POLITICAL REGIME, SHADOW ECONOMY AND INCOME INEQUALITY:
Evidence from Pakistan

Tahir MUKHTAR*, Faiz BILQUEES** and Tahmina YASMIN***

Abstract

There has been growing literature focusing on empirical evaluation of the key determinants of income distribution across the countries for the last three decades. The present study aims to assess the impact of political regime and shadow economy on income inequalities in Pakistan over the period 1975 to 2016. Two estimation techniques, namely, fully modified ordinary least squares (FMOLS) and autoregressive distributive lag (ARDL) model, have been used for estimation purposes. The findings indicate that democratic regimes and shadow economies significantly contribute to the worsening of income inequalities in the country. Furthermore, the results also reveal that democracy reinforces income inequalities promoting the impact of the shadow economy in Pakistan.

Keywords: Income Inequality, Democracy, Shadow Economy, ARDL, FMOLS.
JEL Classification: C22, E25, E26.

I.   Introduction

In a market economy, the crucial issue of asset and income distribution is mainly determined by inherent ability, prevailing technology, nature of market structure through which investment prospects are governed, property rights and the division of human and physical capital across various sections of society. However, it is pertinent to note that the market system is a part of the comprehensive political system. The distribution of gains from economic development rests on the laws, institutions, and policies enacted by this political system. For instance, the institutions which are prone to accumulate political authority within a small portion of the populace— the most prominent feature of non-democratic governments in developing countries— tend to generate greater inequality. This situation leads to strategies which are primarily pro-politically powerful segments of the society, while policies are framed

* Associate Professor, Department of Economics, Fatima Jinnah Women University, ***Ph.D Scholar, Department of Economics, Arid Agriculture University, Rawalpindi, **Former Joint Director, Pakistan Institute of Development Economics (PIDE), Islamabad, Pakistan.

and implemented to keep the poor away from sharing the gains of economic growth and ensuing development. For this purpose, wages are pushed down through legal actions [Wilse-Samson (2013) and Acemoglu, et al., (2015)].

Income inequality is generally attributed to the low-income countries, which are usually considered less democratic regimes, often under dictatorial powers or purely communist regimes. This claim is substantiated on the ground that democracies are supposed to redistribute more to the poor, with declining inequality as a net outcome, consistent with Meltzer and Richard's (1981) median voter model [Nikoloski (2015)]. There is a strand of literature as a counter balance, which maintains that income redistribution is mainly driven by efficiency decisions rather than politics in various forms of political regimes [Sala-i-Martin (1996), Benabou (1996) and Rodriguez (2004)]. The supporters of this line of research are utterly against mentioning the type of regime in the list of key determinants of income inequality.

Shadow economy and income inequality have received much attention from academics and policymakers over recent decades because they have far-reaching ramifications for economic growth, institutional efficiency, and public policies [Dell'Anno (2016)]. Particularly in the Asian context, it has been observed that the size of the shadow economy and level of income inequality are mounting along with good economic growth performance. The significant rise in the extent of the shadow economy in Asian countries implies that macroeconomic data are substantially underestimated on average [Bajada and Schneider (2005)]. This observation gets strength from the finding of Medina and Schneider (2018) that in Asian economies estimated average size of shadow economy remained 30.94 per cent of gross domestic product (GDP) during the period 1990 to 2015, recording a rise of 10.24 per cent. In the presence of a shadow economy, resource allocation gets distorted, income distribution tends to alter and tax revenue collection of government is certain to fall [Alm and Embaye (2013)]. Therefore, ignoring this macroeconomic phenomenon is more likely to create biasedness in judging the effects of different economic policies.

The significance of analysing income distribution with regards to Pakistan originates from the fact that Pakistan is a low-income country marked by a high level of poverty. Since Pakistan has never been able to maintain a sustained growth rate, poverty levels in Pakistan have fluctuated considerably [Naseer and Ahmed (2016)]. While studying the growth periods of 1988-99 and 2000-05 in Pakistan, finds that growth is not neutral in its distributional ramifications [Jamal (2009)]. It has not only increased inequality during the high growth periods but also reduced the poverty-decreasing effect of growth. However, the periods of low growth are marked by extreme increases in poverty due to inequalities.

The growth performance of the last three decades confirms that growth is negatively related to poverty and positively to inequality. Starting with the 1980's Pakistan saw high economic growth, accompanied by a decline in poverty and an increase in inequality. However, the growth declined in the 1990s that resulted in

the rise in poverty while inequality decreased. In the early half of 2000, Poverty Reduction Strategy Program (PRSP-I) was adopted with the aim of achieving pro-poor growth by focusing on different aspects of poverty, including high economic growth. While the policy led to a sharp decline in poverty, it was ineffective in reducing inequality, as it increased from 0.28 to 0.30 in 2005. The second phase of the poverty reduction program continued from 2008 to 2011. Still, many of its objectives could not be achieved due to macroeconomic instability as the growth declined, thereby increasing poverty and income inequalities [Naseer and Ahmed (2016)]. However, the economic growth performance of Pakistan has shown a persistent increase during the period 2012 to 2016, while income inequality has exhibited a declining trend during the same period [Pasha (2018)]. Since unequal income distribution is one of the obstacles in the way of successful alleviation of poverty, therefore, to observe a drastic decline in poverty, it is imperative to recognise the structure of income inequality properly. This can be achieved by identifying the main drivers of income distribution in Pakistan. For policymakers, such understanding is profoundly pertinent as it helps them determine when and how to make remedial moves against rising income inequality in the country.

Given the theoretical background and arguments described above, the present study aims to gauge income inequality-shadow economy nexus in the context of Pakistan. Moreover, the role of political regime in income inequality-shadow economy association has also been quantified. The distinction of the present study is evident from the fact that it is a pioneer in incorporating the role of the political regime in investigating the shadow economy's effect on income inequality in Pakistan. In the existing stock of literature on the inequality of income in Pakistan, this dimension of research is entirely lacking.

The rest of the study is organised as follows: Section II reviews the literature on determinants of income inequality; Section III describes variables and econometric methodology adopted for this study; Section IV contains the results of the estimated models; and finally, Section V concludes the study with appropriate policy recommendations.

II. Review of Literature

Literature on the subject of income inequalities shows that among the economic factors, the relationship between GDP growth and income inequality has been one of the most widely researched topics since the 1950s. Kuznets (1955) postulated an inverted U-shaped relationship between growth and income distribution. In the short-run development from an agrarian to industrial economy growth will be rapid and income inequalities will also increase; however, in the long-run, income inequalities decline. Similarly, Barro (2000), White and Anderson (2001) and Panniza (2002) also report that in the long-run, higher growth results in higher income for the poor, and

inequalities tend to decline. In the same vein, Anderson, et al., (2003) also maintain that inequalities decline due to higher growth and increase in the share of the poor in total income in the long-run. On the other hand, Knowles (2005) finds a negative relationship between growth and inequality even in the long-run.

Shadow economy has attained significant importance in developing economies due to its vast macroeconomic ramifications. All unlawful practices adopted to earn money illegally, including smuggling, corruption, black marketing, narcotics, informal legal jobs etc., constitute the shadow economy. These activities are not in the tax net and have a significant negative impact on the social welfare of the residents of a country like Pakistan. Tanzi (1983, 1999), Frey and Pommerehne (1984), Feige (1989), Pozo (1996) and Johnson, et al., (1998) describe higher taxes in the formal sector and rising social security burdens as two very important factors promoting informal markets.

Rosser, et al., (2000) quite aptly explain that the considerable size of the informal sector results in low tax revenues, which results in poor social service delivery and hence worsening income inequality. Similarly, Ghecham (2017) employs 34 countries' cross-section data to examine the influence of the informal sector on variations in income across various categories of income. He finds that the informal sector is undermining the efficacy of vital rules encouraging income redistribution, contributing to income accumulation in the hands of earners of high income, that in turn hinder the pace of economic growth.

The relationship between shadow economy and income distribution has been less explored. It remains tentative, with the exception of some attempts, even though several types of research focused separately on shadow economy or income inequality. Valentini (2009) documents, through a micro approach of including a regional share of the Non-Observed Economy (NOE) in a wage equation, that tax evasion associated with NOE appears to minimise the inequality calculated by the daily wages in the particular case of employees of the Italian private sector. This finding is in line with the hypothesis of Smith (2002) that more jobs are created due to the existence of the shadow economy. In addition, Kim (2005) reports that the inspiration for joining the shadow economy in Romania is to avoid poverty. So informal economic practices are used to save the vulnerable in order to reduce the extent of poverty. The goal of the study is to quantify the effect of the shadow economy on income inequality and scrutinise the determinants of income inequality in countries of Asia for the time frame 1990 to 2015 [Huynh and Nguyen (2019)]. They find that the shadow economy plays a significant role in diminishing income inequalities.

With regard to the political factors, Rodrick (1999), Reuvney and Li (2003), Lapp (2004), Lindert (1994, 2004), Lee (2005), Balcazar (2016) and Islam (2016) agree with the established notion that more democratic societies are more equitable because they follow more redistributive policies. However, Savoia, et al., (2010) shows that in some Asian countries, high economic growth and low-income inequality prevails in the presence of low rating democratic institutions. On the other hand, in many

Latin-American countries, income distribution is highly skewed in favour of the rich despite the existence of high rating democratic institutions [Bollen and Jackman (1985)]. They also argue that the prevalence of democracy does not mean that income inequalities will be lower; similarly, Engerman and Sokoloff (1997) consider institutions a more relevant factor in reducing inequality. Milanovic, et al., (2001) also oppose democracy as the cure for inequality and focus on the impact of ideology on inequality; Gupta, et al., (2002) attribute inequality and poverty to corruption.

We do find enormous literature on income inequality in the case of Pakistan, but unfortunately, none of the existing researches attempted to explore the shadow economy-income equality nexus in the present political regime for the country. For example, the focus of investigations by Kruijk (1987), Awan (2007), Naschold (2009), Ali and Akhter (2014), Naseer and Ahmed (2016), Munir and Sultan (2017), Kiyani, et al., (2019) is on examining the determinants of income inequality. In contrast, Chaudhry and Imran (2013), Amjed (2015) and Khan, et al., (2015) strive for quantifying the repercussions of trade liberalisation on income distribution. Jamal (2009) describes the extent and trends in inequality levels, Idrees (2001) analyses inequality in the individual earning while Afridi, et al., (1984) and Ali (2018) empirically estimate the contribution of inflation and macroeconomic instability in income inequality, respectively. Thus, to date, the academic research efforts to discover the determinant of income inequality has opened Pandora's Box, leaving a host of critical questions unanswered that warrant further research.

Nonetheless, what is evident is that income inequality (as measured by the Gini coefficient) is closely associated with some of the variables of economic and political nature, which yields us a plausible beginning point for our study. Moreover, we have not come across any study which has attempted to gauge the impact of shadow economy on income inequality in a developing country like Pakistan in the presence of a type of political regime.

III. Analytical Framework

1. Theoretical Background

The academic endeavours to identify the determinants of income inequality have yielded voluminous literature. Moreover, attempts to understand the causal pathways and mechanisms of transmission through which different factors influence income inequality in the short and long-term are still away from producing some concrete outcomes. What is clear nonetheless is that income inequality (as measured by the Gini coefficient) is strongly associated with some political, social and economic variables, which yields a good beginning point for research.

Some modified versions of the Kuznets (1955) curve provide the key theoretical approach to deal with the determinants of income inequality. Because of the Kuznets

hypothesis, income inequality widened in the initial stage of economic growth and it follows a downward trend in the later stage. A thorough survey of the relevant literature reveals that different dimensions and determinants of income inequality have become the subject of research on various researchers since the emergence of the seminal work of Kuznets (1955). However, despite the advent of a voluminous literature on income inequality, scholars still have no consensus on the determinants of income inequality across the countries. For the purpose of understanding the drivers of income inequality in previous studies, they can be grouped into two main categories. The first category includes macroeconomic variables such as GDP growth [Kuznets (1955)], unemployment [Rice and Lozada (1983), Blejer and Guerrero (1990)], fiscal actions, consisting of size of government, government expenditure, and subsidies [Tanninen (1999), Dupont and Martin (2006)], globalisation, the openness of the economy, economic freedom and foreign direct investment [Wood (1997), Spilimbergo, et al., (1999), Barro (2000), Chintrakarn, et al., (2012) and shadow economy [Valentini (2009), Huynh and Nguyen (2019)]. The second category includes institutional quality and political factors, continuing corruption, governance, democracy and political freedom [Reuveny and Li (2003), Carmignani (2009), Acemoglu, et al., (2015)].

With regard to shadow economy-income inequality nexus, it is widely believed that shadow economy serves as a window of opportunity for various workers and firms which find a good chance to generate income and get employed that it would be difficult in a highly regulated formal sector. In addition, the shadow economy provides individuals and business firms a suitable environment to sharpen the wealth-generating entrepreneurial culture [Adams, et al., (2013)]. The job creation impact of the shadow economy implies that income inequality tends to decline with the increase in the size of the shadow economy. This type of reasoning is well emphasised by Smith (2002). However, at the same time, there is also an opposite opinion which postulates that the shadow economy results in low tax revenues, which in turn leads to inadequate social services provision, which is more likely to worsen income inequality [Rosser, et al., (2000)]. Thus, the shadow economy may encourage or discourage income inequality in a country like Pakistan.

In today's world, economic and political systems are greatly interlinked. The impact of economic policies on income distribution depends on the laws, institutions, and policies adopted by a political system; what institutions or policies a political system produces relies on the distribution of power in society and how preferences are aggregated by political institutions. For instance, we expect institutions that concentrate political power within a few hands to cause greater inequality, characteristic of non-democratic regimes [Acemoglu, et al., (2015)]. Nonetheless, it is not universally true that the prevalence of democracy will ensure a fall in income inequality [Bollen and Jackman (1985), Milanovic, et al., (2001)]. Therefore, considering democracy as a solution for income inequality in a developing country like Pakistan is questionable.

2. *The Model*

Keeping in view the theoretical background given in the study estimates the following two econometric models to accomplish its empirical task quantifying the impact of the shadow economy and political regime on income inequality in Pakistan:[1]

$$GINI_t = \alpha_0 + \alpha_1 GDPGR_t + \alpha_2 GDPGR_t^2 + \alpha_3 SE_t + \alpha_4 TO_t + \alpha_5 UEMP_t + \alpha_6 GE_t + e_t \quad (1)$$

$$GINI_t = \beta_0 + \beta_1 GDPGR_t + \beta_2 GDPGR_t^2 + \beta_3 SE_t + \beta_4 TO_t + \beta_5 UEMP_t + \beta_6 GE_t \\ + \beta_7 PR_t + \beta_8 (SE*PR)_t + u_t \quad (2)$$

where,

GINI   =   GINI Index (proxy for income inequality),
GDPGR   =   growth rate of gross domestic product(GDP),
$GDPGR^2$ =   squared GDP,
SE   =   shadow economy (size as per cent of GDP),
TO   =   trade openness (total trade as per cent of GDP),
UEMP   =   unemployment rate,
GE   =   government expenditure(as per cent of GDP),
PR   =   political regime,
SE*PR   =   interaction term of shadow economy and political regime,
e & u   =   random error terms, and
t   =   time period from 1975 to 2016.

As far as the expected impact of economic growth rate and its squared term on income inequality are concerned, the former positively and the latter negatively affect income inequality as emphasised by the Kuznets curve. Shadow economy's association with income inequality may be positive or negative. An increase in the degree of trade openness is more likely to elevate inequality in developed countries and lower in developing economies [Barro (2000)]. The notion that trade liberalisation tends to raise wages of skilled and unskilled workers in developing countries is also documented by Wood (1997). Hence, it may be stated that trade openness and income inequality are adversely connected in a developing nation like Pakistan. However, it is really hard to find the practical validity of the Stolper-Samuelson theorem in the global trade in the real world; therefore, income inequality may tend to increase as a result of more openness to international trade, since large disparities in the world factor endowments impede the equalisation of factor prices [Davis (1996)]. Therefore, trade openness may reduce or intensify the issue of income inequality; the likely impact of unemployment on in-

---

[1] We formulated our econometric models by using modified version of the Kuznets model where shadow economy and political regimes along with some other key variables are factored in to show their impact on income inequality.

come inequality is straightforward. Unemployment and income inequality both are positively associated as unemployment leads to cause significant falls in the incomes of workers, especially the unskilled ones [Mocan (1999)]. The Keynesian theory postulates that government spending paves the way for enhancing public investment, national out and employment levels in an economy leading to reduce income inequality [Alamanda (2020)]. Thus, social welfare-enhancing, job creation and business facilitating dimensions of government spending are certain to create an environment of fair income distribution in a country. Hence, we expect government spending to influence income inequality in Pakistan adversely. For political regime-income inequality association, we have already discussed that political regime matters for income distribution. Nonetheless, democracy may exacerbate or reduce income inequality. As theoretically, shadow economy and political regime may separately be drivers of income inequality or its reducing factors, so the ultimate impact of their product that is interaction term of the shadow economy and political regime on income inequality is expectedly ambiguous.

Consistent time series data on the size of the shadow economy are not available in any official document of the Government of Pakistan. Therefore, we have obtained the estimates of this variable by following the modified version of the monetary approach developed by Cagan (1958) and further extended by Tanzi (1983). In this regard, the following econometric model is specified:

$$CM_t = \gamma_0 + \gamma_1\, Tax_t + \gamma_2\, FD_t + \gamma_3\, IR_t + \gamma_4\, LCPI_t + \gamma_5\, LRPCI_t + v_t \qquad (3)$$

where, *CM, TAX, FD, IR, LCPI, LRPCI, v* and *t* represent currency in circulation to broad money (M2) ratio, tax revenue to GDP ratio, financial development (represented by monetary liabilities of the banking sector, excluding currency in circulation) to GDP ratio, market interest rate, natural log of consumer price index used as a proxy for inflation, natural log of real per capita income, random error term and time period covered by the study respectively. To estimate the size of the shadow economy, we make use of the following specifications:

Illegal money (IM)   =   CM*M2
Legal money (LM)   =   M2-IM
Velocity of circulation of money (V) =   GDP/LM
Size of shadow economy (SE)   =   [(IM*V)/GDP]*100

3.   Data and Estimation Technique

The current study works with annual time series data over the period 1975 to 2016. The required data have been gathered from the Annual Reports of the State Bank of Pakistan (SBP), published by the SBP, International Financial Statistics, published by the International Monetary Fund (IMF), Pakistan Economic Surveys (PES) published

by the Ministry of Finance, Islamabad, Pakistan, Statistical Year Books, published by the Pakistan Bureau of Statistics; World Development Indicators, published by the World Bank (WB) and World Income Inequality Database (WIID 3.4), published by the United Nations University (UNU). The Gini coefficient measures income inequality; the value of this coefficient varies between 0 and 1. However, we convert its range into 0 and 100, multiplying its value by 100 for our empirical analysis. The size of the shadow economy is calculated by estimating the regression model (3).

Data on democracy are sourced from the Polity IV dataset version 2017, which considers democracy as a combination of institutions, institutionalised constraints on the power of the executive and guarantee of civil liberties in the exercise of their right to political participation. The democracy score ranges from -10 (strongly autocratic) to +10 (strongly democratic).

A specific estimation technique depends on the features and nature of the data set included in the model. As data are time series, the first step is to examine the unit root properties of each variable used in models (1) to (3). To this end, the study employs the Augmented Dickey-Fuller (ADF) test. Model (3) used for measuring the size of the shadow economy is estimated by means of the fully modified ordinary least squares (FMOLS) technique. This technique was originally designed by Philips and Hansen (1990) to provide optimal estimates of cointegration regressions. For attaining asymptotic efficiency, this method transforms least squares to counter serial correlation impacts and account for the endogeneity in the regressors resulting from the presence of a cointegrating relationship [Philip and Hansen (1990), Hansen (1995)].

In order to estimate the impact of political regime and the shadow economy, the study has employed the autoregressive distributed lag (ARDL) cointegration technique developed by Pesaran, et al., (2001). This technique is considered useful in obtaining consistent parameter estimates whether the underlying regressors are I (0), I (1) or a combination of both. Moreover, it is capable enough to yield efficient and consistent empirical results for a small data size like this study. The representations of the Models (1) and (2) can be formulated as:

$$
\begin{aligned}
\Delta GINI_t = \theta_0 &+ \sum_{i=1}^{p} \theta_1 \Delta GINI_{t-i} + \sum_{i=0}^{p} \theta_2 \Delta GDPGR_{t-i} + \sum_{i=0}^{p} \theta_3 \Delta GDPGR_{t-i}^2 + \sum_{i=0}^{p} \theta_4 \Delta SE_{t-i} \\
&+ \sum_{i=0}^{p} \theta_5 \Delta TO_{t-i} + \sum_{i=0}^{p} \theta_6 \Delta UEMP_{t-i} + \sum_{i=0}^{p} \theta_7 \Delta GE_{t-i} + \lambda_1 GINI_{t-1} + \lambda_2 GDPGR_{t-1} \\
&+ \lambda_3 GDPGR_{t-1}^2 + \lambda_4 SE_{t-1} + \lambda_5 TO_{t-1} + \lambda_6 UEMP_{t-1} + \lambda_7 GE_{t-1} + \varepsilon_t
\end{aligned}
\tag{4}
$$

$$
\begin{aligned}
\Delta GINI_t = \delta_0 &+ \sum_{i=1}^{p} \delta_1 \Delta GINI_{t-i} + \sum_{i=0}^{p} \delta_2 \Delta GDPGR_{t-i} + \sum_{i=0}^{p} \delta_3 \Delta GDPGR_{t-i}^2 + \sum_{i=0}^{p} \delta_4 \Delta SE_{t-i} + \sum_{i=0}^{p} \delta_5 \Delta TO_{t-i} \\
&+ \sum_{i=0}^{p} \delta_6 \Delta UEMP_{t-i} + \sum_{i=0}^{p} \delta_7 \Delta GE_{t-i} + \sum_{i=0}^{p} \delta_8 \Delta PR_{t-1} + \sum_{i=0}^{p} \delta_9 \Delta (SE*PR)_{t-i} + \omega_1 GINI_{t-1} + \omega_2 GDPGR_{t-1} \\
&+ \omega_3 GDPGR_{t-1}^2 + \omega_4 SE_{t-1} + \omega_5 TO_{t-1} + \omega_6 UEMP_{t-1} + \omega_7 GE_{t-1} + \omega_8 PR_{t-1} + \omega_9 (SE*PR)_{t-1} + \xi_t
\end{aligned}
\tag{5}
$$

In Models (4) and (5), the coefficients attached with difference operators measure short-run dynamics, whereas the terms with first lag capture the long-run relationship. For checking the existence of the long-run relationship between income inequality and all the explanatory variables, we test a separate null hypothesis of no cointegration for equations (4) and (5) as:

$$\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = \lambda_7 = 0$$
$$\omega_1 = \omega_2 = \omega_3 = \omega_4 = \omega_5 = \omega_6 = \omega_7 = \omega_8 = \omega_9 = 0$$

For this purpose, the computed F-statistic from the test is compared with critical values from Pesaran et al., If the null hypothesis is rejected, it points to a cointegrating relationship between income inequality and the explanatory variables of the study. If a long-run relationship is established between the variables; in that case, the next step is to estimate short-run dynamics and stability of equilibrium relationship between income inequality and all the regressors in equations (4) and (5) by means of the following two error correction models:

$$\Delta GINI_t = \phi_0 + \sum_{i=1}^{p} \phi_1 \Delta GINI_{t-i} + \sum_{i=0}^{p} \phi_2 \Delta GDPGR_{t-i} + \sum_{i=0}^{p} \phi_3 \Delta GDPGR_{t-1}^2 + \sum_{i=0}^{p} \phi_4 \Delta SE_{t-i}$$
$$+ \sum_{i=0}^{p} \phi_5 \Delta TO_{t-i} + \sum_{i=0}^{p} \phi_6 \Delta UEMP_{t-i} + \sum_{i=0}^{p} \phi_7 \Delta GE_{t-i} + \eta ECT_{t-1} + \zeta_t \qquad (6)$$

$$\Delta GINI_t = \kappa_0 + \sum_{i=1}^{p} \kappa_1 \Delta GINI_{t-i} + \sum_{i=0}^{p} \kappa_2 \Delta GDPGR_{t-i} + \sum_{i=0}^{p} \kappa_3 \Delta GDPGR_{t-1}^2 + \sum_{i=0}^{p} \kappa_4 \Delta SE_{t-i} + \sum_{i=0}^{p} \kappa_5 \Delta TO_{t-i}$$
$$+ \sum_{i=0}^{p} \kappa_6 \Delta UEMP_{t-i} + \sum_{i=0}^{p} \kappa_7 \Delta GE_{t-i} + \sum_{i=0}^{p} \kappa_8 \Delta PR_{t-1} + \sum_{i=0}^{p} \kappa_9 \Delta(SE*PR)_{t-i} + \pi ECT_{t-1} + \psi_t \qquad (7)$$

where, η and π are coefficients of lagged error correction term (ECT) Model (7) and (8), respectively. From Pesaran, et al., (2001), it is evident that the coefficient of lagged ECT specifies the speed of adjustment, which is linked to the cointegration equation. Hence, ECT characterises the feedback of the system in stabilising its disequilibrium. Finally, the validity of the estimated econometric model is checked by means of some important stability and diagnostic tests which are frequently employed in empirical studies.

IV. Results and Discussion

The study begins with an estimation of the size of the shadow economy given in Model (3). The first step is to check the stationarity properties of the variables using the Augmented Dickey-Fuller (ADF) unit root test. The results reported in Table 1 show that all the time series integrated order one i.e., I (1). Therefore, we can use the FMOLS technique to estimate the shadow economy model (3).

TABLE 1

Unit Root Test Results

Variable	Level	First Difference	Mackinnon Critical Values at 5% Level of Significance	Order of Integration
CM	-1.778	-4.625	-3.524	I(1)
Tax	-1.361	-4.242	-3.524	I(1)
FD	-2.138	-6.084	-3.524	I(1)
IR	-2.177	-5.768	-3.524	I(1)
LCPI	-1.374	-5.639	-3.524	I(1)
LRPCI	-2.062	6.374	-3.524	I(1)

Source: Authors' estimation.

The estimation of the model (3) by means of the FMOLS technique shows that all the variables are significantly contributing in shaping the outcome of currency ratio except for inflation in Pakistan, as shown in Table 2.

TABLE 2

Estimates of Shadow Economy Model

Dependent Variable: CM		
Variable	Coefficient	t-value
TAX	1.375***	4.882
FD	-0.087*	-1.897
IR	-0.432***	-3.824
LCPI	0.055	0.985
LRPCI	-0.284**	-2.273
Constant	0.593**	2.419
R^2	0.836	
F (p-value)	19.351(0.000)	
DW	1.901	

Source: Authors' estimation.
Note: ***,** and * indicate significant at 1%, 5% and 10%.

The tax to GDP ratio emerges as a relatively dominant factor of determining the currency ratio. Based on these estimates, the overall size of the shadow economy is calculated and presented in Table 3.

It is interesting that from the mid-1970s to the end 1980s shadow economy constituted 33 per cent of GDP. This time period incorporates the adverse effects of nationalisation and devaluation in the early 1970s under the democratically elected government and the massive inflow of remittances into the informal sector during the 1980s under the military-led civil government. The poor management policies to rehabilitate the confidence of the investors under the policy of reversal of nationalised units and failure to channelise the flow of remittances into commodity-producing sectors to promote exports were some of the factors responsible for this trend. The size of the shadow economy averaged almost the same, i.e., 32.8 per cent in the early 1990s in the wake of extensive reforms were introduced in the banking sector and some liberalisation of the capital market by the civilian government. However, the attraction of the informal sector as a tax haven with quick returns from the domestic market for the rich and powerful dominated, as is reflected in the sharp surge in the size of the shadow economy, averaging 40 per cent in the second half of the 1990s. A more vigorous drive at reforms in the banking sector as well as in the tax department is reflected in the tenure of the new military-led civil government (1999-2007). The size of the shadow economy was reduced from 35.84 per cent in 1999 to 30.37 per cent in 2007. The size of the informal sector again averaged 35 per cent in the next five years of the two democratically elected civil governments of 2008 to 2013 and 2013 to 2016. Thus, the informal sector expansion also reflects the spread of corruption with the connivance of the rich and powerful and its impact on income distribution is explored by estimating models (4) and (5).

Prior to the main estimation exercise, we have checked the order of integration of all variables contained in models (4) and (5) using the ADF unit root test. It can be seen from Table 4 that all the variables are integrated of order one, i.e., I (1), except the growth rate of GDP, which is integrated of order zero, i.e., I (0). The mixed order of integration of regressors justifies the use of the ARDL technique. After selecting optimal lag using the Schwartz Bayesian Criteria, the value of the F-test statistic is estimated to test the null hypothesis of no cointegration in the case of both equations (4) and (5) as an initial crucial step (see Table 5). A comparison between calculated value of the F-test statistic with that of its critical counterpart, as provided by Pesaran et al., (2001) reveals that the null hypothesis of no cointegration between income inequality and all the regressors is rejected in the case of both equations (4) and (5). Hence, it turns out that shadow economy and political regime and other explanatory variables form a long-run relationship with income inequality in Pakistan.

TABLE 3

Size of Shadow Economy in Pakistan (1975-2016)

Year	Size of Shadow Economy (as % of GDP)	Year	Size of Shadow Economy (as % of GDP)
1975	30.21	1996	39.57
1976	32.44	1997	40.15
1977	31.92	1998	42.67
1978	34.27	1999	35.84
1979	36.49	2000	31.77
1980	34.61	2001	32.57
1981	32.55	2002	30.35
1982	33.86	2003	29.68
1983	30.22	2004	27.85
1984	32.65	2005	26.99
1985	33.83	2006	25.94
1986	35.95	2007	30.37
1987	36.25	2008	31.54
1988	34.11	2009	32.72
1989	32.56	2010	37.97
1990	31.84	2011	34.61
1991	28.75	2012	35.88
1992	31.87	2013	33.98
1993	34.66	2014	35.57
1994	35.94	2015	37.84
1995	36.72	2016	34.21
Averages			
1975-1980	33.32	2000s	30.6
1980s	33.37	2011-2016	35.35
1990s	35.79	1975-2016	33.56

Source: Authors' estimation.

TABLE 4

Unit Root Test Results

Variable	Level	First Difference	5 %	Order of Integration
GINI	-0.745	-6.874	-3.524	I(1)
GDPGR	-4.821	---	-3.524	I(0)
SE	-2.051	-6.585	-3.524	I(1)
TO	-2.999	-7.125	-3.524	I(1)
UEMP	-1.888	-5.697	-3.524	I(1)
GE	-2.019	-8.400	-3.524	I(1)
PR	-0.996	-4.082	-3.524	I(1)

Source: Authors' estimation.

Given the evidence of cointegrating relationship among the political regime, shadow economy and income inequality, we proceed to the long-run estimates of models (4) and (5) as reported in Table 6. The coefficients of the growth rate of GDP and its squared term are significant, but the former carries the positive sign while the latter has a negative sign. This outcome implies the validity of the Kuznets hypothesis in Pakistan as we find an inverse U-shaped relation between the growth rate of GDP and income inequality. The coefficient of the shadow economy is significant and positive, which implies that with the increase in the size of the shadow economy, income inequality tends to increase in the country. Hence, this finding is consistent with the view that the shadow economy is deleterious for income inequality in a developing country like Pakistan [Rosser, et al., (2000), and Ghecham (2017)]. An expanding shadow economy causes more inequality due to falling tax revenue and weakened social safety nets designed for supporting the poor masses of the society in Pakistan.

TABLE 5

Bound Test Results

Estimation	F-Test Statistic	Critical Value (95% Level of Significance)	
		Lower Bound	Upper Bound
Equation 4	7.19	2.45	3.61
Equation 5	5.18	2.22	3.39

Source: Authors' estimation.

Moreover, this finding seems to support the claim that the employees in the informal sector receive relatively less financial rewards as compared to their counterparts in the formal sector [Krstic and Sanfey (2011), La Porta and Shleifer (2011)] which induces disparity in their earnings. Additionally, this finding corroborates what have been documented by Kar and Saha (2012) for Asian countries and Asadzadeh and Jalili (2015) for Iran. However, the contention of Kar and Saha (2012) that if a country is highly corrupt, the existence of a large shadow economy is associated with a reduced gap of income disparities does not get any validation from the data of Pakistan's. The extent of corruption is relatively high in Pakistan. At the same time, the size of the shadow economy is also significantly large, which is one of the important factors responsible for increasing income inequality in Pakistan.

The coefficient of political regime is statistically significant and positive, implying the income inequality increasing the effect of democracy in Pakistan. The result in total contrast to the notion of the favorable effect of democracy on income distribution as stated by Median Voter Theory.[2] Nonetheless, our finding is in line with the claim of Acemoglu, et al., (2015) that democracy may result in a more unequal income distribution. In the context of Pakistan, some plausible justification can be put forward for such a type of outcome. Firstly, a democratic regime constituting the national parliament and the senate is controlled by the rich elite, mainly from the agriculture and industrial sectors. A large majority of the ruling elite carries minimal educational qualifications. Since the 1980s, the ruling elite and the opposition parties have been colluding to pass the laws

TABLE 6

Long-Run Estimates

Variable	Equation 4	t- value	Equation 5	t-value
		Dependent Variable: GINI		
GDPGR	0.286***	3.143	0.192**	2.469
$GDPGR^2$	-0.084***	-4.31	-0.113**	-2.565
SE	0.180*	1.786	0.139*	1.961
TO	0.215***	3.342	0.103*	1.876
UEMP	0.066***	2.839	0.142*	1.914
GE	0.017*	1.724	0.091*	1.984
PR	----	-----	0.105**	2.064
(SE*PR)	-----	---	0.361**	2.314

Source: Authors' estimation.
Note: ***& ** indicate statistical significance at 1 and 5% level.

[2] The median voter theory conventionally applies to a democratic system. The theory implies that legislation and implementation of laws on the part of politicians are mainly based on the median voter's preferences. With regard to income distribution it is assumed that democracies enforce the median voter's distributional preferences.

favouring them and their cronies [Khan, et al., (2018)]. This has resulted in massive corruption by the rich at the expense of the poor masses. This collusion has destroyed all the relevant institutions meant to work for the benefit of the common man who takes it for granted that they have to pay bribes in all government departments to get anything done. Hence, the upper class always succeeds in constraining redistribution and consequently, inequality persists [Hussain (2008)]. Secondly, based on the Director's Law[3] premise, increased tax revenues under democratic rule in Pakistan are mainly allocated to the benefit of the middle-class group and not redistributed to the larger poor group of the population since it is not favoured by the middle-class group.

Finally, in democratic regimes, legislation mainly focuses on reforms and policies to benefit the ruling class and not the country and its citizens. Such policies include uncalled for privatisation of well-performing national assets, financial markets and trade liberalisation at most inappropriate times, commission generating infrastructure projects at the expense of educational institutions and health facilities. Mostly the successive governments were bent upon introducing certain reforms to enhance the role of markets in economic activities [Shaikh and Ehsan (2013)]. This situation occurs due to what is termed by Acemoglu, et al., (2015) as "Inequality-increasing market opportunities". Accordingly, democracy has proven to be very conducive for the upper class of the society, but it fails to work desirably for the low-income groups in Pakistan [Zaidi (2005)]. The coefficient of interaction term SE*PR is significant as well as positive and its value is 0.361, which indicates that income inequality increasing the role of shadow economy further strengthen in the presence of democratic rule in Pakistan. Unfortunately, the experience of the country with democracy has been very dismal due to incompetent and corrupt governments in the country. Accordingly, no attention has been given towards institutions' building and improving governance structure for enhancing government effectiveness. Therefore, we do not observe any move towards properly documenting the economy and checking smuggling and drug trafficking, which greatly contributed to the continued expansion of the size of the shadow economy. Additionally, the successive democratic governments continued to increase the ratio of indirect taxes in total tax revenue, directly affecting the general masses. Thus, poor governance by the "democratic rulers" in the country has let the shadow economy flourish to their advantage and intensify income inequalities. The rest of the regressors, namely, trade openness, unemployment rate and aggregate public expenditures, are also positively associated with income inequality in the country. These findings are quite consistent with the real situation prevailing in Pakistan. The trade liberalisation policies of the successive governments for the last three decades have created winners and losers in the economy. They increased competition due to global integration has

---

[3] This law is based on the notion that primary beneficiaries of public sector programs are the middle income group while in financing these programs the poor and the rich substantially contribute in the form of taxes. In view of its size and aggregate wealth, the middle income group acts like a dominant group in a democratic system to gather maximum state benefits by paying minimum taxes as cost.

TABLE 7

Estimates of Error Correction Model 6

Dependent Variable	ΔGINI	
Variable	Coefficient	t-value
ΔGINI(-1)	0.357**	2.482
ΔGDPGR	0.047***	3.183
ΔGDPGR(-1)	0.015	1.274
ΔGDPGR(-2)	0.008**	2.276
ΔGDPGR^2	0.017	0.254
ΔGDPGR^2(-1)	0.009	0.322
ΔSE	0.038***	4.969
ΔTO	0.027*	1.915
ΔGE	0.004**	2.447
ΔGE(-1)	0.001	0.824
ECT(-1)	-0.827***	-6.388
Constant	0.935**	2.183
Diagnostic Tests		
$\chi^2_{SC} = 0.411(0.528)$		$\chi^2_{H} = 0.815(0.352)$
$\chi^2_{FF} = 0.884(0.324)$		$\chi^2_{N} = 2.263(0.287)$

Source: Authors' estimation.
Note: ***, **and * indicate significant at 1%, 5% and 10% levels respectively. χ^2_{SC}, χ^2_{H}, χ^2_{FF} and χ^2_{N} denote LM test for serial correlation, heteroscedasticity, functional form and normality respectively. The associated p values are in parentheses.

generated higher demand for skilled and trained labour while the unskilled are left unemployed; this causes income distribution to be skewed in favour of the rich.

Moreover, the unwise/untimely trade openness moves to please foreign governments in return for seeking favours for their personal industries (particularly the sugar industry-owned mainly by the elite politicians) has put the small scale industries in jeopardy. Then, the two most favoured international competitors are India and China, where the production costs are much lower than in Pakistan. China, in particular, has glutted the Pakistani markets with all sorts of consumer goods ranging from fabrics to electronics. This has led to massive closures and migration of industries to other countries in the region. The resulting massive unemployment of the poor households has further deteriorated income distribution and increased poverty.

For short-run and stability analysis, error correction models (6) and (7) are estimated. Results are presented in Tables 7 and 8, respectively. Table 7 contains parameter estimates of error correction Model 6. In contrast to the long-run outcomes, the only growth rate of

GDP, shadow economy, trade openness and government expenditures are found to have a significant and positive association with income inequality in the short-run. It implies that all the four macroeconomic variables have a consistent effect on income inequality in the short-run as well as in the long-run. Thus, policymakers are required to keep an eye on the behaviour of these four variables even in the short-run to effectively manage the trend of income inequality in Pakistan. The remaining variables are insignificant in the short-run.

The value of the coefficient of lagged error correction term is – 0.827 and it is significant at one per cent level which reveals that the long-run equilibrium relationship between income inequality and all the explanatory variables is stable. In case of any disequilibrium, there will occur almost 83 per cent correction every year as the coefficient of error correction term represents the speed of adjustment to restore equilibrium.

TABLE 8

Estimates of Error Correction Model 7

Dependent Variable	ΔGINI	
Variable	Coefficient	t-value
ΔGINI(-1)	0.207***	5.692
ΔGDPGR	0.092*	1.901
ΔGDPGR(-1)	0.004	1.579
ΔGDPGR^2	0.002	0.797
ΔSE	0.063**	2.552
ΔTO	0.004***	3.915
ΔTO(-1)	-0.001	-1.576
ΔGE	-0.001	-0.145
ΔPR	0.003	0.89
ΔPR(-1)	-0.021	-0.967
ΔPR(-2)	0.002	0.279
Δ(SE*PR)	-0.020	-0.952
ECT(-1)	-0.615***	-7.053
Constant	0.565***	4.083
Diagnostic Tests		
$\chi^2_{SC} = 0.347(0.564)$		$\chi^2_{H} = 0.766(0.375)$
$\chi^2_{FF} = 0.622(0.429)$		$\chi^2_{N} = 2.917(0.213)$

Source: Authors' estimation.

Note: ***, **and * indicate significant at 1%, 5% and 10% levels. χ^2_{SC}, χ^2_{H}, χ^2_{FF} and χ^2_{N} denote LM test for serial correlation, heteroscedasticity, functional form and normality respectively. The associated p values are in parentheses.

The estimated results of error correction Model 7 are reported in Table 8, which shows that in the short-run only three variables - growth rate of GDP, shadow economy and trade openness have a significant and positive impact on income inequality.

The lagged error correction term coefficient has an expected negative sign and is significant at a one per cent level. Its value (-0.615) shows that deviation from the equilibrium level of income inequality due to any exogenous shock will be corrected by almost 62 per cent each year. Results of four diagnostic tests are reported in the lower panels of Tables 7 and 8, which depict that the estimated models do not suffer from serial correction, heteroscedasticity, functional form and normality issues. These outcomes increase our confidence on the overall findings of the estimated model. Finally, CUSUM and CUSUM of squares tests suggest stability of the parameter estimates of the estimated models as their plots remain within a 5 per cent level of significance [Figures (1) and (2)].
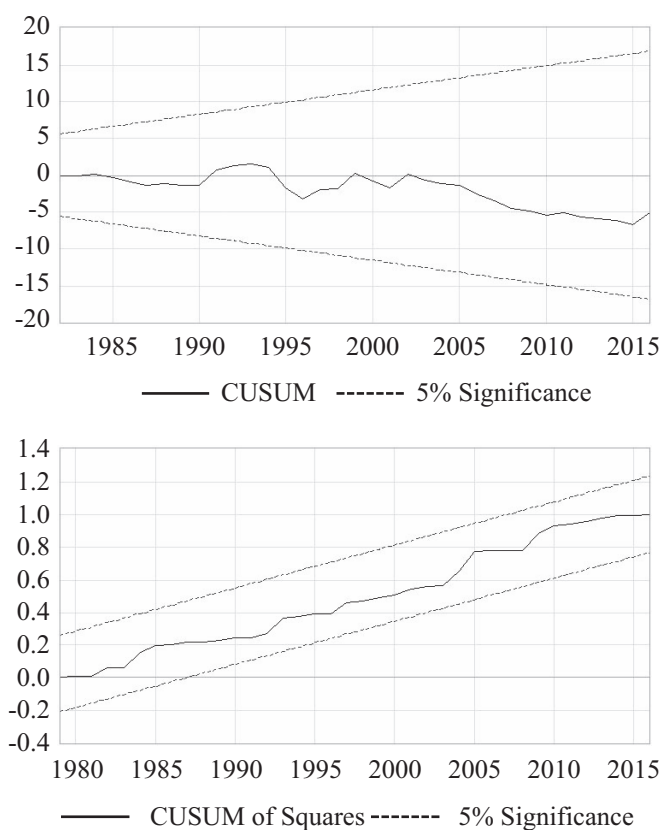

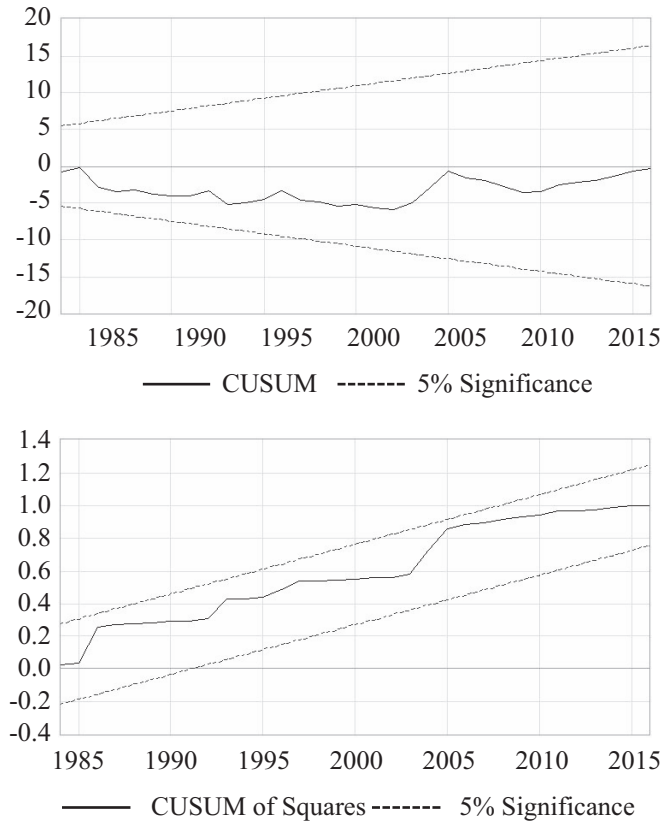**FIGURE 1**
Stability Test – Model 4

FIGURE 2
Stability Test - Model 5

V. Conclusion and Recommendations

The empirical evidence on the relationship between the political regime, shadow economy and income distribution in Pakistan over the period 1975 to 2016 makes some interesting revelations. By using the ARDL estimation technique, we find that the two important variables of the study – democracy and the shadow economy tend to increase income inequality in Pakistan. Similarly, the interaction term of the shadow economy and political regime bears a positive sign implying that an increase in the size of the shadow economy will lead to increases in income inequality under a democratic regime in Pakistan. This implies that democratic systems intentionally chose not to mitigate the adverse effect of informal activities on income distribution. A surprising outcome is that the dictatorial regimes are found to be more egalitarian and

thereby are more inclined to adopt policies to protect the benefits of the deprived. The outcomes for the growth rate of GDP and its squared term surprisingly validate the existence of Kuznet's curve for Pakistan. The results of other economic variables, namely trade openness, unemployment rate and aggregate public expenditures with income inequality in the long-run.

In view of the results obtained for the political and economic determinants of inequality, some relevant policy recommendations are as follows: It is quite obvious that economic factors, including the shadow economy, are more important in dealing with income inequalities; therefore, it is strongly recommended that urgent measures need to be taken by the government. The documentation of the economy is central to any attempts to control tax evasion and check illegal activities to control corruption. Democracy or no democracy, corruption is the root cause of such decadence of the economy. The decline in the informal sector will help in ensuring better income distribution at all levels, particularly among the low paid. Tax reforms, and more importantly, their implementation, is not possible without the confidence of all stakeholders; the business community, investors, traders, and the general public. The effective establishment of an accountability system and the rule of law ought to be ensured in the country to promote investment, both in the economic and social sectors, to provide an educated, healthy and skilled labour force and ease the job situation and ensure better income distribution. In this regard, variables like public expenditures need to be further probed by disaggregating their distribution among various classes of the society to ensure equality. Rehabilitation of the institutions and quality of governance are the two essential first steps for a democratic government for judicious economic management of the economy aiming at bridging the gap between the minority rich elite and the deprived majority. Furthermore, different versions of the democracy variable need to be tried to ensure that democracy does not necessarily lead to inequalities.

Bibliography

Acemoglu, D., S. Naidu, P. Restrepo, and J.A. Robinson, 2015, Democracy, redistribution, and inequality, in: A.B. Atkinson and F. Bourguignon (eds.), Handbook of Income Distribution (Vol. 2: 1885–1966, Amsterdam: Elsevier Ltd.

Adams, A.V., S.J. de Silva, and S. Razmara, 2013, Improving skills development in the informal sector: Strategies for Sub-Saharan Africa, Washington, DC: World Bank, IBRD.

Afridi, U., A. Qadir and J. Zaki, 1984, Effect of dual sector inflation: Across income levels in Pakistan, The Pakistan Development Review, 23(3): 381-390.

Alamanda, A., 2020, The effect of government expenditure on income inequality and poverty in Indonesia, Info Artha, 4(1): 1-11.

Ali, A., 2018, Issue of income inequality under the perceptive of macroeconomic instability: An empirical analysis of Pakistan, Pakistan Economic and Social Review, 56(1): 121-155.

Ali, L., and N. Akhtar, 2014, An analysis of the gender earning differentials in Pakistan, Research Journal of Applied Sciences, Engineering and Technology, 7(13): 2772-2784.

Alm, A., and A. Embaye, 2013, Using dynamic panel data methods to estimate shadow economies around the world, 1984-2006, Public Finance Review, 41(5): 510-543.

Amjad, Z., 2015, Trade and income distribution in Pakistan, Global Journal of Management and Business Research (B: Economics & Commerce), 15(8):18-25.

Anderson, E., T. Conway, A. McKay, J. Moncrieffe, T. O'Neil, and L-H. Piron, 2003, Inequality in middle income countries: Key conceptual issues, Overseas Development Institute, Occasional paper. 4.

Asadzadeh, A., and Z. Jalili, 2015, Shadow economy and income inequality in Iran, Faslnameh-ye Modelsazi-ye Eqtesadi, 30: 91–109.

Awan, M. S., 2007, Changing income distribution in Pakistan – An intertemporal analysis of the household income and expenditure data, A PhD dissertation submitted to the Department of Economics, University of Sargodha.

Bajada, C., and F. Schneider, 2005, Shadow economies of the Asia-Pacific, Pacific Economic Review, 10(3): 379 – 401.

Balcázar, C. F., 2016, Long-run effects of democracy on income inequality in Latin America, Journal of Economic Inequality, 14: 289–307.

Benabou, R., 2000, Unequal societies: income distribution and the social contract, The American Economic Review, 90: 96-129.

Blejer, M. I., and I. Guerrero, 1990, The impact of macroeconomic policies on income distribution: An empirical study of Philippines, Review of Economics and Statistics, 72(3): 414–423.

Bollen, K.A., and R.W. Jackman, 1985, Political democracy and the size distribution of income, American Sociological Review, 50(4): 438-457.

Barro, R., 2000, Inequality and growth in a panel of countries, Journal of Economic Growth, 5: 5-32.

Cagan, P., 1958, The demand for currency relative to the total money supply, Journal of Political Economy, 66:303-328.

Carmignani, F., 2009, The distributive effects of institutional quality when government stability is endogenous, European Journal of Political Economy, 5(4): 409–421.

Chaudhry, I.S. and F. Imran, 2013, Does tradeliberalisation reduce poverty and inequality? Empirical evidence from Pakistan, Pakistan Journal of Commerce and Social Sciences, 7(3):569-587.

Chintrakarn, P., D. Herzer and P. Nunnenkamp, 2012, FDI and income inequality: Evidence from a panel of U.S. States, Economic Inquiry, 50(3): 788–801.

Davis, D.R, 1996, Trade liberalisation and income distribution, NBER Working Papers, 5693, Cambridge, Massachusetts: National Bureau of Economic Research.

Dell' Anno, R., 2016, Inequality and informality in transition and emerging countries, IZA World of Labor, Institute of Labor Economics, Germany:1-11.

Dupont, V., and P. Martin, 2006, Subsidies to poor regions and inequalities: Some unpleasant arithmetic, Journal of Economic Geography, 6(2): 223–240.

Engermann, S., and K. Sokoloff, 1997, Factor endowments, institutions, and differential paths of growth among new world economies: A view from economic historians of the United States, in: Stephen H. (ed.), How Latin America fell behind, Stanford: Stanford University Press.

Feige, E. L., 1989, The underground economies: Tax evasion and information distortion, Cambridge: Cambridge University Press.

Frey, B. S., and W. Pommerehne, 1984, The hidden economy: State and prospect for measurement, Review Income Wealth, 30(1): 1–23.

Ghecham, M. A., 2017, The impact of informal sector on income distribution: Could concentration of income be explained by the size of informal sector? International Journal of Economics and Financial Issues, 7(1): 594-600.

Gupta, S., H. Davoodi and R. Alonso-Terme, 2002, Does corruption affect income inequality and poverty? Economics of Governance, 3: 23-45.

Hansen, B., 1995, Rethinking the univariate approach to unit root testing: Using covariates to increase power, Econometric Theory, 11: 1148–1171.

Islam, M. N., 2016, Does democracy reduce income inequality? Empirical Economics, 51: 1–20.

Hussain, A., 2008, Power dynamics, institutional instability and economic growth: The case of Pakistan, Islamabad: The Asia Foundation.

Huynh, C.M. and T.L. Nguyen, 2019, Shadow economy and income inequality: New empirical evidence from Asian developing countries, Journal of the Asia Pacific Economy, 25(1): 175-192.

Idrees, M., 2007, An analysis of income and consumption inequalities in Pakistan, Phd Thesis, Islamabad: Quaid-i-Azam University.

Jamal, H., 2009, Growth and income distribution for poverty reduction: Pakistan's experience, Policy Brief-1, Islamabad: United Nation Development Program.

Johnson, S., D. Kaufmann and P. Zoido-Lobatón, 1998, Corruption, public finances and the unofficial economy, Policy Research Working Paper, 2169, Washington, D.C: World Bank.

Kar, S., and S. Saha, 2012, Corruption, shadow economy and income inequality: Evidence from Asia, IZA Discussion Paper Series, 7106, Bonn: Institute for the Study of Labor.

Khan, B., S. Ahmad and A. Khan, 2018, The politics of corruption and its impact on democracy in Pakistan (1988-1999), Pakistan Journal of Criminology, 10(2):138-150.

Khan, M.A., T. Walmsley and K. Mukhopadhyay, 2015, Tradeliberalisation and income inequality: The case for Pakistan, Unpublished Manuscript.

Kiyani, A., S. Siddique and S. Sheikh, 2019, The socio economic determinants of income inequality in Pakistan, Orient Research Journal of Social Sciences, 4(1):137-157.

Knowles, S., 2005, Income inequality and economic growth: The empirical relationship reconsidered in the light of comparable data. Journal of Development Studies, 41(1): 135-159.

Krstić, G. and P. Sanfey, 2011, Earnings inequality and the informal economy: Evidence from Serbia, Economics of Transition, 19(1): 179-199.

Kruijk, H. De., 1987, Sources of income inequality in Pakistan, The Pakistan Development Review, 26(4): 659-672.

Kuznets, S., 1955, Economic growth and income inequality, American Economic Review, 65:1-28.

La Porta, R., and A. Shleifer, 2011, The unofficial economy in Africa, Massachusetts: NBER Working Paper, 16821.

Lapp, N. D., 2004, Landing votes: Representation and land reform in Latin America, New York: Palgrave Macmillan.

Lee, C.S., 2005, Income inequality, democracy, and public sector size, American Sociological Review, 70(1): 158–181.

Lindert, P. H., 1994, The rise of social spending, 1880–1930, Explorations in Economic History, 31(1): 1–37.

Lindert, P. H., 2004, Growing public: Social spending and economic growth since the eighteenth century, New York: Cambridge University Press.

Meltzer A., and S. Richard, 1981, A rational theory of the size of government, Public Choice, 41: 403-418.

Milanovic, B., M. Gradstein and Y. Ying, 2001, Democracy and income inequality: An empirical analysis, Policy Research Working Paper, 2561, Development and Research Group, Poverty and Human Resources, World Bank.

Mocan, H. N., 1999, Structural unemployment, cyclical unemployment, and income inequality, Review of Economics and Statistics, 81(1): 122–134.

Munir, K., and M. Sultan, 2017, Macroeconomic determinants of income inequality in India and Pakistan, Theoretical and Applied Economics, 26(4): 109-120.

Naschold, F., 2009, Microeconomic determinants of income inequality in rural Pakistan, The Journal of Development Studies, 45(5): 746-768.

Naseer, S., and A.M. Ahmed, 2016, Determinants of income inequality among the earners in Pakistan, Working Paper Series, 6, Islamabad: NUST.

Nikolosk, Z., 2015, Democracy and income inequality: Revisiting the long- and short-term relationship, Review of Economics and Institutions, 6(2):1-24.

Pasha, H.A., 2018, Growth and inequality in Pakistan: Agenda for reforms, Friedrich-Ebert- Stiftung, Islamabad.

Phillips, P., and B. Hansen, 1990, Statistical inference in instrumental variables regression with I(1) processes, Review of Economic Studies, 57: 99–125.

Pozo, S., 1996, Exploring the underground economy: Studies of illegal and unreported activity, Michigan: W.E. Upjohn Institute for Employment Research.

Rodriguez, F., 2004, Inequality, redistribution and rent-seeking, Economics and Politics, 16: 287-320.

Rodrik, D., 1999, Democracies pay higher wages, Quarterly Journal of Economics, 114: 707–738.

Reuveny, R., and Q. Li, 2003, Economic openness, democracy, and income inequality - An empirical analysis, Comparative Political Studies, 36: 575–601.

Rice, G. R., and G. A. Lozada, 1983, The effects of unemployment and inflation on the income distribution: A regional view, Atlantic Economic Journal, 11(2): 12–21.

Rosser, J. B., M.V. Rosser and E. Ahmed, 2000, Income inequality and the informal economy in transitions economies, Journal of Comparative Economics, 28(1):156–171.

Sala-i-Martin, X., 1996, A positive theory of social security, Journal of Economic Growth, 1: 277-304.

Savoia. A., J. Easaw and A. Mckay, 2010, Inequality, democracy, and institutions: A critical review of recent research, World Development, 38: 142–54.

Shaikh, U.A., and S. Ehsaan, 2013, Effect ofprivatisation on economy and its adverse effects on economy, IOSR Journal of Humanities and Social Science, 14(6):34-61.

Smith, R. S., 2002, The underground economy: Guidance for policy makers? Canadian Tax, Journal, 50: 1655–1661.

Spilimbergo, A., J. L. Londono and M. Szekely, 1999, Income distribution, factor endowments, and trade openness, Journal of Development Economics, 59(1): 77–101.

Tanninen, H., 1999, Income inequality, government expenditures and growth, Applied Economics, 31(9): 1109–1117.

Tanzi, V., 1983, The underground economy in the United States: Annual estimates 1930-1980, IMF Staff Papers, 30(2): 283-305.

Tanzi, V., 1999, Uses and abuses of estimates of the underground economy, Economic Journal, 109: 338-340.

Valentini, E., 2009, Underground economy, evasion and inequality, International Economic Journal, 23(2): 281–290.

White, H., and E. Anderson, 2001, Growth versus distribution: Does the pattern of growth matter?, Development Policy Review, 16(3): 267-289.

Wilse-Samson, L., 2013, Structural change anddemocratisation: Evidence from apartheid South Africa, Unpublished working paper, Columbia University.

Wood, A., 1997, Openness and wage inequality in developing countries: The Latin American challenge to East Asia conventional wisdom, World Bank Economic Review, 11(1):33-57.

Zaidi, S.A., 2005, State, military and social transition: Improbable future of democracy in Pakistan, Economic and Political Weekly, 40(49):5173-5181.