydin 2012). Pakistan is exporting mostly agricultural products, so the demand for these products is income inelastic; per capita increases in exporting partners does not significantly affect Pakistan's exports. The SAARC variable is also found to have a statistically significant and positive impact on Pakistan exports because the p-value is less than 0.05, which indicates that a country that belongs to the same block of the South Asian Association for Regional Cooperation will export more compared to others, as the coefficient indicates $.5439669\%$ more exports with member countries. This result is supported by different studies for different countries that have different economic and regional blocs. The finding is consistent with the findings of (Paper 2016), (Alam 2015), and (Alleyne and Lorde 2014), as well as many others.

The FTAs variable is also found to have a statistically significant and positive impact on Pakistan's exports because the p-value is less than 0.05, which shows that a 1% increase, or signing a free trade agreement with exporting partners, will induce exports by $.2725744\%$, which is also supported by (Elshehawy et al. 2014) and (Alam 2015). Free trade between partners will boost exports, which is true for Pakistan, as has been found out in different kinds of literature. Pakistan has signed different trade agreements with other nations, including the APTA with Afghanistan and the FTA with China, which have considerably led Pakistan to trade with those countries. The variable of sharing common languages has no statistically significant impact on Pakistan's exports, as the p-value is greater than 0.05 ($P > 0.05$). However, it still has a positive impact on Pakistan's exports, as the coefficient is 0.3851571. It is supported by (Tumwebaze Karamuriro 2015)

and (Alam 2015), which posit that sharing a common language decreases transaction costs between trading partners.

4. Conclusions, Suggestions and Limitations

The gravity model of international trade is selected to investigate the main determinants that have effects on Pakistan's export; the results clearly show that Pakistan's export patterns follow the basic gravity model. Quite simply, Pakistan's exports increase compared to its GDP and its partners GDP, and its exports also decrease in proportion to its distance to those exporting destinations. The results recommend that in order to expand its exports, the government of Pakistan and export corporations need to emphasize promoting exports to rich nations, as well as neighboring countries. Distance matters for Pakistan's exports and is considered a proxy for high transportation costs and discourages trade among Pakistan and its exporting partners. Discovering a means to reduce transportation pricing is essential in overcoming this hurdle, so the government needs to pay adequate attention to destination markets with cheaper transport costs. Entering into such markets should be eased by appropriate policies that take the benefits of geographical location into account when supporting Pakistani exports' competitiveness. The government should improve internal peace to attract more FDI and will have to cope with the intense terrorism problem facing the country that hinders the economic growth of the country. The exchange rate also positively and significantly effects exports, as appreciation in national currencies discourages exports; thus, the government should keep stabilizing the exchange rate, and the government should adopt suitable exchange rate policies for adjusting the real exchange rate, since that is more useful to the acceleration of output capacity and economic growth. The per capita GDP of exporting partners negatively, but insignificantly, affects Pakistan's exports. Intuitively, the major reason behind this is that Pakistan's exports are based extensively on primary commodities and semi-manufactures and less on manufactured goods and agricultural products; thus, there is less increase in demand from exporting partners as their per capita income increases. Free trade areas and the regional block SAARC membership have positive and significant effects on Pakistan's exports. Finally, sharing a common (official or commercial) language with trading partners was found to have expansionary effects on Pakistan's bilateral exports, although its impact is statistically insignificant. It was found that

improvement in Pakistan's trade policy with trading partners and increased access to foreign markets through economic partnership agreements exerts a significantly positive impact on Pakistan's bilateral exports.

The empirical analysis and results presented in this study are not without limitations. This study not exhausted all the possible determinants; there are more factors than those addressed that have an impact on Pakistan exports. Another associated limitation is that the study only covers Pakistan's main export partners; there are more than 15 nations to which Pakistan exports. This research did not cover all of them due to a lack of data on which exports have less value and which have insignificant effects on exports, and as a result, our paper does not give an exact picture of the determinants of Pakistan's exports. However, this research gives a close and good approximation because the sample comprises all of the top exporters from Pakistan. It also does not cover the supply side factors that are important for a nation's exports. Consideration of this will be carried out in future research.

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Flavio Felice*

THE INTERNATIONAL DIMENSION OF THE SOCIAL MARKET
ECONOMY: ITS RECEPTION IN ITALY AND STURZO'S
INTERPRETATION

Abstract

This paper presents a perspective on the Social Market Economy and its problematic reception in Italy by examining the contribution of the Italian political scientist, Luigi Sturzo (1871-1959). Sturzo, who spent twenty-two years in exile in Great Britain and the United States because of his anti-fascism (1924-1946), elaborated a social theory called “popolarismo” and offered an interesting reading of the Social Market Economy’s founding fathers, also in a European key. This contribution allows us to highlight the international dimension of the Social Market Economy model and to understand the reasons for the difficulties in its implementation. Sturzo understood that the free market does not exist outside the rules of free competition and without an ethical perspective based on the centrality of the human person. This is, perhaps, the most valuable and significant legacy we have from reading the works of the fathers of the Social Market Economy, among them Luigi Sturzo.

JEL CLASSIFICATION: A14; B31; F02; N44; Y8; Z12; Z13

KEYWORDS: LUIGI STURZO; EUROPEAN INTEGRATION
POPULARISM; ORDOLIBERALISM; SOCIAL MARKET ECONOMY

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1. Introduction

The economic and social theory known as the “social market economy” should be framed within the troubled fate that has befallen the long march of modern continental liberalism both in Germany and elsewhere. One example shows how its march is anything but over. In 2008 the Attali Report was published in Italy by the commission established by the then President of the French Republic, Nicolas Sarkozy, to relaunch the French economic policy. In the preface to the Italian edition, two members of that commission, Profs. Franco Bassanini and Mario Monti, wrote: “The commission’s report has been appreciated, overall, by innovators, liberals, and reformers from both the French center-right and the left, and has likewise been criticized, as was foreseeable, by conservatives on the right and the left, by the defenders of profits, privileges, corporate or local interests. This confirms that a large part of the reforms and innovations necessary to face the challenges of this century cannot be labeled a priori as being from the right or left, though they can perhaps be defined according to their coherence with some basic underlying choices in the perspective of a social market economy, which values the merit, talents, and capacities of all men, from instruction to security, from health to environmental quality” (Bassanini, Monti 2008, p. XIII). The words of Bassanini and Monti, followed by the interventions of well-known personalities in the Italian academic and economic world,¹ demonstrate the relevance of this current of thought, which paradoxically seems to have taken on increasing importance with the passing of time and, understandably, with the process of de-ideologization, which culminated with the end of the systems of real socialism, affecting an increasing number of individuals, ruling classes and nations.

The social market economy illustrates the historical reasons and theories that led some German social scientists and others to oppose the Nazi and communist abominations, proposing instead an economic and social system based on the market economy, free initiative, the fight against monopolies (both public and private) and monetary stability (Felice 2008). We believe it is of some interest, in order to express the international dimension of the social market economy, to explain how a different current of Catholic social

¹ See Bazoli 2008. See Ostellino 2008. See Monti 2008. See Salvati 2008. See Forte 2008. On this debate see Felice 2008.

thought – Luigi Sturzo’s liberal populism – received, developed and participated in the dissemination of the principles and values, i.e., the political philosophy, underlying the aforementioned economic theory. In an article dated August 10, 1959, Sturzo expresses his full agreement with the theoretical elaboration of one of the founders of social market economy theory: “Prof. Roepke couldn’t have better highlighted the problem of the modern economy than by making reference to the fundamental canon of morality. Without this, the public economy doesn’t hold up, the private economy doesn’t hold up” (Sturzo 1959, p. 116).

Conscious of the partiality of this contribution, we hope that it may nonetheless contribute to debate, serving as a useful instrument for the reflection on the epistemological, political, economic and ethical-cultural reasons of free societies. Moreover, we hope that freedom, responsibility and creativity, which together with fallibility and ignorance characterize the physical and moral makeup of the human person, may inspire the political and economic proposals of at least the majority of those who have requested and obtained that the European electors carry out the difficult profession of legislator².

The article comprises two main parts, namely, “The Reception of the Social Market Economy in Italy” and “Luigi Sturzo’s Interpretation.” In the first, I try to explain how Ordoliberal theory and the Social Market Economy principles on competition began to be implemented following the reception of the Rome Treaty of 1957, updated by the Treaty of Masstricht of 1992, even though we must note the general diffusion of such ideas, between the First and Second World Wars, thanks to the works of influential intellectuals both Italian and German. In the second part, I try to describe Sturzo’s main economic argument to show some relevant points of contact between the Italian scholar and, above all, Wilhelm Röpke’s elaboration of the idea of State intervention in “conformity” with the market process.

2. The Reception of the Social Market Economy in Italy

The Ordoliberal topic of a competitive economy as a “public good,” above all after Wilhelm Röpke’s contribution to developing the theory of the

² “A Social Market Economy is a model for social-economic and institutional order coherent with Economic Union, on condition it is perceived in terms of subsidiarity. [...] It is the Author’s opinion that the fundamental rules debated can be summarized in three principles: zero inflation, zero deficit, zero debt” (Velo 2014, 10).

social market economy, is fairly widespread in Italy thanks to its positive evaluation by Luigi Einaudi, Luigi Sturzo, Benedetto Croce and Guglielmo Ferrero in the period immediately following the First World War, to then be sadly set aside by the second half of the 1960s; even less fortunate was the reception of Ordoliberal thought at the time of the drafting of the Italian Constitution.³ With particular reference to this second context, Tommaso Padoa Schioppa wrote: “The norms on the economic relations contained in Part I of the 1948 Constitution appear to be largely inspired by the idea that public institutions should have an active role in the economy. It is an idea that joined the two dominant political forces of the time, the Marxist and the Catholic, in a vision that was strongly critical of ‘capitalism’. Government intervention in the market, limits on ownership rights, the orienting of economic activity to social ends are thus grafted strongly onto the fabric of liberal origin” (Padoa Schioppa 1999, pp. 452-453). The author of the passage just cited perceives how strongly the thesis is affirmed that to pursue a “social” value, it would be necessary to reduce the “market space” to make room for “Government intervention.” In such a thesis, Padoa Schioppa comments, we glimpse a negative judgment of the market – considered intrinsically “antisocial” – and a positive one regarding public intervention – judged “intrinsically beneficial.” Padoa Schioppa comments: “for some time there has been a consensus in economic theory in deeming the market’s ‘failures’ an exception rather than the rule; that, just as we were saying, ‘except for exceptions’, the market system has in itself the capacity to achieve the ends of ‘safety, freedom, human dignity, salaries proportional to the quality and quantity of the work done’ that the Constitution enunciates” (Padoa Schioppa 1999, p. 454). This same position has been expounded by Alberto Quadrio Curzio, according to whom “It would instead be better to say that a middle way (though some would see it as a compromise) has prevailed between the liberal configuration favorable to the market regulated by the Western democracies, and the Communist-socialist configuration, favorable to Eastern planning. This middle way was advocated for principally by Catholics, but others’ intentions could have distorted it, had political events permitted, in the extreme case, towards the collectivist planning solution”; and again: “Already in Art. 1 of the Constitution, which affirms that ‘Italy is a Democratic Republic, founded on work’, the possibility was left open to extend this concept even towards conceptions of

³ See Rotondi 2012, 113-133.

the supremacy of the ‘working class’. In fact, it does prove difficult to understand why ‘work’ should come before the ‘human person’ (spoken of in later articles) that expresses values that are far superior and of greater breadth that include, among other things, also that of work [...] There occurs [in the Constitution] instead, often, the reference to the intervention in production and state and public ownership as an expression of that ‘third way’ which in our country has generated a growing and grave distortion with a protectionist bureaucratic attitude and state-run entrepreneurship activities for which only recently attempts at a remedy have been made” (Quadrio Curzio 1999, p. 450). An equally radical judgment on the insensibility to the market of a significant part of the fathers of the republican constitution was expressed by Giuliano Amato. In an essay on the market in the Italian Constitution, he writes: “It is a classic mixed-feeling that which the Constituting Assembly, in its great majority, feels and asserts in regard to the market. It mistrusts the market at the same time that it defends it; and it defends it [...] while being in the main insensible to a large part of the reasons for which it is right and fitting to do so” (Amato 1992, p. 7). The result is an economic constitution that oscillates between a kind of neo-corporatism and veiled government control, where the role of the little autonomous producer predominates, who, rather than seeking out and demanding respect for the laws of the market, regulates himself within his own community (“corporation”) of associate producers. All this in a general climate where efficiency and social justice are considered antinomies, and where political rhetoric finds it more convenient to emphasize the latter rather than the former. No one, in the context of drafting the Constitution, would discuss anti-trust laws, the rules of the market, the limits that the market itself – and not the state – imposes on individuals; no one discusses conflicts and interests that legitimately and inevitably dwell there and that determine the choices of consumers and workers (Amato 1992, p. 13).

They were years when no one questioned the State Participation model. In addition, in these years of boundless optimism, due to the hope that people were placing in growth after the Second World War, the “Ordoliberal” prudence and fears of bureaucratization, in these years of the monopolization of social services and of anti-statist recipes, favoring the principle of free competition, appeared as a dead weight that would have inevitably slowed the positive economic cycle triggered by reconstruction. These were the years when Italy was experimenting the great deflation willed by the then President of Banca d’Italia and the future President of the Republic, Luigi

Einaudi and was entering the exciting and mythologized phase of reconstruction, through the policy of assistance and subsidies directed towards companies. The Italian industrial fabric that was reborn after the Second World War was the child of an industrial policy centered not on the market, with its rules, but on state help, with the distorting burden of both its bureaucratic technical apparatus and its expectations to enact its political programming.

This statist culture, with its diffidence towards the market and ignorance of the opportunity that the mechanism of free competition offered, was shaken by the process of European unification. The Treaty of Rome of 1957 bore a series of directions, prohibitions and limits heading in the direction opposite to that taken by the Italian Constituent Fathers (Felice and Sandonà 2017, pp. 93-118). It took the direction of the market, of the principle of competition as the hermeneutical key of economic policy and not as a mere applicative instrument of some occasional policy. It went in the direction of a public intervention not aimed at interfering with the market, but at dictating rules to safeguard and promote competition, seen no longer as an alternative to social justice but its ally and the sole authentic promoter of economic efficiency.

The opinion is widespread among economic jurists that the “ordoliberal” conception will significantly influence the underlying philosophies of the institutive Treatises of the European Economic Community. Maria De Benedetto writes: “According to such a doctrine [ordoliberalism] the State, ‘strong but neutral’, is called to carry out the functions of rebalancing and institutionally guaranteeing the mechanisms of the market: ‘the new neutrality imposes a public administration of the economy’” (De Benedetto 2000, pp. 18-19). Thus, there enters into Italy, by way of Europe, the market culture (Velo, p. 2014), the principle of competition, the consciousness that the market process represents not so much a possible nonvalue to be contained, as a value to be grown and matured⁴. We refer in particular to articles 85, 86, and 90 of the Treaty of Rome of 1957, today articles 81, 82 and 86 of the Treaty of Maastricht (1992), in the section on the “Common norms regarding competition, taxation and drawing the respective legislative bodies closer.” Contained in these articles is an affirmation of the principle

⁴ “The reforms of Ludwig Erhard oriented towards the free market in West Germany near the end of the 1940s offered an alternative model of development, and the consequent economic growth represented a strong impulse to the vast European liberalization” (Tupy 2008, 163).

of competition as the hermeneutic principle expressing the economic identity – the “ordoliberals” would say the “Economic Constitution” – of the geopolitical area we call Europe. Agreements between businesses and associations are prohibited, as are all those practices that prejudice the market and restrict or falsify free competition, enunciating moreover the irreducible irreconcilability between the presence of any companies that abuse their dominant position and the principle of competition.

3. Luigi Sturzo’s Interpretation

It is therefore true that the application of “ordoliberal” theories has only recently reached Italy and that by an indirect route (Forte and Felice 2016²; Forte and Felice 2012). However, we cannot but acknowledge that the ideas of authors such as Erhard, Eucken and Röpke have profoundly influenced broad sectors of the economic and political culture of Italy. Particularly, in regard to the ideology of liberal popularism, we note that Fr. Luigi Sturzo, a priest, scientist, politician and statesman, knew how to clearly express the social philosophy of our authors. A significant testimony can be found in a letter sent by the German Chancellor Konrad Adenauer to Giuseppe Palladino on September 25, 1959, a few days after the death of the Sicilian priest: “I esteemed Fr. Sturzo as one of the great politicians who out of a profoundly felt sense of Christian responsibility, after the chaos of the last war, have worked in every sense to build a new Europe; I hope greatly that Fr. Sturzo’s prayers may help me to cooperate, in turn, in the spirit that animated his intention, to resolve the problems that will present themselves for the Christian West” (Palladino 1995, p. 53). Having returned to Italy in 1946, after a long and sorrowful exile begun in 1924, which led him first to France, then to England, and finally to the United States, Sturzo began intense work as a freelance journalist for newspapers and academic journals that saw him strongly critical towards the mounting statist climate of those years, one that translated into government and parliamentary orientations on the topic of the state’s intervention in the economy.

In an article of December 29, 1957, entitled *Paura della libertà (Fear of Freedom)*, our author wrote: “Unfortunately there exists among us, like it or not, a hybrid industrial business, [comprising] the staticized one and the private one; the former with monopolistic privileges, ample state guarantees, a facility of means, and no sense of risk; the latter with a longstanding tradition of state-given favors, facility of means and with a sense of risk;

even industrial operators who seek particular favors lose sight of the value of economic freedom and the real interests of national productivity” (Sturzo, December 29, 1957-1998, p. 158). These are not the words of an impenitent libertarian, an anarcho-capitalist who dreams of who-knows-what strategies to privatize lunar real estate. Quite the contrary. These are the words of the father of Italian and European political Catholicism, one of the greatest interpreters of modern Christian social thought and one of the most authoritative social scientists of the 20th century.

This article is of considerable importance. It is interesting to note how Sturzo affirms that no form of “solidarity” appears practicable where the coexistence of “statism” and “market economy” emerges, while a policy oriented towards solidarity would be possible only where the “free market” lives side by side with a state policy of “cooperation” and of “occasional” and “more or less agreed intervention.” These would be the circumstances that allow for a fair and healthy policy. Ultimately, Sturzo qualifies his political-economic position with characteristics typical of the social market economy. Not by chance does he take the German and U.S. economic-entrepreneurial reality as an example; nor is it by chance that Röpke pointed to Sturzo’s work as one of his inexhaustible sources of inspiration. The social market economy Sturzo developed takes three conceptual elements into consideration. First, that freedom is unique and individual: “one loses political and cultural freedom if one loses economic freedom, and vice versa,” which goes against the Crociani “liberism/liberalism” distinction and is in line with the unitary perspective of Einaudi, Hayek and Röpke himself. Second, that freedom is an expression of self-discipline as well as of legislative regulation “for the coexistence and respect of reciprocal rights and duties.” And third, that the main functions of the state are to “guarantee and safeguard collective and private rights,” keeping public order, assuring national defense, caring for and safeguarding the monetary and credit system, and, moreover, with an eye to the vigilance and care of public finance and the guaranteeing of its proper administration. Only secondarily and “subordinately does the state intervene, in a supplementary manner, in those sectors of social and general interest where private initiative is deficient, until these are able to resume their role.” As one can see, Sturzo, similar to the ordoliberals and the fathers of the social market economy, does not deny that in cases of necessity the state must intervene, but he limits such cases to situations of “emergency,” for a “temporary” period and “in a secondary and alternative manner.”

The economic freedom of which Sturzo speaks “is an economic freedom that conditions and facilitates the existence and development of the political and moral freedoms.” In this sense, for Sturzo, all those “corporativistic illusions of the philo-fascist Catholics of yesterday” would collapse. Corporatism, for our author, did not and could not have any realization except in the sad Mussolinian attempt to identify “State-party-corporation,” in the very realization of the fascist motto: “all in the State, of the State, for the State, nothing outside the State.”⁵

Analogously, the identification of economic freedom with the existence and development of political and moral freedoms – integral and indivisible freedom – allegedly also cause the collapse of the illusions of the “socialist and classist State.” The experience of the Soviet bloc and of its satellite countries, as well as the “forgeries of Belgrade and Beijing,” all demonstrate that, in the absence of economic freedom, “free capitalism” is soon substituted by a “State capitalism, a thousand times worse than the private one,” and that the dictatorship of the proletariat would be nothing but “the military dictatorship with the apparatus of profiteering functionalism.”

It is at this level of reflection that Sturzo comes to affirm that “The Western countries, more or less individualistic and dynamic, with so many differences of climate, productivity, economic development, customs, needs, history, and culture, and whose political conditions are full of contrasts, will never undergo – except by force – the suppression of their fundamental liberties, of which the economy is the necessary condition” (Sturzo, December 29, 1957-1998, 158). In this picture, although the state intervention of that time was generally more extensive than in the past, its impact would be less and the productive energies coming from the private sector would represent an antidote against state interference precisely in those countries where the political structure was more solid and the industry healthier. Among these countries, Sturzo does not see Italy, which was inconsistent and evidently immature at the political level and possessed an economic-productive system that was extremely weak and constantly desponsibilized by a state interventionism that, assuring monopolistic

⁵ On the contrary, it is precisely by recovering the experience matured by and in 19th century social Catholicism that Sturzo develops a sensitivity towards the underlying human factors of the production process, proposing representation for work, understood in its most varied forms, within the administrative organization of the Italian state (Secco Suardo 1962, 212; Sturzo 1934-1950-1970, 147; Sturzo 1933-1950-1970, 103-118).

privileges (state guarantees), had ended up miseducating the economic operators to the “risk that educates.”

In underlining the fact that state interventionism does not lead to policies of solidarity and respect for personal freedoms, but rather to the overcoming in an authoritarian sense of the free society, Sturzo presents a realistic picture of strong impact. His harsh critique of this reality regarded a part of the Catholic political and intellectual class accustomed to referring to concepts such as “personalism” and “solidarism” as possible picklocks that could have unhinged – by overcoming them – the typical institutions of the market economy, to give life to some form of an economy “of Italy’s own.” This was an illusory alternative to the market economy that pervaded the political and cultural liberties: illusory, inasmuch as – according to Sturzo – freedom is “individual” and consequently “whole and indivisible” (Sturzo, December 29, 1957-1998, p. 159).

State intervention, which Sturzo considers necessary for civil living (living in *conformity*, according to the terminology of the fathers of the social market economy), slips dangerously into statist interventionism: *not in conformity*, “a destroyer of every institutional order and every administrative order,” when it appears as the “systematic degeneration of state intervention, in fields not its own or by provisions harmful to the rights of citizens” (Sturzo, January 23, 1958, 1998, p. 371). An intervention is “illegitimate” or “harmful to the rights of citizens” – Röpke and the interpreters of the Freiburg School would say “not in conformity with the market economy” – when the state does not limit itself to attempting to neutralize the hostile factors in the joint activity between entrepreneurs and workers: when, ultimately, its action does not go outside its own particular field, provided by the respect for individual freedom, that whole and indivisible freedom of the human person, and by the historical experience of its concrete applications. The degeneration of statism would result in the monopolization of national capital, consequently contracting productivity, devaluating currency, generalizing functionalism and effecting a totalitarian drift (see Sturzo, 1935-1956, p. 109). As one can see, for Sturzo the state was in its very essence the political form of civil society, what the *Res publica* was for the ancient Romans and the *Administration* was for the Anglo-Saxons. Ultimately, in Sturzo’s words, it was “power and the administration of the common good.”

The reasons for the anti-statism of a certain tradition of Catholic social thought (the current heir to Sturzo’s thought) are expressed by the priest of

Caltagirone himself when he affirms that statism ultimately unhinges the intermediated articulation of society by centralizing power in the hands of state entities and bureaucratizing civil society, contravening one of the cardinal points of the modern social doctrine of the Church: the principle of subsidiarity, both in its horizontal and vertical dimensions⁶. It weakens a certain capacity for individual resistance in the face of the threat of invasion by bureaucratic bodies in the spontaneous life of social organizations. It transforms parties and unions into bureaucratic bodies of the state – where the state is strong – and of the anti-state, where the state is weak. Sturzo's fear is that “one day today's power-centralizing state will collapse even with its half-chained freedom, and there the anti-state, itself a power-centralizing entity, will rise to power with the cadaver of political freedom at its feet” (Sturzo, July 29, 1958, 1998, p. 278). According to Sturzo, by subverting the rights inherent in the human person, statism also ends up subverting the powers and functions of the administration, producing an economic imbalance in both the production and distribution of goods and services, due to its irrational initiatives, elevated costs, and management deficit.

Sturzo's lesson in economics can be traced back to the maxim, typically used in the Ordoliberal context: “the state, a referee and not a player in the free economic game.” Giuseppe Palladino, the Italian economist who executed the ‘will’ of the founder of the Italian Popular Party,⁷ and who was one of the men closest to him in the last years of his life, has the distinction of having highlighted the great lesson in economics we received from Don Luigi Sturzo. In a volume dedicated to the United States recessions from 1927 to 1957, Palladino writes: “In rethinking the past and recent economic and financial experience, we shall make reference above all to the critical

⁶ “A State-controlled organisation on subsidiarity puts up for discussion not only the repartition of competence and power between the various institutional levels, from local to European levels, but also puts up for discussion the repartition of competences in the horizontal sense, between operators having diverse characteristics – public, private and State-private – having in common the capability to carry out activities of general interest. This problem has already been addressed in different and in convergent ways applying a variety of theories, with the most important identifiable as federalism, the theory of subsidiarity and the model of Social Market Economy. These different approaches allow one to understand the various elements of the historical process. Their capacity to develop a cross-fertilisation process can be attributed to the very nature of the ongoing processes involving the change referred to by all the three mentioned” (Velo 2014, 15).

⁷ The Italian Popular Party was founded by Luigi Sturzo on January 18, 1919, and in the opinion of the Italian historian Federico Chabod, it was “The most notable event in the history of the Italian twentieth century.” It contributed to the end of the so-called “Roman question,” which was exacerbated by the capture of Rome by the Italian army on September 20, 1870 (Chabod 1961, 43).

position assumed by Don Luigi Sturzo in the face of more relevant government and parliamentary directions on the topic of state intervention in the economy” (Palladino 1958, p. 171). We especially owe to Palladino the reception of Sturzo’s thought in a manner strongly committed to understanding the national and international economic processes and also the understanding of Sturzo as one committed to giving answers coherent with his sociological presuppositions and oriented towards the research current we have defined as Ordoliberalism. Sturzo was conscious that “stability,” understood as full commitment, and “development,” in the absence of inflation, represent two demands of modern democracies, since such democracies are more sensible to the needs of the market. Their greater market sensibility results from their diminished derivation from those nets of social protection typical of archaic societies; consequently, the women and men of the postwar period were much freer, but at the same time much more exposed to risks deriving from possible economic crises and catastrophes.

In conformity with the ordoliberal lesson, Palladino, adopting the Sturzonian principle of “the sociology of the concrete” regarding the evils of statism, writes that “since the series of economic and social relationships in a free society is always posed as a question of fair and proper competition, it is well to observe that the following principle of free competition was suffocated yesterday (in the past) by the illusion of being able to consider the market the playing field and referee of the economic game and is more seriously threatened today by the error of deeming the state a party and referee of the game itself. In addition, thus the game remains a confused one, and its stability enters into conflict with the ulterior development of the economy” (see Palladino 1958, p. 178). Ultimately, the Sturzian teaching, mediated by Palladino’s contribution, regarding the Italian reception of the ordoliberal lesson, takes into account the awareness that in a game or match, the best results are obtained when the following three conditions exist: the presence of good players (“conscious and updated economic workers”), clear and certain rules (“principles with which to regulate the hierarchy of interests and ends, starting from those individuals and of groups, of the categories and – in the universal sphere – of the individual nations”) and an impartial referee.

The first error was allegedly committed in considering the market the playing field, in which senseless automatons with homogeneous – and thus indifferent – expectations exercised themselves in the public manifestation of the principle of free and perfect competition. This dual function was

motivated by the conviction that it was sufficient for the state to serve as the guarantor of economic freedom, and consequently having the function of impeding anyone from disrupting competition – which on its own could not have been other than perfect – out of respect for an interpretation of the concept of the “invisible hand,” according to which the instances of individual selfishness would be directed towards the “greatest common good.” This mistake, according to Palladino, generated the misleading idea that universal and free competition would regulate the natural and spontaneous circulation of work, capital and goods, resolving in this way the problem of the allocation of scarce resources on a global scale. So that, Palladino points out, that “healthy force of the economy’s sure development” – which has from time immemorial been called selfishness – when not moderated by reason, can serve as neither brake nor limit. In this way, selfishness, exploiting the increased revenues of larger companies, has obtained the upper hand over the weakest: “And as companies have grown *in proportion* they have also become less numerous in the main sectors of the economy: the iron and steel industry, metallurgy, sources of energy, mechanics, credit, etc. In this way *individual selfishness* has often become *group selfishness* (monopolies, trusts, cartels), *class selfishness* (trade union monopolies) and *national selfishness* (economic imperialism and isolationism)” (Palladino 1958, p. 179).

At the end of the 1950s it was evident that the great economic and social question, conscious as it was of the market’s incapacity to regulate itself and of the inestimable harm the state would do if positioned simultaneously as referee and as player, was being directed towards the search for a referee able to guide the economic game. Persons began to understand how the anti-monopoly and anti-trust laws would not suffice, since in those sectors, which had been left in the hands of a few companies, no law would ever keep a certain number of directors from meeting and making decisions that would influence the global market for a single good. Here, Palladino sees three possible remedies. Having set fairness and stability as objectives of the economic game led by free men, he deemed that these objectives could be pursued as long as society addressed the quality of the economic players, took on the full consciousness of its individual and collective goals and finally became definitively aware that only the principle of free competition “is compatible with the economic game of a free society founded on the incentive of private property and on men’s free individual choices, on the democratic method as workers, consumers and savers” (Palladino 1958,

181). Instead, where economic power is confused with political power on the international field, through control by nations, or worse, through a mixed economic system in the domestic realm, it is highly unlikely the results would be any more comforting than those of an economy left to itself, since the asphyxiating control of the entrepreneurial state would lead to an increasing confusion of the political system with the economic system.

4. Conclusion

To deliver a brief summary on Sturzo's reception and contribution to the development of the Social Market Economy theory, I would like to underline the role played by Sturzo to explain the importance of a free, ordered and ruled market process. According to Sturzo, these qualities of the market are necessary to promote competition, as a share of the "common good," preventing the discretionary nature of political interventionism and the consequent crisis of inclusive democracy. For this reason, in line with the theoretical focus of Social Market Economy, Sturzo spent all his intellectual life theorizing the importance of social institutions as a bulwark against arbitrariness driven by the political interest of the moment, warning us against political degeneration and the advent of the totalitarian State.

Just as the market has proved incapable of simultaneously functioning as both playing field and rules of the economic game, so the state should not have been both referee and player. The state cannot but carry out the role of referee. The political system should have distinguished itself from the economic one, both in the national and international context. Hence the need to distinguish the state as referee, the market as the playing field and the operators as the teams at play. With each actor playing his part, one can thus catch a glimpse of possible antidotes to the risk of enormous private economic concentrations degenerating into a system of public collectivism. The first remedy, identified by Palladino, is of an internal nature, and considers the uncontrolled form of self-financing and the separation between the managing and ownership of shares of large companies. The second is an external remedy, and considers states' commitment to enlarging the market processes as much as possible in order to impede a few sellers and buyers from being able to continue to dominate the market. Palladino wrote: "With the first corrective, capitalism must become popular and the democratic method be adopted by large companies. With the second, the solution to the

economic problem must assume a worldwide dimension” (Palladino 1958, p. 182).

This is the main problem on the agenda of worldwide governance, one that asks to be resolved with the greatest urgency if we are to avoid the risk of sacrificing economic dynamism to the stagnation of collective agreements – the children of a corporative logic – and free individual choices to the “fatal conceit” of the Great Planner.

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THE RELATIONSHIPS AMONG ECONOMIC GROWTH, RENEWABLE ENERGY CONSUMPTION, CO₂ EMISSIONS AND AGRICULTURE PRODUCTION: EMPIRICAL EVIDENCE FOR CHINA AND INDIA.

Abstract

The present study empirically investigated the nexus among renewable energy consumption, economic growth, agriculture production and carbon dioxide emissions for two Asian countries, China and India. By using the autoregressive distributed lag (ARDL), we analyzed the long-run and short-run estimates. The paper gathered the data of economic growth, agriculture production and carbon emissions from world development indicators (2017), while the data for renewable energy were collected from the Energy Information Administration database (EIA, 2016). The results showed a unidirectional relationship from agricultural production to economic growth. Further, the long-run result confirmed a bidirectional relationship between agricultural production and CO₂ emissions. The causality from agricultural production to CO₂ emissions was positive, indicating that agriculture is guilty of increasing CO₂ levels. In the long run, renewable energy consumption demonstrated a negative impact on CO₂ emissions for both countries. Moreover, renewable energy consumption demonstrated a significant positive relationship with agricultural production. In summary, the study provides multiple policy implications: (i) renewable energy sources should be promoted in the overall energy mix to combat global warming, (ii) advanced farming and irrigation methods must be used to increase production and economic growth, and (iii) to reduce carbon emissions and for a green economy, the adoption of advanced agriculture technologies and increased investments in renewable sources for energy needs in China and India are more than urgently needed.

JEL CLASSIFICATION: Q18; Q23

KEYWORDS: ECONOMIC GROWTH; RENEWABLE ENERGY CONSUMPTION; AGRICULTURAL PRODUCTION; CO₂ EMISSIONS

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1. Introduction

In the past few decades, on one side, energy has played a significant role in economic growth (Costantini and Martini 2010). On the other side, the use of fossils fuels to produce electricity and manufacture products and for transport has adversely impacted the environment due to emissions of harmful greenhouse gases (GHG), e.g., carbon dioxide (CO_2), sulfur dioxide (SO_2) and nitrogen oxide (NO_x) (Hoel and Kvemdokk 1996, Hook and Xu 2013). As per the annual report of 2014 of the International Panel on Climate Change, the share of carbon in greenhouse gases was 76% (Edenhofer and Madrugá 2014)¹. By consisting of half the world population and economy, the countries of BRICS (Brazil, Russia, India, China and South Africa) emitted more than 40% of the total global carbon in 2013 (Liu, et al. 2017).

China is leading in greenhouse gases emissions with 8205.86 million tons (mt), while India is fourth with 1954.02 mt (International Energy Agency, 2014, 2015). These harmful gases cause many health issues as well as environmental problems. For those reasons, policy makers and practitioners divert their attention towards a better source of energy. Recently, many studies report that renewable energy is the best alternate source to meet the relentlessly growing energy demand and to address the energy, economic and environmental issues (Yu and Zhang 2011, Bayrakçı and Kocar 2012, Mahesh and Jasmin 2013, Bélaïd and Youssef 2017).

The agriculture sector is an important contributor to economic growth and per capita income of families in India. Bose (2015) argues that the agriculture sector contributes 16% to the Indian annual gross domestic product (GDP). The agriculture sector also provide employment to half the Indian population (Cagliarini and Rush 2011). In the last four years, the growth in output of the agriculture sector is reported at 20% per annum. Heavy investments are spent on renewable energy to increase the irrigation area and to control CO_2 emissions (Chhappia 2017). For the case of China, the agriculture sector contributes 11% to the total gross domestic product, while the total factor productivity (TFP) of agriculture increased 6.5% annually from 1991-2009 (Cao and Birchenall 2013; Huang and Rozelle 2009). Moreover, the agriculture sector has strong potential to reduce carbon dioxide emissions approximately 80 to 88% (Reynolds and Wenzlau 2012).

¹ IPCC, 2014 <http://www.ipcc.ch/report/ar5/wg3/>.

As per trends in the global CO_2 emissions report, China is first with 30% of emissions, while India is fourth with 6.5% of global emissions (Olivier and Muntean 2015). Moreover, the agriculture sector is the second largest greenhouse gases (GHG) emitter with 21% of total global emissions (Lipper and Skot 2016)². Agriculture greenhouse gases emissions are produced from livestock emissions, soils, deforestation, burning of biomass and nutrient management (Liu, et al. 2017).

Recently, renewable energy sources are being used to fulfill agricultural needs, e.g., irrigation and greenhouse temperature control, among others. Bayrakcı and Kocar (2012) explained the multifold uses of renewable energy sources in agriculture: a) solar energy in agriculture is used for product drying, farm field irrigation, and greenhouse heating and cooling; b) geothermal energy is used in barns, to dry agriculture products and in aquaculture; c) wind energy is a natural energy that depends on geographical location and is used in electricity production, for irrigation of fields and for grinding crops; d) hydropower is a cheap and commonly used source of electricity production and irrigation. In addition to these sources, bioethanol and biogas, grain dust, and wheat straw are used in agriculture as sources of renewable energy.

Recently, Asian economies, e.g., China, Bangladesh and India, among others, are raising their investments in renewable energy for a better and cleaner environment. World investments in renewable energy sources increased 5% with \$258.9 billion in 2015, and a major part of this record-breaking investment is by the developing economies, led by China and followed by India (McCrone and Moslener 2016). China is the largest energy producer that generates 22% of the world energy (Future Directions International, 2013). According to the latest statistics by The Renewable Energy Policy Network, China is first in hydropower generation capacity, solar power capacity, wind power and solar water heating capacity, while India is second in concentrated solar power capacity (CSP), fourth in solar water heating generation capacity and fifth in hydropower generation and wind power capacity (REN 21, 2015)³.

India is a rapidly growing economy in the world. The average annual GDP growth of the country was 7.1% in 2016 (Times of India, 2017). Mainly, industry is the main strength for this growing GDP of India. On the

²FAO, 2016 <http://www.fao.org/3/a-i6030e.pdf>

³Renewable Energy Network, 2015 Report.

other side, this industrialization creates many environmental issues, due to the usage of fossil fuel and coal for electricity generation. To counter this problem, India is investing many resources in renewable energy (Patwardhan 2010). Bhattacharya and Jana (2009) state that India is fifth in wind power generation capacity with total wind power potential of 100 GW in the country. Although India is the fifth largest energy producer in the world, India still needs more energy, because more than 600 million people are living without electricity and more than 700 million people are using biomass (Patwardhan 2010).

The present research study contributes to multifold purposes. First, the study aimed to empirically investigate the dynamic causal relationship among economic growth (*GDP*), agriculture production (*AVA*), renewable energy consumption (*REC*) and *CO*₂ emissions for China and India from 1991 to 2015. China and India are major oil importing countries in eastern Asia with high levels of energy consumption and energy sharing for prosperity and economic development (Ahmed, et al. 2016). Second, the study empirically examined the short-run and long-run causality among carbon emissions, economic growth, renewable energy and agriculture production for the cases of India and China. Third, the study aimed to investigate the renewable-agriculture-carbon nexus and to provide policy implications to increase agriculture production, lower carbon value and promote green economic development for China and India. Liu et al. (2017) examined the renewable energy, agriculture and carbon nexus for the countries of BRICS, and they found a positive impact of agriculture production towards carbon and a negative effect of renewable energy on carbon. Finally, the study provides the policy implications for a clean environment, green and developed economic growth and to achieve an optimistic level of agriculture production by examining the nexus and impact of renewable energy sources, agriculture production and economic growth on carbon emissions. As per our knowledge and exposure, this study is the first for the cases of China and India to examine the relationships among economic growth, renewable energy consumption and *CO*₂ emissions by incorporating agriculture as the determinant for carbon. As we discuss above, agriculture has an important role in economic growth and the environment.

2 Background Literature

The wide background literature about energy and the environment does not properly consider the role of the agriculture sector in the economy and environment. As a matter of fact, the agriculture sector contributes in a positive way to the economy and in a negative way to the environment, and the sector needs massive reforms and policies for better growth and a green economy. In addition, previously, energy-environment studies have not considered the role of the agriculture sector regarding the increasing pace of air pollution due to carbon emissions generated from agriculture activities. The presents study attempts to study the role of the agriculture sector in a clean environment and better economic growth. Moreover, the study also recommends policies to achieve better agriculture production by utilizing renewable energy and the latest techniques. Recently, many researchers have empirically examined the causal relationships among economic growth, renewable energy use, carbon emissions, nonrenewable energy, nuclear energy, pollution emissions and international trade in under developing, emerging and developed economies (e.g., Chebbi 2010, Long and Naminse 2015, Jebli and Youssef 2016, Ahmad and Du 2016; Ben Jebli and Youssef 2017; Liu et al 2017). The results and policy implications of these empirical studies depended on the time period, considered factors, countries and employed econometric techniques.

Evidence indicates a positive relationship among CO_2 emissions, economic growth and agriculture production, as well as a negative relationship. For instance, Halicioglu (2009) found long-run empirical relationships among CO_2 emissions, total energy use, foreign trade and income for Turkey. Bound tests and Granger causality tests were applied from 1960-2005, and the results identified a bidirectional relationship between CO_2 emissions and income in the short run and long run. The results highlighted that new environmental policies should be designed to reduce environmental degradation and increase stability of economic growth in Turkey.

Bayrakci and Kocar (2012) examined the benefits and uses of renewable energies in agriculture activities for Turkey. The results reveal that Turkey has high levels of renewable energy consumption in the form of the following sources: solar energy, hydropower, wind energy, geothermal energy and biomass energy; these are all sources of energy used in industry, transportation and agriculture. Furthermore, 24 million people of rural

populations in Turkey are engaged in agriculture, and renewable energy sources are being used for agriculture at a large scale. Based on the results, the use of more renewable energy sources is recommended in Turkey, because these sources increase economic growth and benefit the country socially and environmentally.

Long and Naminse (2015) empirically investigated the dynamic casual relationships among renewable energy, economic growth, nonrenewable energy and carbon emissions for the case of China. Cointegrations and Granger causality tests were applied to investigate the relationships among variables. A positive bidirectional relationship was proven between CO_2 emissions and economic growth, while coal consumption demonstrated greater impact on economic growth and carbon emissions than that of oil consumption. Ozturk and Apergis (2015) investigated the casual relationships among carbon emissions, population density, land, economic growth, and industry share in GDP for 14 Asian countries from 1990-2011. The generalized method of moments (GMM) and panel cointegration tests were used to examine the environmental Kuznet curve (EKC) hypothesis. The results confirm the validity of the U-shaped EKC hypothesis. The empirical findings demonstrated that environmental degradation increased with the increase in per capita income in the initial stages of economic growth and then it was reduced after arriving at its peak; furthermore, the EKC hypothesis shows unidirectional causality from income to CO_2 emissions.

Ahmad et al. (2016) examined the validity of the EKC hypothesis and causal relationships among economic growth, CO_2 emissions and income. Autoregressive distributed lag (ARDL), vector error correction model (VECM), variance decomposition and impulse response function analysis were employed to test the hypothesis. The results indicated that CO_2 emissions and economic growth have a bidirectional relationship in the short run. However, in the long run, a unidirectional relationship was found from economic growth to CO_2 emissions. The empirical evidence also confirmed the validity of the environmental Kuznet curve hypothesis for Croatia. Jebli and Youssef (2016) examined the short- and long-run relationships among renewable energy consumption, agriculture production, nonrenewable energy consumption, and trade openness in Tunisia for the period of 1980-2011. Vector error correction model (VECM) and Granger causality tests were applied to examine the nexus among these considered variables. The results revealed bidirectional causality between agriculture production and

CO_2 emissions and between agriculture production and trade.

Liu et al. (2017) provided empirical evidence of the nexus among renewable energy use, agriculture, nonrenewable energy and carbon emissions for the countries of BRICS. The results highlighted the negative impact of renewable energy towards carbon emissions and the positive impact of agriculture and nonrenewable energy towards carbon, indicating that renewable sources help to mitigate carbon and that nonrenewable sources and the agriculture sector increase the carbon level in the atmosphere. In the case of North African countries, Jebli and Youssef, (2017) used panel cointegration techniques, Granger causality and VECM approach to determine the causal links among renewable energy, agriculture production, economic growth and CO_2 emissions for North African countries for the period of 1980-2011. The empirical results identified bidirectional relationships between CO_2 emissions and agriculture production and unidirectional causality from agriculture to economic growth. Moreover, in the long run, a bidirectional nexus was highlighted between agriculture production and CO_2 emissions and a unidirectional nexus from renewable energy to agriculture and emissions. The results highlight that any increase in economic growth or renewable energy consumption increases CO_2 emissions in North African countries, while any increase in agriculture production decreases CO_2 emissions.

As per the theoretical and empirical aspects, it is fully inconclusive to understand the role of the agriculture sector in contributing carbon to the environment and the role of renewable energy in reducing carbon in the environment. The intuition and theory of this model is sound and logical and joins the list of previous researchers (Ben Jebli and Youssef 2017; Liu et al. 2017). The present study contributes to this direction with an empirical examination of the role of agriculture and renewable energy in two globally emerging economies, India and China.

3. Data Specification and Modeling.

3.1 Data Specification and Model.

The study used the yearly data from 1991 to 2015 to empirically examine the nexus among economic growth, renewable energy consumption, carbon emissions and agricultural production. The study also investigated the renewable-agriculture-emission nexus for two major oil importing countries

China and India. The data for gross domestic product (GDP), agriculture production (agriculture value added) and carbon emissions (CO_2 emissions) were obtained from World Development Indicators⁴, (2017), while the data for renewable energy consumption were gathered from the Energy Information Administration (EIA 2016). We augmented the carbon emission function by incorporating agriculture production of both countries as an additional determinant of environmental quality. The agriculture sector is considered an important part of a country, which guarantees food safety, and consists of crops, fishing, forestry, and livestock production. Many countries use fossil fuels and nonrenewable energy sources for irrigation (tube wells) and agriculture farming, which tends to increase the carbon level in the atmosphere. The agriculture sector contributes to economic growth but is also a culprit of carbon emissions (Jebli and Youssef 2016; Liu et al. 2017). The study provides policy implications to increase agriculture production, reduce carbon level and for a green economy. The empirical equation is as follows:

$$GDP_t = f(REC, CO_2, AVA) \quad (1)$$

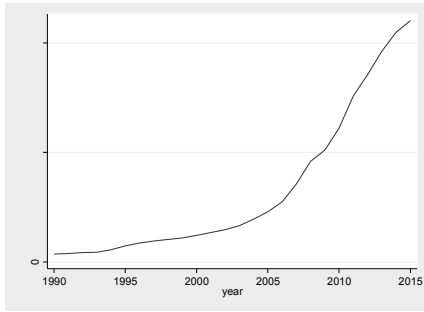
Shahbaz and Lean (2012) and Shahbaz et al. (2017) mentioned that log-linear specification delivers reliable and efficient evidence compared to that of simple linear specification. Thus, we transformed all the variables to natural log. The estimated equation of the production function is given as:

$$\ln GDP_t = \alpha_1 + \alpha_2 \ln REC_t + \alpha_3 CO_{2t} + \alpha_4 AVA_t + \mu_i \quad (2)$$

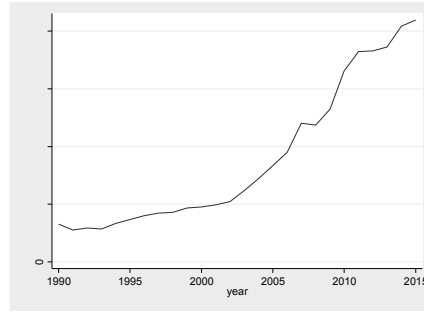
where μ_i is an error term with a normal distribution and GDP represents the gross domestic product, which is measured by GDP per capita (constant 2010 US\$), REC_t is the renewable energy consumption proxy by renewable energy consumption in kilotons, CO_{2t} shows the carbon dioxide emissions in metric tons per capita, and AVA_t is the agriculture value added per worker (constant 2010 US\$).

Figure 1: Gross domestic product and renewable energy consumption

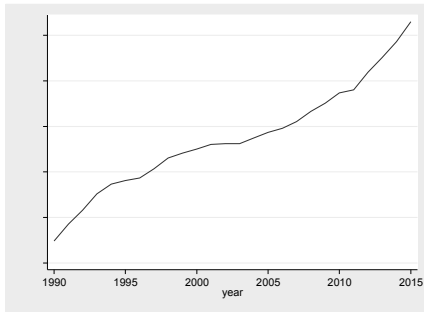
⁴ World Development Indicators Database is a large database that provides data of all economic, finance and energy indicators collected from several organizations in the world. <https://data.worldbank.org/>



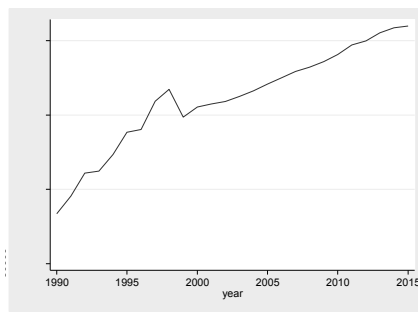
GDP (China)



GDP (India)



REC (China)



REC (India)

The present study used the data of two emerging economies of Asia: China and India. The motivation was multifold for the selection of these two countries. First, China had the leading GDP at PP in 2014 with 17,632 billion US dollars, and India was the second largest emerging country of Asia with 7,277 billion US dollars (International Monetary Fund, IMF). Second, in Asia, China and India are among the top three investors in renewable energy⁵. Finally, the gross domestic product and renewable energy consumption of both economies steadily increased during the studied period, as presented in Figure 1.

4. Data analyses and Results.

4.1. Cross-Sectional Dependence Test.

The increasing trend in globalization of the world economy creates cross-sectional dependence among regional economies, which provides the spurious output for long-run and short-run estimations. To counter this issue, we employed the cross-sectional dependence test proposed by (Pesaran 2004). On one side, if cross-sectional independence was proved, then we proceeded to the first-generation unit root test. On the other side, if cross-sectional dependence was confirmed, then the second-generation unit root tests was the valid technique. The Pesaran (2004) cross-sectional dependence statistic is established on pair-wise correlation coefficients.

$$CD = \sqrt{\frac{2T}{N(N-1)}} \alpha_{i=1}^{N-1} \alpha_{j=i+1}^{N-1} S_{ij}^2 \quad (3)$$

Table 1 highlights the cross-sectional dependence result; the null hypothesis of cross-sectional independence was accepted based on the nonsignificance of the Pesaran CD statistic, which led to the application of first generation unit root tests.

Table 1. Cross-sectional dependence

Test	Pesaran (CD)
Statistic	-2.038

**,* indicate the significance at 1% and 5%, respectively.

4.2. Panel unit root

The paper used the (Levin, Lin and Chu 2002) (LLC) and the (Maddala and Wu 1999) (MW, ADF and MW, PP) panel unit root tests to stationarity of GDP_t , REC_t , CO_{2t} and AVA_t . Augmented Dickey Fuller (ADF) test and Phillips-Perron (PP) test are nonparametric tests. For all employed sets of panel unit root test, the null hypothesis states the existence of unit root (null hypothesis: unit root problem exists among variables), while the alternative

hypothesis argues that the variable is stationary (alternate hypothesis: the variables are stationary).

The LLC test uses individual specific intercepts and time trends for unit root analysis. The LLC test states the condition that autoregressive coefficients are homogeneous to examine the stationarity. The LLC panel unit root test uses the augmented Dickey Fuller (ADF) regression for hypothesis testing.

$$\Delta y_{it} = \rho_i y_{i,t-1} + \sum_{L=1}^{p_i} \theta_{iL} \Delta y_{it-L} + \alpha_{mi} d_{mt} + \varepsilon_{it} \quad (4)$$

which leads to two auxiliary regressions

Δy_{it} , $\vartheta_{i,t-1}$ and d_{mt} to obtain $\hat{\varrho}_{it}$ and $y_{i,t-1}$ on $\Delta y_{i,t-L}$ and d_{mt} to obtain $\hat{\vartheta}_{i,t-1}$.

The next step is standardization of $\hat{\varrho}_{it}$ and $\hat{\vartheta}_{i,t-1}$.

$\tilde{\varrho}_{it} = \hat{\varrho}_{it} / \hat{\sigma}_{\varepsilon i}$ and $\tilde{\vartheta}_{i,t-1} = \hat{\vartheta}_{i,t-1} / \hat{\sigma}_{\varepsilon i}$, where $\hat{\sigma}_{\varepsilon i}$ represents the standard error.

Finally, the pooled OLS regression is estimated

$$\tilde{\varrho}_{it} = \rho \tilde{\vartheta}_{i,t-1} + \tilde{\varepsilon}_{it}$$

Some drawbacks occur with the LLC unit root test. First, the LLC test assumes cross-sectional independence. Second, if the null hypothesis is accepted, the indication is that all cross sections prove the evidence of unit root problem among variables, although some cross sections have no unit root. For that purpose, we applied PP and ADF unit root tests to examine the existence of unit root. Moreover, Maddala and Wu (MW) unit root technique is a nonparametric approach with two degrees of freedom (d.f.) in a chi-square distribution. The test performs unit root analysis for a single time series in each cross section. The test statistics are as follow:

$$\lambda = -2 \sum_{i=1}^n \log_e(p_i) \sim \chi^2 2n(d.f.) \quad (5)$$

where p_i is the probability value of ADF tests for unit i . We used level and first difference to investigate the existence of unit root. Schwarz information criterion (SIC) was employed to find the number of lags.

Table 2. Panel unit root test

<i>LLC test</i>	<i>GDP</i>	<i>REC</i>	<i>CO2</i>	<i>AVA</i>
At Level	-0.89817	-3.51343**	0.77907	1.60887
First difference	-0.97731	-1.90279	-2.5219**	2.86413
<i>ADF test</i>				
At Level	1.54404	16.8831**	1.39685	0.29231
First difference	9.5913*	7.39623	10.8695*	14.8062**
<i>PP test</i>				
At Level	0.70424	41.9026**	1.08316	0.17268
First difference	14.8622*	10.702	12.986*	40.2946**

**,* indicate the significance at 1% and 5%, respectively.

Table 2 shows the results for panel unit root tests of all studied variables. According to these results, *GDP* was stationary at first difference in two unit tests (ADF test and in PP), *CO₂* emissions was stationary at first difference in all three unit root tests (LLC test, ADF test and PP test), *REC* was stationary at level in the LLC test, ADF test and PP test, and *AVA* was stationary at first difference in two unit root tests (ADF test and in PP test). In summary, the results revealed that *GDP*, *CO₂* emissions and *AVA* were stationary at first difference, while *REC* was stationary at level in all the panel unit root tests.

4.3. Panel ARDL method

To examine the short-run and long-run cointegration among studied variables, the study employed the ARDL cointegration method developed by Pesaran et al. (2001). The ARDL method was selected because it has several advantages over traditional cointegration techniques. First, unlike other methods, the ARDL is the most appropriate method for variables in a small sample (Ghatak and Siddiki 2001), while other cointegration models require

a large data sample. Second, the ARDL cointegration test is applicable if some variables are stationary at level $I(0)$, first difference $I(1)$ or a mixture of level and first difference $I(0)/I(1)$. However, the conventional cointegration techniques are valid when all the explanatory and dependent variables are stationary at first difference (Pesaran et al. 2001; Shahzad, et al. 2016). Third, the ARDL can have different optimal lags of variables, whereas this function is impossible for Engle-Granger and Johansen cointegration techniques (Ozturk and Acaravci 2010; Ozturk and Acaravci 2011). Fourth, an ARDL unrestricted method of error correction model (ECM) takes satisfactory lags of variables to capture the data generating process from a general to specific framework (Shahbaz 2013). Last, the ARDL technique overcomes the endogeneity issues in the model (Shahzad, et al., 2016). Recently, Bildirici and Kayikci (2012) used ARDL estimation to examine the relationship between economic growth and electricity consumption. Later, Bildirici and Kayikci (2013) examined the empirical association between oil production and economic growth by employing the ARDL technique. Bekhet et al. (2017) employed the ARDL technique to examine the nexus among economic growth, CO_2 emissions and energy consumption in GCC countries.

Pesaran and Pesaran (1997) and Pesaran et al. (2001) employed the autoregressive distributed lag (ARDL) approach for cointegration analysis. The first step in the ARDL cointegration method analyzes the long-run relationship between studied variables. Second, after confirming the long-run relationship, the ARDL technique estimates the long-run coefficients. Furthermore, cross-equation restriction to long-run parameters should be applied by the maximum likelihood technique for a given estimation in panel data. After maximum likelihood estimation, the pooled mean group (PMG) analyzes the average of unrestricted single country coefficients and is a better alternative method than fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS). For empirical analysis of the long run and short run, the mathematical representations of the autoregressive distributed lag (ARDL) are as follow:

$$\Delta GDP = \alpha_1 + \sum_{k=1}^n \beta_{1k} \Delta GDP_{t-k} + \sum_{k=0}^n \beta_{2k} \Delta REC_{t-k} + \sum_{k=0}^n \beta_{3k} \Delta CO_{2t-k} + \sum_{k=0}^n \beta_{4k} \Delta AVA_{t-k} + \varepsilon_{1t} \quad (6)$$

$$\Delta REC = \alpha_2 + \sum_{k=1}^n \delta_{1k} \Delta REC_{t-k} + \sum_{k=0}^n \delta_{2k} \Delta GDP_{t-k} + \sum_{k=0}^n \delta_{3k} \Delta CO_{2t-k} + \sum_{k=0}^n \delta_{4k} \Delta AVA_{t-k} + \varepsilon_{2t} \quad (7)$$

$$\Delta CO_2 = \alpha_3 + \sum_{k=1}^n \gamma_{1k} \Delta CO_{2t-k} + \sum_{k=0}^n \gamma_{2k} \Delta GDP_{t-k} + \sum_{k=0}^n \gamma_{3k} \Delta REC_{t-k} + \sum_{k=0}^n \gamma_{4k} \Delta AVA_{t-k} + \varepsilon_{3t} \quad (8)$$

$$\Delta AVA_t = \alpha_4 + \sum_{k=1}^n \chi_{1k} \Delta AVA_{t-k} + \sum_{k=0}^n \chi_{2k} \Delta GDP_{t-k} + \sum_{k=0}^n \chi_{3k} \Delta REC_{t-k} + \sum_{k=0}^n \chi_{4k} \Delta CO_{2t-k} + \varepsilon_{4t} \quad (9)$$

4.4. Results and Discussion

To check the long-run dynamic causal relationships among studied variables, we employed the ARDL cointegration test. Table 3 provides the empirical results for the ARDL analysis. In the case of the full panel, the results revealed that when GDP was the dependent variable, renewable energy consumption, CO₂ emissions and AVA were nonsignificant. CO₂ emissions had a significant negative effect on REC, while AVA and GDP had no significant association with REC. Moreover, agriculture value added had an adverse impact on CO₂ emissions. The finding indicated that an increase in agriculture would increase the CO₂ emissions in China and India. This increase was because these countries use more fossil energy than renewable energy for agriculture (Directorate of Economics and Statistics, Tata Energy Research Institute). Renewable energy consumption had a significant negative relationship towards CO₂ emissions. The finding is similar to that of (Jebli and Youssef 2014; Sebri and Salha 2014), showing that increased use of renewable energy may reduce CO₂ emissions in China and India and enable these countries to combat global warming. Finally, in long-run estimates, CO₂ emissions had a significant positive effect on agriculture value added; whereas the effects of GDP and renewable energy consumption were nonsignificant.

For the case of China, the empirical estimates proved that agriculture production, carbon emissions and renewable energy consumption were nonsignificant. In contrast, the empirical results showed that any increase in GDP and CO₂ emissions may decrease the renewable energy consumption. Similarly, with CO₂ emissions as the dependent variable, the increase in use of renewable energy sources reduced the CO₂ emissions. These countries can decrease CO₂ emissions by investing and promoting renewable energy. Finally, in long-run estimates of the ARDL test for China when AVA was the dependent variable, GDP and CO₂ emissions had a significant positive relationship with agriculture value added, and this result is consistent with that of (Jebli and Youssef 2016).

Table 3. ARDL test for long-run estimations

	Long Run			
	<i>GDP</i>	<i>REC</i>	<i>CO2</i>	<i>AVA</i>
<i>GDP</i>		-0.7473	-0.3033	0.1901
<i>REC</i>	4.0776		-0.8465*	0.1414
<i>CO2</i>	5.4257	-0.9931**		0.4220**
<i>AVA</i>	-4.1057	2.2198	1.2977**	
<i>China</i>				
<i>GDP</i>		-1.6401*	-0.8148	0.4000**
<i>REC</i>	-2.2036		-1.1817**	0.3161
<i>CO2</i>	-0.1357	-0.7130**		0.3814**
<i>AVA</i>	-1.1281	3.5034	1.7772	
<i>India</i>				
<i>GDP</i>		0.1456	0.2082	-0.0199
<i>REC</i>	10.3589		-0.5113	-0.0333
<i>CO2</i>	10.9872	-1.2733*		0.4627*
<i>AVA</i>	-7.0832	0.9362	0.8182	

**,* indicate the significance at 1% and 5%, respectively.

In the individual analysis of India, renewable energy consumption, CO_2 emissions and agriculture production had no significant impact on GDP .

With *REC* as the dependent variable, *GDP* and agriculture value added were nonsignificant. On the other hand, CO_2 emissions had a significant negative effect on *REC*; Jebli and Youssef (2014) also reported similar findings. Furthermore, the gross domestic product, renewable energy consumption, and agriculture value added were nonsignificant towards CO_2 emissions. Agriculture production affected CO_2 emissions positively in India, which is a finding consistent with the empirical nexus of the full panel and China. Increased use of renewable energy in India would help to mitigate or control the CO_2 level, while increased use of agriculture in India would increase CO_2 emissions. Previously, Jebli and Youssef (2016) reported a similar conclusion in the case of Tunisia.

The short-run results of the ARDL test were obtained by the pooled mean group (PMG) and are reported in Table 4. Agriculture value added was positive towards gross domestic product, while CO_2 and *REC* were nonsignificant in the full panel. This result showed that agriculture production contributed towards the *GDP* of China and India in the short term; Ben Jebli and Youssef (2017) also reported a similar result for five North African countries. This empirical evidence explains that any change in agriculture production has a strong positive impact on economic growth and that economic growth helps to develop the agriculture sector in both countries by providing investment opportunities. This result is different from that of Chebbi (2010) in the case of Tunisia. In the full panel, negative was the CO_2 emission coefficient towards *REC*, while those of *GDP* and *AVA* were nonsignificant. However, positive was the *AVA* coefficient towards CO_2 emissions, while those of *REC* and *GDP* were nonsignificant. Finally, in short-run estimates of the panel, nonsignificant was the response of renewable energy consumption, gross domestic product and carbon dioxide emissions towards agriculture production. In summary, the short-run results indicated unidirectional causality from *AVA* and *GDP* for both countries. A unidirectional negative relationship existed between CO_2 emissions and *REC*, and a unidirectional positive relationship existed between *AVA* and CO_2 emissions in the full panel. The error correction term in all of these results was statistically significant and between 0 and -1; this term shows the speed of adjustment in case of any disturbance in the short run.

Table 4. ARDL test for short-run estimations

Short Run					
	ΔGDP	ΔREC	ΔCO_2	ΔAVA	ECT
ΔGDP		-0.1369	-0.1915	0.5423	-0.0128
ΔREC	-0.4189		-0.9536	0.7894	-0.2993**
ΔCO_2	-0.0122	-0.1775**		0.0905	-0.4919**
ΔAVA	0.2784**	-0.1994	0.3217**		-0.6049*
<i>Cons</i>	0.3580	-1.8883	-1.7506	3.5263	
<i>China</i>					
ΔGDP		0.3172	0.8094	-0.0590	-0.0539
ΔREC	0.0329		-0.2341	-0.0446	-0.4060*
ΔCO_2	0.0886	-0.2260		-0.0685	-0.4196*
ΔAVA	0.3354	-0.5072	0.4755		-0.3165**
<i>Cons</i>	1.2165	-3.0467	-0.6093	0.7717	
<i>India</i>					
ΔGDP		-0.5909**	-1.1925**	1.1436**	0.0283
ΔREC	-0.8706**		-1.6732**	1.6235**	-0.1927
ΔCO_2	-0.1130	-0.1289		0.2494	-0.5642**
ΔAVA	0.2213*	0.1084	0.1678		-0.8932**
<i>Cons</i>	-0.5005	-0.7299	-2.8919	6.2808	

**,* indicate the significance at 1% and 5%, respectively.

The ARDL short-run results for India revealed that agriculture value

added was significant and positive towards economic growth and that renewable energy consumption was significant and negative towards economic growth. Carbon dioxide emission response with economic growth was nonsignificant. The result indicated that any increase in agriculture production and renewable energy consumption immediately affects the economic growth of India. The finding is similar to the ARDL empirical results for the long-run full panel and with India. Negative was the *GDP* coefficient with *REC*, while those of *AVA* and *CO₂* emissions were nonsignificant. *GDP* and *REC* coefficients were negative towards *CO₂*, while that of *AVA* was nonsignificant. Finally, in short-run estimates of India, *GDP* and *REC* had positive relationships with *AVA*, while *CO₂* emissions was nonsignificant. This result showed that any change in economic growth and renewable energy immediately affects *CO₂* emissions in India. Furthermore, any increase or decrease in economic growth and use of renewable energy sources immediately affect agriculture production of both countries. The error correction term (ECT) in the short-term results was between 0 and -1; this term shows the accurate time period to adjust in case of any drawbacks.

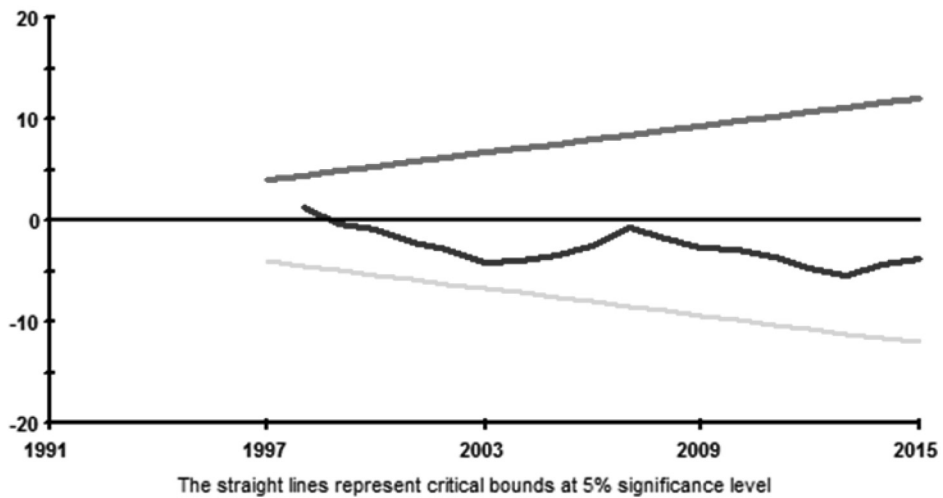
The ARDL short-run estimates of China revealed that all the variables were nonsignificant in the pooled mean group. The results showed that in the short-time run, no causality occurred among renewable energy, economic growth, *CO₂* emissions and agriculture production. This result is consistent with that of Jebli and Youssef (2016) in the case of Tunisia, as they explained bidirectional causality between variables for the long term and no causality in short-run results.

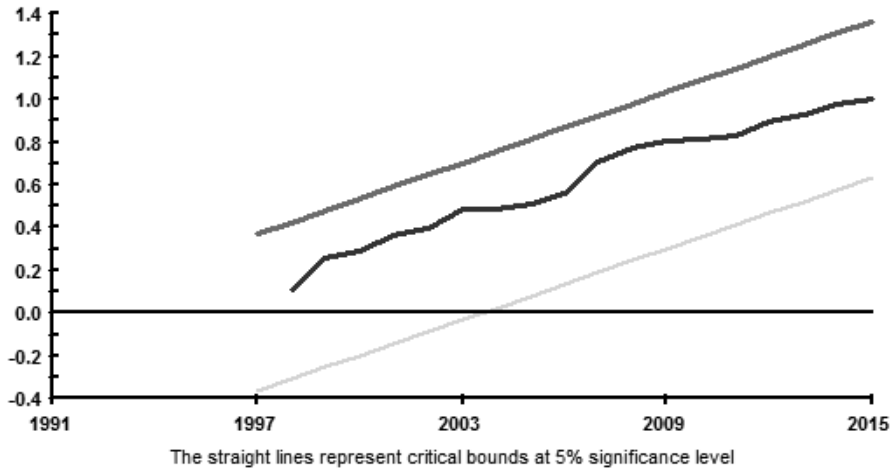
In summary, the results showed that *REC* and *GDP* had a bidirectional relationship, indicating that energy is required in these countries at all times, but high investment is required for transformation devices, which is why the renewable energy contribution to *GDP* was very small. Moreover, renewable energy consumption and *GDP* proved the feedback hypothesis, and both variables affected each other negatively in the case of India. This finding is consistent with that of Ocal and Aslan (2013) in the case of Turkey. Furthermore, *GDP* to *CO₂* emissions had a confirmed unidirectional relationship. The empirical estimates for the long run proved a significant unidirectional negative relationship running from renewable energy use to *CO₂* emissions for both countries. This finding is consistent with that of Waheed et al. (2017), who found similar results in the case of Pakistan. The negative response of renewable energy consumption towards *CO₂* levels should grab the attention of policy makers and suggests an increase in the

investments on renewable energy in the overall energy mix.

Figure 2 and Figure 3 demonstrate the plots of cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ), respectively. The examination of the structural stability in the models was the purpose. The blue line in both graphs is between the critical bounds, indicating no evidence of structure instability in the models. The Y-axis represents the data in terms of CUSUM and CUSUMSQ, while the X-axis shows years with six year gaps.

Figure 2. Plot of cumulative sum of recursive residuals

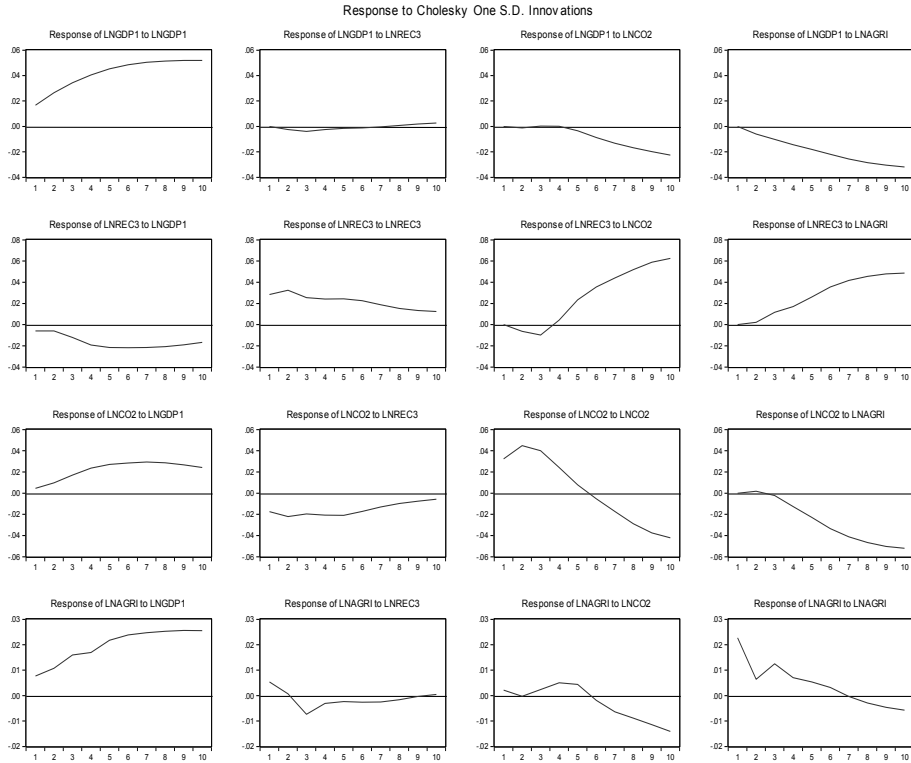




4.5. Impulse response function analysis

To identify the responsiveness of endogenous variables in vector autoregressive (VAR), we applied impulse response function analysis for ten periods. Impulse response function finds the reaction for a future period on other variables when one standard deviation shock is given to residuals (Rajasekar and Deo 2014). Impulse response function is an alternative approach to the variance decomposition method, and it highlights to what extent the regressors react to shocks in explanatory variables (Rafindadi & Ozturk, 2015). Figure 4 highlights the graphical presentation of impulse response function analysis.

Figure 4. Impulse Response Function (IRF)



The response of economic growth towards renewable energy was negative for initial periods and later became positive. However, economic growth adversely impacted CO_2 emissions and agriculture production for the next ten periods; this result is consistent with the (Long and Naminse 2015) case for China. Renewable energy consumption was negative towards economic growth. For the first three periods, the increase in renewable energy consumption caused a decrease in CO_2 emissions. Surprisingly, after three periods, renewable energy consumption boosted CO_2 emissions. On one side, the response of CO_2 emissions at one standard deviation shock was negative towards renewable energy consumption and agriculture production.

On the other side, a positive association occurred between CO_2 emissions and economic growth of both countries.

Finally, the response of agriculture production was positive towards economic growth, while towards renewable energy consumption and CO_2 emissions, the response was negative.

5. Conclusions and Policy Implications

The present study econometrically examined the nexus among agriculture production, CO_2 emissions, economic growth and renewable energy consumption. We used the data of the two largest oil-importing countries (China and India) in Asia over the period 1991-2015. First, the Pesaran (2007) cross-sectional dependence test was applied to examine the dependence between countries within the panel. Second, by using the findings of the cross-sectional dependence test, we investigated the presence of unit root in the variables. Third, we employed the autoregressive distributed lag test (ARDL) to find the long-run and short-run relationships between variables. Finally, impulse response function was applied to check the direction of variables for ten periods.

The empirical estimates for the panel ARDL method showed short-run unidirectional causality running from agriculture production to economic growth, indicating the importance of agriculture in boosting the economy of both countries. The unidirectional nexus running from carbon dioxide emissions to renewable energy consumption showed that any change in CO_2 emissions immediately affects the renewable energy consumption in both countries. In the case of India, unidirectional causality was found from renewable energy consumption to CO_2 emissions, indicating that carbon emission levels can be controlled and reduced by increasing the percentage of renewable energy in the overall energy mix for India.

In addition, a long-run bidirectional relationship was found between agriculture production and CO_2 emissions. Further, a positive and significant effect of agriculture production on CO_2 emissions for the full sample was observed. This result pointed out that the agriculture sector is also guilty for increases in the carbon level. The main cause for CO_2 emissions from agriculture production was the use of nonrenewable energy for farming and irrigation. As discussed above, an increase in use of agriculture increased the GDP in the short run. In contrast, an increase in agriculture production damaged the environment by CO_2 emissions. As per long-run empirical

estimates, a unidirectional relationship was proved between renewable energy and carbon dioxide emissions for India and China implying that increased use of renewable energy helps to combat global warming.

To summarize, the findings highlight important policy implications regarding lowering carbon emissions, increasing agriculture production and green development of the economy of both countries. First, China and India should replace the nonrenewable energy sources with renewable sources such as wind, hydro and solar power in the overall energy mix. Second, the governments should motivate and encourage private firms to make investments in renewable energy projects and in production and innovation. Third, for the agriculture sector, the need is more than urgent to apply the latest agriculture techniques such as organic farming, solar tube wells and tunnel farming for irrigation and to use scientifically designed seeds to increase production levels. Last, the governments should introduce major agriculture reforms such as the provision of solar tube wells to small-scale farming, low electricity prices generated from renewable sources, tax benefits for farmers, and tunnel farming and better irrigation systems, among others, in order to increase agriculture production and reduce carbon emissions. The policy makers of both countries should focus on additional investments in renewable energy sources because such investment can stimulate agriculture production and help to reduce environmental degradation.

Although the paper econometrically examined the renewable-carbon and renewable-agriculture-growth nexus, the study has particular limitations. The present study only considered the agriculture sector regarding the environment and growth, while other economic and noneconomic sectors also contribute to the environment and growth such as forests, industry, and transport, among others. Moreover, the paper only considered two developing countries (China and India) in empirical estimations, while the econometric results and policies might be different for the case of developed nations or panel data. Future research concerning the renewable-carbon-agriculture nexus can be conducted with the combination of economic and noneconomic sectors, such as industry, housing, forests, construction, transport, and commerce, for different countries and regions. Such studies can contribute to the literature by providing necessary policy implications regarding energy policy design, advanced technology and the latest techniques for different sectors.

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DETERMINANTS OF THE USAGE OF FINANCIAL SERVICES IN
PAKISTAN

Abstract

The household sector plays a pivotal role in the economic growth and development of a country. The objective of this study is to assess the financial decision-making process of households with respect to the use of basic financial services in Pakistan. The target respondents of the study are the household heads. To collect data, 150 household heads were interviewed with the help of a structured interview schedule. For the selection of interviewees, the purposeful stratified sampling method was used. The data were analyzed using NVIVO 10 software. The major findings of the study are that financial knowledge and information are important in mobilizing households to use products and services offered by financial institutions. Numerical financial literacy is necessary but does not play a significant role in decisions regarding using financial services and products. The other important determinant that showed an impact on the financial decisions of the respondents is religion. The majority of the respondents considered financial services and products as being against Islam. Subjective trust is another factor that significantly affects the decisions of users of financial services. The education level of respondents has a lesser impact on households' financial decisions.

JEL CLASSIFICATION: G19; G20; G21; G29

KEYWORDS: FINANCIAL SERVICES; FINANCIAL INSTITUTIONS;
FINANCIAL PRODUCTS; FINANCIAL LITERACY; FINANCIAL
KNOWLEDGE

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1. Introduction

Household participation in financial markets has received significant attention lately. Researchers, such as Anand and Cowton (1993) and Lusardi and Tufano (2009), have observed that financial services and products used by households constitute an important segment of the financial industry. While discussing the importance of financial services, Al-Hussainy (2008) observed that financial services have recently been recognized as critically important to the micro-foundations of economic development. Personal finance is an evolving area of inquiry and raises important questions regarding various aspects of human psychology with regard to making important economic and financial decisions. More importantly, ample empirical research work empirically confirms the role of the use of financial services in the economic development of a country. For example, Adesoye and Atanda (2012) believe that the efficient working of financial institutions is very important for economic growth. Campbell (2006) found that the benefit and the role of the welfare of financial markets depend to a great extent on how effectively households use these markets. Calvet et al. (2009) observed that household finance researchers have shown increasing interest in the concept of financial sophistication. Financial sophistication is defined as the ability of a household to avoid making investment mistakes. In a nutshell, the importance of the participation of households in financial markets is difficult to overlook.

As a developing economy, Pakistan is faced with the problem of the financial exclusion of the masses. A very small fraction of the population uses formal financial services. A major component of the population fulfills its financial needs through informal sources. In the recent past, a number of people in Pakistan have lost their savings by handing them over to some fraudulent individuals and groups offering informal financial services. On the other hand, at the macro level, Pakistan is in need of funds to finance its developmental projects; however, due to the low saving rate in the economy and to the non-accumulation of the tiny amount of savings by the formal financial sector, the government most often depends on foreign aid and loans. Unfortunately, these loans usually carry extremely unfavorable terms and conditions. Ardic et al. (2011) reported that in Pakistan, only 11% of households have bank accounts compared to India, where 48% of households have them. Researchers, such as Ali et al. (2012), reported that in

Pakistan, the financial literacy situation is also highly discouraging. According to the World Bank "Access to Finance Survey" (2008), only 47 percent of adults are aware of the term "Bank Accounts." Ahmed (2013) reported that According to the World Bank Global Findex report (2014), 13% of Pakistani citizens have a bank account, whereas in South Asia 46.4% of the people in the same age group have a savings account. Likewise, Nenova et al. (2009) reported that the average household in Pakistan neither uses formal financial sector services for borrowing, nor trusts a financial institution with their savings.

Given the importance of this issue, governmental and nongovernmental institutions around the world have been formulating policies and strategies to promote financial inclusion. Researchers have been exploring the causes of financial exclusion and are advancing suggestions for the financial inclusion of the masses. In Pakistan, the government has recently recognized the need for conducting studies to measure the level of financial inclusion and has devised a national financial inclusion strategy.

The decision regarding the use of financial services is not a simple one. Most contemporary researchers have made an effort to probe the matter in a highly simplistic way using one or two variables or a few demographic factors as determinants of that decision. Moreover, most studies have used the data from surveys conducted for some other purpose. No researcher has directly approached households and practitioners in the field to discover their views about the non-usage of financial services. According to one study, social, economic, demographic, religious, and psychosocial factors affect the decision of households regarding the usage of financial services. Atkinson et al. (2006) believe that research shows that people around the world are not inclined to use financial services and products. The most vulnerable groups in this regard are the young, the unemployed, immigrants and the elderly. This study has made an attempt to identify the most important factors that contribute to financial exclusion in the country.

2. Research Questions

- Do demographic characteristics play a role in the financial exclusion of households?
- Do numerical literacy and financial knowledge play a role in the financial exclusion of households?
- Do difficulties in accessing financial services play a role in the

- financial exclusion of households?
- Do the religious preferences of individuals and the level of trust play a role in the financial exclusion of households?

3. Analytical expressions

- To identify the significant determinants of the usage of financial services in Pakistan.

4. Literature review

Steiner et al. (2009) argued that there are three types of basic financial services: saving products, loans offered by financial institutions and insurance services. The Financial Stability Report (2006) of the State Bank of Pakistan listed financial services as including savings in national savings schemes, currency circulating in the economy, deposits in banking and nonbanking financial institutions, indirect investments, and deposits in a provided general fund. Arona and Mihaescua (2012) argued that the household sector is the main contributor towards the savings of a national economy. Bodsworth (2011) analyzed the determinants of savings and argued that a household's savings are necessary for its members to cope with a number of economic shocks emanating from the macroeconomic environment and natural circumstances. Diop et al. (2003) pointed out that microsavings (poor people's savings) include a nation's possibly noteworthy source of savings, and that utilizing this source of prospective funds is vital for inclusive growth. Mbwambo and Salia (2014) observed that the majority of households use financial services provided by the informal financial sector, which means that the masses are financially excluded. The researchers suggested that financial institutions should estimate the demand for savings products using households' socioeconomic and demographic characteristics such that these institutions might increase their market base. Moreover, financial services providers should adopt market-led savings mobilization strategies to attract microsavers from informal savings mechanisms to formal and semiformal financial institutions. Kast and Pomeranz (2014) maintain that poverty is usually considered the result of a low and unstable income, but it is more often the result of over indebtedness. The researchers further argue that over indebtedness stems from faulty financial decisions.

Researchers believe microcredit is a powerful tool to alleviate poverty. Imai et al. (2010) found that a household's access to microfinancing reduces poverty. Li et al. (2011) evaluated the impact of microcredit in rural China on a few welfare indicators (e.g., income, consumption) and found that those borrowers who invested borrowed money properly increased their income level. On the other hand, it was found that those who benefited from the credit facility were only wealthy people. Pellegrina (2011) empirically proved that microfinancing is less effective than bank loans with respect to long-term investments; however, when the time horizon is short, microfinancing fares well compared with bank loans. Lührmann et al. (2015) believe that it is the responsibility of the government to provide protection to the user of financial services and to maintain a level field for both the consumers and the suppliers of such services. The researchers emphasized the role of government in the financial inclusion of its citizens. Badarinza et al. (2016) argued that the field of household finance has grown rapidly and has been successful in identifying the investment mistakes made by households. Traditional financing has not fared well in enabling households to avoid mistakes in making financial decisions. The findings of the researchers discussed above recognize the importance of financial inclusion and of the study of the factors responsible for it.

4.1. The role of demographic variables

Researchers have found a significant positive relationship between education level and the rate of savings at the individual level. For example, Zhan and Weiss (2007) revealed that education level has a positive and significant impact on the savings behavior of individuals. Guiso, Sapienza, and Zingales (2008) reported that educated households are inclined to trust others more than uneducated households and thus invest more in stocks. Further, educated households realize that noninvestment in stocks is an investment mistake.

Ahmed et al. (2011) found a variety of factors responsible for limited stock market participation, including lack of trust, low education level and risk aversion. Annamalah (2013) argued that the education level of the household head is the determining factor in life insurance purchasing decisions. Assibey (2009) observed that the education variable appears significantly important in explaining an individual's self-exclusion from using financial services. Annamalah (2013) found that the education level of

the household head is the determining factor in the decision to purchase a life insurance policy. Campbell (2006) believes that some investors make financial mistakes because of their lower education. Haliassos et al. (2015) showed that households with higher income, higher education level and greater wealth generally more actively participate in financial markets. King (2011) found that in Nigeria, demographic factors, such as lower incomes, lower education, and lower levels of financial sector knowledge, are the causes of financial exclusion. Bridgeman (1999) revealed that due to a lack of educational and technological skills, some groups cannot benefit from new facilities and new financial products. Beck and Webb (2003) maintain that individual characteristics such as “education, life expectancy, dependency ratio, and the social security system” do not affect it. The findings of the researchers are against that expectation. The majority of researchers has observed a significant impact of individual characteristics on the decision to purchase a life insurance policy. Osondu et al. (2015) observed that age, educational level, primary occupation, farm size, access to credit and household size had a significant positive influence on farmers’ volume of saving.

4.2. Access to usage of financial services and products:

Demirgüç-Kunt and Honohan (2008) believe that access to financing is the ability to include credit, deposit, payment, insurance, and other risk management services. The researchers believe that poor households are marginalized due to lack of access to financial services and for a number of other socioeconomic reasons. Demirgüç-Kunt et al. (2014) maintain that during the last decade, researchers have worked hard to promote financial inclusion across the globe. However, very little data is available and further work in the field to collect and manage relevant data is needed. Honohan (2006) argued that it is preposterous to ask what quantum of financial assets poor households have, the relevant question being whether households in low-income countries have access to financial products and services at all. The researchers collected data from 150 countries regarding financial access. They found that low financial access increases poverty, as both are negatively correlated, although the results were not robust. Demirgüç-Kunt and Honohan (2008) observed that at the household level, holding a bank account or bank card is positively associated with income, wealth, and education in the majority of countries. These researchers also observed an

urban-rural gap, as well as the role of religion and social integration. The researchers further found that foreign bank ownership is positively correlated with the use of bank accounts among affluent and educated households. State ownership of banks, on the other hand, does not induce the financial inclusion of poor households in rural areas. Moreover, facilities provided by banks attract customers to the institution. Khan and Hasan (1998) pointed out that a liberalized macroeconomic environment ensures greater access (in its broader sense) to financial services and results in higher household savings, which is the major source of capital formation. Chaia et al. (2009) argued that information about the use of financial services by households is limited, and this hinders efforts by policymakers to improve the situation.

4.3. Religion and the use of financial services

Demirgüç-Kunt et al. (2014) believe that during approximately the last decade, the Islamic financing industry has fascinated policy-makers and international benefactors as a possible channel through which to expand the scope of financial inclusion. Although the impact of religion on financial exclusion has been explored by researchers, it is difficult to find a generally accepted definition of religion. Clarke and Byrne (1993) argued that there are three reasons it is difficult to reach at satisfactory definition of religion. Lehrer (2004) stated that there are two dimensions to the term religion: one is religious affiliation by an individual to a certain religious group and the other is religiosity, which mean the degree to which an individual adheres to or acts upon his or her religious beliefs.

Al-Ississ (2010) observed that researchers accept the role of religious factors in financial markets, but the issue has not been researched as thoroughly as it should be. Iannaccone (1998) believes there is abundant evidence that religious beliefs affect the behavior of individuals and, consequently, economic behavior both at the micro and macro levels. Vellekoop et al. (2013) found that religious individuals are more risk averse. Klaubert (2010) revealed that religious beliefs and practices of individuals have profound effects on their savings behavior. Tahir and Brimble (2011) conducted a study to evaluate the extent to which Muslim investors follow the instructions laid down by Islam for making investments and found that it depends on the individual's level of religiosity. The more religious an individual is, the more he or she will observe the instruction of Islam with respect to making investments.

4.4. Financial literacy and the use of financial services

Before studying the impact of financial literacy on the usage of financial services by individuals, it is pertinent to examine how researchers define financial literacy. According to Huston (2010), “financial literacy could be defined as measuring how well an individual can understand and use personal finance-related information.” Huston (2009) differentiated financial literacy from financial knowledge, defining financial literacy as the confidence and ability to use knowledge about financial services and products.

Guiso and Japelli (2008) found that financial literacy is highly correlated with the degree of portfolio diversification. Negi and Singh (2012) suggested that understanding the consumer’s perception and attitude towards insurance and promoting an insurance culture are important for the success of insurance services. Robb and Woodyard (2011) observed that the economic wellbeing of an individual is dependent on his/her financial decisions. Knowledge is a precondition to making an educated decision. Delafrooz and Laily (2011) concluded that “financial literacy “has a positive impact on the intention to save.” Lusardi (2015) has also recognized that financial literacy as an important element of economic and financial stability, both for the individual and for the economy as a whole. According to Lusardi, the financial environment has changed and this change has made financial literacy even more important. Lusardi and Tufano (2009), evaluating the impact of debt literacy, observed that lower debt literacy results in inefficient borrowing decisions. Memarista and Brahmana (2017) observed that better motives and financial literacy have a positive impact on better financial expenditures planning, but that demographics have no significant effect on financial planning. Lusardi and Mitchell (2007) observed that Hispanic boomer households hold their wealth, if any, in the form of homes. Since the majority of such individuals hold their wealth in housing, they are particularly vulnerable to housing value shocks. The researchers further observed that planning and economic literacy are important predictors of savings and investment success. Widdowson and Hailwood (2007) maintain that financial literacy influences people in saving, borrowing, and in managing their financial affairs. They further observed that financial literacy also plays a significant role in influencing how financial institutions manage their affairs and what products they provide as these institutions try to cater to the needs of their clients. Dinkova et al. (2016) believe that for couples,

the man's financial literacy plays a large role and that a woman's higher financial literacy score decreases consumption.

In this study, we have made an attempt to discover whether general education, numerical financial literacy or financial knowledge and information regarding the workings of financial institutions and their services have an impact on decisions regarding the usage of basic financial services. We have adopted the three basic questions from Lusardi (2007) to measure the numerical financial literacy of the respondents. As far as the respondents are concerned, Cull and Scott (2010) believe that when measuring the usage rate of financial services, it makes no difference whether the information is collected from the head of the household or if a full numeration is undertaken. The researchers asked product-based and institution-based questions and found that product-based questions are more useful for collecting the relevant data.

In this study, we have also asked questions based on products and services as well as on institutions.

In discussing the impact of financial literacy on the usage of financial services, Rud et al. (2010) argued that the availability of valid empirical proof to support or refute these theoretical propositions about the financial literacy and use of financial services remains limited. Likewise, Collins and O'Rourke (2010) argued that so far no compelling proof has been advanced by researchers of the impact of financial literacy on the use of financial services, and thus research in this area of finance has a promising scope. Seth et al. (2010) observed variation in the level of financial literacy of individuals and the use of financial services by these individuals. Lusardi, Michaud, and Mitchell (2011) observed that although recent studies show that financial literacy is strongly positively related to household wealth, there is also substantial cross-sectional variation in both financial literacy and wealth levels.

4.5. Knowledge about financial knowledge and information and use of financial services

Conversely, as defined by the researcher, financial knowledge is the stock of knowledge acquired and which is related to essential financial concepts and products. However, other researchers do not differentiate between the two concepts. Kunovskaya (2010) states that the competent use of financial services requires additional knowledge, including an awareness of consumer

rights and an understanding of the functions of financial institutions. According to Kunovskaya (2010), insufficient financial knowledge and skills may result in incorrect and overpriced financial decisions and expose consumers to the risk of deception and theft. Following Huston (2009), we have used an open-ended interview schedule to measure the financial knowledge and information level of the respondents and their impact on their decisions regarding their usage of financial services. Rooij et al. (2011) observed that individuals have a low understanding of basic economic concepts such as inflation and compound interest rates, but that their knowledge of stocks and bonds, the concept of risk diversification, and how financial markets operate is even lower. The researchers observed that a low level of financial literacy results in lesser participation in the stock market. Hilgert et al. (2003) believe that families do not engage in financial management practices due to a lack of knowledge. They observed that certain types of financial knowledge were found to be statistically significant for particular financial practices.

4.6. Trust and the use of financial services

Ennew & Sekhon (2007) reported that more than half of bank customers believe that having a trusting relationship with their financial institution is more important than getting the best value for their money. Guiso et al. (2008), Zak and Knack (2001) and Dearmon and Grier (2009) defined trust as the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action that is beneficial or at least not detrimental to him. The economic decision to make an investment requires a certain level of trust in the financial institution, and each individual's perception of trust might be different.

The researchers further argue that, all in all, an individual's trust can be seen as being subjective, depending on the particular situation and on the objective characteristics of the financial system. Different researchers have used different measures to evaluate the level of trust of individuals in financial institutions. Nieuwerburgh and Veldkamp (2009), for instance, conducted a study to measure the level of trust.

The researchers argued that they observed respondents who were able to give a clear statement regarding whether they would trust a particular financial institution or not. Guiso et al. (2008), using a subjective measure of trust, added new insights to the empirical studies on measuring trust. They

claim to have contributed to the existing literature by providing new insights on the topic of financial market participation in an emerging economy, whereas most studies analyze investor trust and financial market participation in developed countries.

5. Research Methodology

This section aims at devising a series of steps to achieve the objective of the study. Thus, the following steps are taken:

A structured interview schedule is prepared by adapting questions to measure numerical literacy adopted from Lusardy (2007). Questions to measure the impact of objective and subjective trust were adapted from Guiso et al. (2008). For collecting data on demographic variables, direct questions were included in the interview schedule. However, the questions were translated in the vernacular language (Urdu) with a view to ensuring that standardized questions were formed from all the respondents.

The stratified purposeful sampling method has been used in this study. Patton (2002) describes this method of sampling as samples within samples. The researcher further suggests that this method of sampling can be stratified or nested; “for example, one may purposefully sample primary care practices and stratify this purposeful sample by practice size (small, medium and large) and practice setting (urban, suburban and rural).” The justification for using stratified purposeful sampling is different from stratified random sampling in that the sample sizes are likely to be too small for generalization. A stratified purposeful sampling approach can lend credibility to a research study. When enough information is known to identify characteristics that may influence how the phenomenon is manifest, then it may make sense to use a stratified purposeful sampling approach.

The sample size was determined in light of findings by Mason (2010), who carried out an analysis of 560 PhD studies in which the researchers had used qualitative data for analysis. This researcher found that the average sample size was 31 interviews. Keeping in mind the findings of the aforementioned study, the sample size of this study was decided at 150 interviews to capture the demographic variation of the population.

To analyze the suitability of the interview schedule for collecting the required data, a pilot study was conducted during which 25 people were interviewed. The interview schedule was improved on the basis of the results of the pilot study. The data was evaluated using qualitative data analysis

software NVIVO 10.

6. Results and Discussion

The results obtained using NVIVO 10 are discussed below:

Table 1. Educational level and the use of financial services.

Financial Services	Masters	Primary	Matric	Inter	Bachelor	M.Phil.	Middle
No Bank Account	08	4	4	5	6	3	5
No Borrowing from F.I.s	13	16	12	11	9	3	12
No Insurance policies	10	16	9	7	9	6	4
Bank Account	50	8	9	14	19	12	3
Formal Borrowing From F.I.s	35	7	5	3	17	5	2
Buying insurance policies	38	7	6	9	12	15	2

The results contained in Table 1 indicate that the relationship between the level of education and the use of financial services is not linear, but that the level of education has a positive impact on the use of financial services. Interestingly, proportionately more respondents with a master's degree used financial services and products. However, there was no noticeable difference between the remaining respondents with respect to usage of financial services.

Table 2. Rural and urban differences, problems in access and use of financial services.

Financial Services	Urban	Rural	Physical problem in access = No	Physical problem in access = Yes
No Bank Account	13	22	10	25
No Borrowing	33	35	33	35
No insurance policies	20	41	20	41
Bank Account	75	40	70	45
Formal Borrowing	45	37	45	37
Investment in Insurance policies	75	14	72	16

Table 2 contains the results that show the various uses of financial services on the basis of urban and rural differences. The results confirm that the majority of the rural individuals either do not have access to or are not willing to use financial services and products. They confirm the findings of other researchers such as Rehman et al. (2011), who reported that rural people in general are excluded from participating in financial markets.

The table further contains the results regarding the impact of problems regarding physical access with respect to time, money, and effort and their impact on the use of financial services by respondents. The majority of the respondents reported no problem in accessing financial institutions and services and were thus using financial services. On the other hand, of the respondents who reported problems in accessing financial services, a significant number – i.e., 45, 37 and 19 – were using financial services. Thus it can be concluded that access problems do not stop people from using financial services.

Table 3. Need-based products and their usage.

Financial Services	Need-based	Need-based	Need-based
	Yes	No	Do not know
No Insurance	48	8	12
No Borrowing	45	7	13
No bank account	20	5	8
Insurance	52	13	17
Formal Borrowing	53	14	16
Bank Account	69	15	31

Table 3 shows the respondents' comments regarding need-based services and products. The majority of respondents believed that, as people are using financial services and products, they may be need-based, but the respondents had no clear views about this. However, the respondents who answered negatively believed that the financial services and products were suitable only for wealthy and resourceful people.

Table 4. Behavior of staff and the use of financial services and products.

Financial Services	Behavior of staff	Behavior of staff	Behavior of staff
	Good	Normal	Bad
3: No Insurance	50	9	8
4: No Borrowing	47	10	8
5: No bank account	22	7	6
8: Insurance	59	16	6
9: Formal Borrowing	60	15	7
10: Bank Account	86	21	10

Table 4 shows the results regarding the impact of the behavior of the staff at financial institutions on the usage of financial services by respondents.

The majority of the respondents considered the behavior of the staff to be either good or normal, but this showed no visible impact on their decision to use or not to use financial services. Some of the respondents reported the behavior of the staff at financial institutions as bad, but even then the majority were using the institution's financial services. Thus it can be concluded that the behavior of staff plays no important role in the financial inclusion or exclusion of households. The table shows that respondents considered the behavior of staff as good and that those who considered it good were using financial services.

Table 5. Procedure to obtain a loan and the borrowing by household.

Use of Credit	Obtaining loan = Difficult	Obtaining loan = Easy	Obtaining loan = Do not know
No Borrowing	34	17	16
Borrowing	56	15	12

The Table 5 shows that the majority of respondents believe that obtaining a loan from financial institutions is difficult. As previously discussed, in borrowing large sums, the need for collateral and other requirements make it difficult for poor people to borrow from financial institutions. Moreover, there is a perception that financial institutions advance loans only to wealthy individuals. However, some respondents believed that obtaining loans from financial institutions is easy. The majority of respondents who thought that obtaining loans from financial institutions is difficult had borrowed from financial institutions. Most of the borrowing was in the form of credit card loans. Thus it can be said that people who have obtained loans from financial institutions are in better position to comment on the difficulties in obtaining such loans. Therefore, more than 50% of the respondents, i.e., 77 out 150, reported not having borrowed from financial institutions.

Table 6. Impact of the cost of borrowing on the borrowing decision of households.

Use of Credit	Cost of borrowing (interest) =	Cost of borrowing (interest) =
	High	Low
No Borrowing	65	1
One time Borrowers	35	2
Regular borrowers	22	25

Table 6 contains the responses to borrowing costs. The respondents who considered the borrowing cost to be high never borrowed. While 35 of 150 respondents borrowed once and considered the borrowing cost very high and therefore never borrowed again, 22 of the respondents considered the borrowing cost high but continued to borrow regularly, whereas 25 of the respondents who considered the borrowing cost low were regular borrowers. Thus, it can be said that the borrowing cost plays a decisive role in the use of borrowing services provided by formal financial institutions.

Agarwal and Mazumder (2013) believe that the mathematical skills of individuals play an important role in their financial decision-making. To evaluate the impact of numerical financial literacy on decisions regarding the usage of financial services and products, the numerical literacy of the interviewees/respondents was measured with the help of questions contained in Table 7. These questions are adapted from Lusardi (2007).

Table 7. Questions for testing numerical literacy.

S. No	Numerical Literacy Question	Answer
1.	Suppose you had \$100 in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money there to grow?	A. More than \$102 B. Exactly \$102 C. Less than \$102
2.	Imagine that the interest rate in your savings account was 1% per year and inflation was 2% per year; after one year, how much would you be able to buy with the money in this account?	A. More than today B. Exactly the same C. Less than today
3.	Please tell me whether this statement is true or false: "Buying a single company's stock usually provides a safer return than a mutual fund stock."	◆ True ◆ False

Lusardi, A. (2007). Household saving behavior: the role of literacy, information and financial education programs (No. 2007/28). CFS Working Paper.

After obtaining information about the numerical financial literacy of the respondents, information was then collected regarding their bank accounts. The question concerned whether they had opened a bank account and were maintaining it (had used it during the last twelve months).

Table 8. Numerical literacy and usage of financial services.

Financial Services	Interest Question		Inflation Question		Investment Question	
	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct
Bank Account						
No	23	12	30	5	29	6
Yes	65	50	85	30	70	45
Insurance Policy						
No	39	22	49	12	42	19
Yes	45	44	66	23	73	16
Borrowing						
No	60	16	49	27	52	24
Yes	55	19	66	8	63	11

The results contained in Table 8 indicate that 65 respondents gave an incorrect answer to the question regarding interest rate calculation, but even then they had bank accounts, whereas 50 people who gave a correct answer to the said question also had bank accounts. Likewise, the literacy level with respect to inflation and investment also had no noticeable impact on the usage of financial services.

Results regarding the impact of numerical financial literacy on the usage of financial services indicate that 45 of respondents gave an incorrect answer to the question regarding interest rate calculation and had purchased an insurance policy, 44 respondents who gave a correct answer to the said question had purchased an insurance policy, and 45 respondents who gave an incorrect answer to the said question had also purchased insurance policies. Thus, in this instance, one can see that numerical financial literacy is not a decisive factor with respect to the usage of financial services. Answers to the other numeracy questions and their impact on the usage of financial services tell the same story, which means that the usage of financial services does not depend on an individual's numerical literacy skills.

Likewise, 55 respondents gave an incorrect answer to the question regarding interest rate calculation and had borrowed at least once from financial institutions, whereas 19 respondents who gave a correct answer to the said question had also used the credit facility of financial institutions. The results indicate that a high level of numerical financial literacy does not ensure the usage of financial services and products.

On the basis of above results and discussion, we can say that numerical financial literacy level is not a significant factor in making decisions regarding the usage of financial services.

The results contained in Table 4 were obtained in response to the following questions:

1. What do you know about the functioning of a bank?
2. What do you know about different types of bank accounts?
3. Have you opened a bank account?
4. Are you currently maintaining a bank account?
5. What do you know about the working of insurance companies?
6. What do you know about the different types of insurance policies?
7. Have you ever purchased an insurance policy?
8. What do you know about the institutions from which you can borrow?
9. What do you know about different types of loans offered by financial institutions?
10. Have you ever borrowed or applied to borrow from banks?

Table 9. Impact knowledge about financial institutions and usage of financial services.

Financial Services	Knowledge About working of Financial Institutions	Knowledge About working of Financial Institutions	Knowledge about Financial Services and Products	Knowledge about Financial Services and Products
	No	Yes	No	Yes
Bank account				
1: No	23	12	30	5
2: Yes	02	113	02	113
Insurance Policy				
1: No	20	56	29	47
2: Yes	05	69	03	71
Borrowings				
1: No	49	12	32	29
2: Yes	03	86	01	88

The results in Table 9 show that knowledge of commercial banks or knowledge of services provided by these institutions have a certain impact on the opening of a bank account, as 113 respondents with knowledge of banks had opened one. However, only 2 people, who either had no knowledge of the working of financial institutions and types of banks account or who did not wish to share their views, had opened banks accounts.

Moreover, Table 9 further shows the analysis of the impact of knowledge about the existence and working of insurance companies and different insurance policies on buying insurance policies. The results indicate that knowledge of insurance companies and insurance policies has a positive impact on the use of insurance services and products, as people with no knowledge of insurance companies or their products have never used insurance services or products.

The results contained in Table 9 show that respondents' knowledge of financial institutions or of different accounts has an impact on his or her decision to borrow from banks, whereas 69 people with a knowledge of bank borrowing had borrowed from banks, while only 5 respondents, who either had no knowledge of the borrowing process and of borrowing products, had borrowed from banks.

Table 10. Trust and the use of financial services.

Financial Services	Preferred investment in real assets	Preferred investment in financial assets	Trusting financial institutions	Not trusting financial institutions
No Insurance	66	1	49	18
No Borrowing	64	1	48	17
No Bank Account	35	1	25	11
Insurance	82	1	66	07
Formal Borrowing	84	1	67	18
Bank Account	114	1	83	22

The data contained in Table 10 was extracted using the matrix query function of Nvivo-10. The data show the trust level of respondents in the financial system and their decision about the use of financial services and products. This is a kind of triangulation that confirms the results obtained through the word cloud function. These results also indicate that the majority of respondents showed their trust in financial institutions and were more inclined to use financial services. The results extracted through the matrix query confirm that when respondents are asked directly about their level of trust in financial institutions, they showed a high level of trust in the country's financial system and were using financial products and services. However, when questions were asked about their investment preferences, they showed a preference to invest in real assets, indicating that if they do not suffer from budget constraints, they will prefer to invest in real assets.

Table 11. Religion and the use of financial services.

Financial services	Does Islam allow one to deal with financial institutions?		Is wealth accumulation permitted in Islam?	
	No	Yes	No	Yes
No Insurance	51	16	28	39
No Borrowing	52	13	26	39
No bank account	32	9	14	27
Insurance	55	27	21	60
Formal Borrowing	58	25	24	58
Bank Account	77	31	33	74

Table 11 contains information about the impact of respondents' religious perception of their actual usage of different financial services. While providing answers regarding how they deal with financial intuitions from an Islamic point of view, the majority of the respondents believed that to do so is un-Islamic and that they were not using financial services and products. However, some respondents believed that the use of financial services and

products is a modern requirement, although even then the majority of them thought that it was better to avoid using financial services and products. The overall results indicate that the majority of the respondents believe that the financial system of the country is un-Islamic, as the system is based on interest. While answering the question about wealth accumulation, the majority of the respondents believed that Islam allows the accumulation of wealth and therefore Zakat is being levied. The majority of such respondents were using financial services. In the literature review, we discussed the views of a number of researchers who believe that religion plays an important role in impacting the decision-making process of individuals and households. Like Lehrer (2004), they believe that religion plays a significant role in framing the decisions that an individual makes throughout his or her life.

Vellekoop (2014) found religious individuals are more risk averse. Klaubert (2010) revealed that the religious beliefs and practices of individuals have profound effects on their savings behavior. Tahir and Brimble (2011) conducted a study to evaluate to what extent Muslim investors follow the instructions laid down for making investments and found that this depends on the level of an individual's religiosity. Jamaludin (2013) studied the role of religion in individuals' investment choice or decisions and observed that Muslim investors invested both in risky and risk-free assets. However, they observed no difference on the basis of religion when the decision was about investment in unit trust.

6.1 Discussion

6.1.1 Demographics and the use of financial services and products

The results of the data analysis indicate that people with a higher education level were more likely to use financial services, as most of the respondents holding a master's degree used financial services and products compared to respondents with primary, middle or matriculated education levels. However, the level of education has no linear relationship with the use of financial services and products. While evaluating the results, it was found that the majority of the rural people did not use financial services and products. These generally have fewer opportunities in terms of education, employment and in obtaining knowledge and information, and these factors may explain their low usage of financial services and products.

The majority of respondents in this study believed that they had no problems in accessing financial services and products; thus it can be concluded that access problems do not exclude people from using financial services. The majority of respondent were unaware if the services and products offered by the financial institutions were need-based or not. However, they commented that people use financial services and products because these answer their needs. Some of the respondents believed that the financial services and products were suitable only for affluent individuals. The majority of respondents reported that the behavior of the staff was either good or normal. Some of the respondents considered the behavior of the staff at financial institutions as bad, but they did not discontinue using that institution's financial services and products.

6.1.2 Access and the use of financial services and products

On the basis of their experiences, some of the respondents commented that obtaining loans from financial intuitions was difficult, while others who had no experience in obtaining loans also had the same perception. Some of the respondents, who had no experience in obtaining loans from financial intuitions, did not answer the question. Most of the respondents who had borrowed were credit card users. Respondents also thought the cost of loans from financial institution very high. Therefore, more than 50% of the interviewees, 77 out of 150, reported not borrowing from financial institutions. Thus, it can be said that borrowing costs play a decisive role in excluding some individuals from credit services and products offered by financial institutions.

6.1.3 Numerical financial literacy and the use of financial services and products

The results revealed that skill in numerical literacy is of lesser importance in using financial services and products. Therefore, it can be said that numerical financial literacy is not a decisive factor with respect to the usage of financial services. In devising financial literacy programs, stakeholders should place more importance on the contents that contributes to enriching the knowledge of individuals about financial institutions, financial products and financial services.

6.1.4 Knowledge and information about financial institutions and their products and services and the use of financial services

The factor that showed the most profound effect on the usage of financial services and products is the respondents' knowledge of financial institutions and the products and services offered by such institutions. Results show that the majority of respondents with a knowledge of the financial institution and its products and services used them, while respondents without such knowledge did not.

6.1.5 Trust and the use of financial services and products

On the basis of the analysis of data collected, we observed that when respondents were directly asked about their level of trust in financial institutions, they showed a high level of trust in the country's financial system and were actively using financial products and services. However, when asked about their investment preferences, they showed their preference to invest in real assets, indicating that if they do not suffer from budgetary constraints, they prefer to invest in real assets.

6.1.6 Religion the use of financial services and products

The overall results indicate that the majority of respondents believe that the country's financial system is un-Islamic. They believe the system is based on interest, which is haram. However, those respondents who considered the overall financial system of the country as being against Islam were currently using financial services and products.

Our work has important implications for several public policy frontiers. Countries cross the world are framing policies to ensure financial inclusion. Pakistan also initiated financial inclusion programs, such as The Financial Inclusion Program (FIP), implemented by SBP with the support of the UK Department for International Development (DFID), and the National Financial Inclusion Strategy Pakistan. However, these programs were not very successful, as they did not improve the financial inclusion situation. The contribution of this study is twofold. First, on the basis of our results, we have made an attempt to identify the factors that contribute to the country's financial exclusion. Second, presently most financial literacy programs are focused on improving individuals' numerical financial literacy skills,

whereas our results suggest that an individual's knowledge of financial institutions and their services is more important for financial inclusion.

7. Conclusions and Recommendations.

On the basis of the findings of this study, we conclude that general education has a positive impact on the usage of financial services but that promoting the use of financial services is determined to a great extent by the financial knowledge and information of the respondents. The role of numerical financial literacy in determining the usage of financial services was very low. This finding means that the mere awareness of basic financial terms, such as inflation, interest and investment, has a very low impact on decisions about the usage of financial services. Conversely, information and knowledge about financial institutions, their workings and the services provided by them has a greater impact on the usage of financial services. Stakeholder should take measures to impart financial education to the masses and particularly to young people in educational institutions and to adults in their workplaces.

On the basis of the findings discussed in the preceding pages, it may be said that people in Pakistan trust the financial system but need encouragement and motivation to use the services and products it offers. Further, the demographic variables have a mixed effect on the decision of households regarding the use of financial services. However, people in rural areas, with low incomes and less education, require special motivation to participate in the activities of financial markets. Interviews showed that respondents' financial literacy level was low, and in the future a detailed study should be conducted to measure the impact of different forms of financial literacy on the use of financial services and products in Pakistan.

Limitations of the study: Owing to limited resources, the study is limited only to a few selected cities in Pakistan. The study sample comprises only men; unfortunately, Pakistani women have no representation. The major reason for this limitation was that in rural areas, communication with women by a stranger is not appreciated. In the future, researchers may wish to carry out studies using a larger sample size and providing equitable representation to different segments of society.

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