Does Clientelism Affect Income Inequality? Evidence from Panel Data

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This paper studies the determinants of income inequality in a panel of countries to give empirical evidence on the relationship between income inequality and clientelism, a relationship in which a person (or patron) provides one's own resources or the resources he or she controls to persons with inferior positions (or clients) in return for their loyalty and service. Using different panel data techniques, especially group mean fully modified OLS estimator, and also allowing for control variables, cross-sectional heterogeneity and cross-sectional dependence, we find that in the long run, clientelism exerts a significant negative effect on income equality. The overall results of the study have implications for fiscal management strategies and political regime choice.

Keywords: clientelism, governance, government expenditure, income inequality, group-mean fully modified OLS estimator
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1 Introduction

Persistence of high income inequality has remained a common feature in many economies despite concerted efforts at the global level. Not only income inequality affects every aspect of human life – from health, education, employment, housing to child care, retirement, crime – but it also shrinks the prospect of upward economic mobility from generation to generation (Andrain, 2014). For some time, researchers have been pointing out to clientelism both as another problematic outcome as well as a possible source of income inequality.

After originating in anthropology, clientelism and the related term patronage have received widespread applicability in political, economic and other social sciences (Robinson & Verdier, 2013; Sarker, 2008; Scott, 1972). In the literature, clientelism is defined as an asymmetric non-kin voluntary relationship in which a powerful and wealthier party provides for the well-being and protection of a weaker and less wealthy party in exchange for the latter's support for the first party upon demand (Paul, 2008). A patron's help and protection may take such form as support for children's education, assistance in lawsuits and tax problems, provision of finding jobs and in times of need, goods such as food and medicine, while a client's return may occur in assisting the patron with performing office duties, providing information about rivals, working in election campaign, and even fighting for the patron (Kettering, 1986; Scott, 1972). While some scholars use clientelism and patronage interchangeably, others treat clientelism as a much broader phenomenon than patronage, the latter referring to only one specific type of clientelism related to the flow of benefits from public office (Hicken, 2011; Hutchcroft, 1997; Robinson & Verdier, 2013).

At the theoretical level, there is supposed to be a negative relation between income equality and clientelism. Income inequality along with insecurity, low productivity and starkly hierarchical social relations makes societies susceptible to clientelism (Nam, 1995; Robinson & Verdier, 2013; Wantchekon, 2003; You, 2014). On the other hand, although patron-client relationships serve the clients by providing them with "some degree of protection, assistance and social mobility", they nonetheless continue the domination of the patron by maintaining the inequalities between the two sides (Berman, 1974). However, not only does clientelism carry on and deepen existing inequality between the patron and the client, it also "tends to reproduce and reinforce income inequality" for the whole population, especially if the least resourceful households are excluded from clientelist network. Thus the relation is such that inequality leads to clientelism and clientelism reinforces inequality (Markussen, 2011; Medina & Stokes, 2007). It has also been observed that when a society is highly unequal, the transition to democracy does not automatically get rid of the clientelist appeals. Clientelist appeals to the poor seem to be higher in such an environment due to the fact that the more a person

is poor, the higher the value he or she places on small clientelist transfers (Keefer, 2007). Clientelism can also be unaffected by economic development (Markussen, 2011; Nam, 1995). Especially when states deliberately extend patronage support to businesses as a developmental strategy and the political parties decide to receive political funds in return, patronage and economic development can coexist even for decades, South Korea being one example (Nam, 1995). As a result, it becomes imperative to assess the strength of this relation if one wishes to understand the dynamics of income inequality.

Real world observations, however, reveal only weak, if any, evidence on such propositions. Among post-industrial capitalist democracies, for example, the countries that have higher levels of clientelism do not appear to suffer from higher levels of inequality. Only a modest correlation can be observed between income inequality and clientelism among less developed countries. These bivariate observations and country comparisons however lack in sophistication and leave scope for a multivariate econometric analysis (Kitschelt & Wilkinson, 2007). While some studies have attempted to look into the relationship between inequality and some other specific variables such as financial development, corporatism, democracy and foreign aid (e.g. Bahmani-Oskooee, Hegerty, & Wilmeth, 2008; Gatson & Rajaguru, 2009; Herzer & Nunnenkamp, 2012; Jauch & Watzka, 2016; Minnich, 2003; Pecoraro 2014; Perugini & Martino, 2008; Roine, Vlachos, & Waldenström, 2009; Shen & Yao, 2008), proper attention to clientelism as a source of inequality has been missing so far. Under these circumstances, the present paper attempts a sophisticated empirical substantiation of the phenomenon and reveals that clientelism adversely affects income equality in the long run.

The rest of the paper is organized as follows. Section 2 provides a brief description of what is meant by clientelism, how it is affected and in turn affects income inequality. Section 3 describes the construction of an appropriate proxy for clientelism. It also explains the data and variables of our study and the estimation strategy. Section 4 provides the estimation results. Finally, Section 5 presents the conclusions and the policy implications of the study.

2 The Link between Income Inequality and Clientelism: A Review of Literature

The relationship between patron and client in clientelism is essentially one that involves unequal positions among mutually dependent parties, although the extent of inequality may vary from case to case (Paul, 2008; Roniger, 2012). Sometimes the patron-client relationship in clientelism can take the form of a three party patron-broker-client relationship. In this model of clientelism, the broker functions as middleman who makes exchanges of resources between distant parties, either physically or personally or both, possible (Kettering, 1986, 1988). Thus, whether

it is a patron-broker-client relationship or a patron-client relationship, the whole relationship in reality turns into "... a very flexible one in which the needs and resources of the partners, and hence the nature of the exchange, may vary widely over time." (Scott, 1972). Moreover, clientelism does not mean that inequality between the two parties continues to remain at the same level. Rather, it is a process that tends to widen the existing income gap between patrons and their clients over time. The effect is especially severe when clientelism originates from control over an economic good rather than from holding of political positions. Furthermore, clientelism holds those outside the clientelist network at a relative disadvantage, even if it does not intend to do so. Finally, clientelism can weaken the bargaining power of labor and negatively affect redistributive economic policies.

About the link between clientelism and inequality, Scott (1972) argues that it is the relative strength of the patrons with respect to the clients that enables them to supply the type of goods and services the potential clients need for their livelihood and prosperity forming the basis of "unequal exchange relation" or inequality. Neher (1985) asserts that the patron-client relationship generally retains the client in a dependent position in comparison to the patron since it is the clients who find themselves more in need of the patron's resources than the latter in need of the former's resources. According to Berman (1974), patron's interest lies not only in the maintenance of the existing unequal relationship with the clients, but also in widening of the gap between them over time. This enables the patron to exert greater control over the client group by increasing the cost of withdrawal for the latter from the current relationship.

However, not only does clientelism widen inequality between the patron and the clients, but also between the clients and those excluded from this mechanism. For example, when government jobs are allocated solely on the basis of clientelist connection, people falling outside the clientelist network will not find any (Kurer, 1993). Sometimes party clients themselves become members of autonomous institutions such as labor unions. Such membership enables them to enjoy dual benefits – one as a general member of the organization and the other as a client to the patron party. It has been seen that a patron party rates its client groups both as voters and as part of the broader support network. The party aims to preserve the solidarity and mobilization capacity of the client group and at the same time to prevent their defections to the strengthening of its rival parties. Hence, the party makes concessions to client groups and favors economic policy that continues the status quo. The non-client union members, therefore, find themselves in a comparatively disadvantaged position. However, the real victim is the people who are not part of a union and do not participate in any clientelist network (Trantidis, 2015).

Sometimes, the exclusion seems unintentional. In the study on the Partido de la Revolución Democrfiática (PRD), which is the largest left-wing party of Mexico, Hilgers (2008) found such an example where party practice of clientelism generated

greater inequality among a community of senior citizens. The case was observed in the Federal District municipality of Iztapalapa where the party started a number of programs for senior citizens after coming to power in 2004. However, it was later observed that food baskets were provided to only those seniors who attended weekly meetings characterized by both social and political interactions or to those who provided proof of participation in political events. Senior citizens, who decided not to participate in such meetings because of the meeting's political nature, or those who were unaware of the programs did not receive any benefits (Hilgers, 2008). However, if there was no exclusion resulting from unintentional actions, the clientelist system would have to perform the same task intentionally as clientelist system depends on unequal distribution of benefits and in reality such distribution is only possible when specific individuals and groups are excluded. In Indian states of Kerala and Tamil Nadu, it was found that people with clientelist affiliation were more likely to benefit from an important poverty alleviation program than those without such ties and discrimination based on clientelism even took precedence over discrimination based on language, religion, and caste (Markussen, 2011, p. 1722). Thus, even if "... patronage ties enhance the position of relatively disadvantaged groups, they presume inequality on an individual-by-individual and group-by-group basis." (Willerton, 1992). It is, therefore, rightly stated that, in the long run, clientelism "... tends to reproduce and reinforce income inequality, asset concentration, and socioeconomic disempowerment of the overwhelming share of a country's citizens." (Kitschelt & Wilkinson, 2007).

Medina and Stokes (2007) argued that the inequality situation could become more severe if clientelism arises from control over an economic good rather than from holding a political position. They pointed out two different sources of clientelism in a stylized polity composed of an incumbent, who is also the patron, and a challenger – both seeking to maximize their chances of winning an election. In such a setting, clientelistic control for the patron could arise from two sources: economic monopoly over goods which is independent of the outcome of the election and political monopoly over goods that occurs when the patron retains office (Medina & Stokes, 2007). It is true that "... all clientelistic relationships operate a mediated and selective access to resources and markets from which others are normally excluded. In clientelism, such mediated access to resources and markets is contingent on some measure of compliance with or dependence on the decisions of others." (Roniger, 2012). However, the voters face a more difficult situation when the monopolized good is economic, rather than political. For political monopoly, voters will lose access to the goods when they vote for the challenger and the challenger loses. In contrast, the voters will have to face punishment if they vote for the challenger, whether the challenger wins or loses (Medina & Stokes, 2007).

At the policy level, clientelist practices in general weaken the position of labor. It has been found in Pakistan that landlords through the threat of eviction are "able

to extract both free labor and votes" from house tenants despite the existence of legal occupancy rights. Additionally, it is the clientelist system that enabled the landlords to appropriate state resources for themselves and their clients while the majority in rural areas were left to live with little or no access to state resources (Martin, 2014, p. 421). This is not only true for unorganized labor, the same also happens to organized labor if clientelism penetrates its organization. For example, clients who participate in labor unions have dual identities. While as union member they can enter into a greater bargaining position with the patron, their status as clients at the same time weakens the autonomy of the labor unions they represent. Client status limits "... how far they can go in contesting policy proposals, especially those that do not directly threaten their status as client groups." (Trantidis, 2015).

Finally, clientelism can also hinder redistribution. The underlying mechanism is akin to such that when income inequality is high in a society, the poor people find themselves in a situation in which they tend to favor coalition with the elite as opposed to forming a horizontal coalition among themselves. Once the society reaches a level of high income inequality, the incentive levels as well as means of the rich tend to be greater enabling them to protect their interests, leading to persistent and even higher degree of inequality (Pellicer, 2009).

3 Empirical Strategy

To examine the relationship between income inequality and clientelism, this section first addresses the issue of developing an appropriate proxy for clientelism. It then presents the empirical model and the variables used in the regressions. The final part of the section describes the estimation methodology employed in the present paper.

3.1 Measuring Clientelism

To assess the relationship between clientelism and income inequality, it is foremost important to have an appropriate measure of clientelism (summarized in Table 1). Some scholars have employed primary data-based techniques such as experimental, survey based or case based methods to measure clientelism. For example, Wantchekon (2003) used experimental methods (i.e., field experiment) to explore the determinants of the voters' demand for public goods. For this purpose, he divided the sample into three subgroups – one being exposed to clientelist message, another to programmatic message and the third to both types of messages. Stokes (2005) conducted a survey of 1,920 voters in three Argentine provinces to investigate strategic interaction between clientelist parties and voters. The questions that were asked to detect clientelism include questions about receiving help (such as

jobs) from political party in the past and the preference of the household to approach for such help in time of future needs. Weitz-Shapiro (2012) chose a sample of over 120 small and medium-sized Argentine cities as cases and conducted survey on a key informant (which in most cases is the head of the municipal social welfare office) in each of them. Her proxy variable for clientelism is a dummy variable that took the value of 1 if the interviewee claimed the mayoral suggestion was involved in the selection of beneficiaries for the National Food Security Program.

Some other scholars have attempted to measure clientelism from secondary data adopting measures that use "several aggregate quantitative indicators as proxy estimates", such as the size and growth rate of state administration, the ratio of temporary to permanent state employment, or the ratio of spending on personnel to total expenditure (Kopecký & Spirova, 2012). Nannicini, Stella, Tabellini, and Troiano (2013) investigated whether social capital boosts the provision of public goods or clientelistic benefits using the number of proposed bills aimed at a specific area or entity as an indirect proxy for clientelistic activities. Gordin (2002) used the amount of total spending on personnel at both the central government and ministerial levels in a study of several Latin American countries to understand the determinants of clientelism. Arriola (2009) used a different way of measuring the growth of the state administration to proxy for clientelism. His article considered the number of individuals who have cabinet-level status as a proxy for patronage to examine the relationship between patronage and regime stability in 40 African countries. Manow (2002) promoted the idea of using the corruption perception index as a proxy in the countries of Western Europe in an attempt to explain political patronage as he believed that the corruption index actually measured and correlated with aspects of party patronage. Finally, Keefer (2007) identified several aspects of clientelist policies (i.e., underprovision of non-targeted goods, overprovision of targeted transfers and engagement in excessive rent seeking activities) and attempted to measure them using corruption, rule of law, bureaucratic quality, secondary school enrolment, government ownership of newspapers, public investment and the central government wage bill data collected from *International Country Risk Guide*, *World Development Indicators* and *Government Financial Statistics*. Table 1 provides an overview of some of the previous empirical studies on clientelism.

Table 1: Overview of some selected empirical studies on clientelism

Study	Dependent variable	Measurement of clientelism variable	Type of data, empirical approach and country (period)
Gordin (2002)	Political patronage	Ratio of the central government's total spending and the total spending on personnel (i.e., the wage bill)	Panel; time series cross section regression (TSCSREG, SAS version); 6 Latin American countries (1960–1994)
Wantchekon (2003)	Vote for a type of candidate	Dummy variable referring to whether the voter received clientelism-based promises, such as government patronage jobs and local public goods	Cross-sectional; probit; Benin (2001)
Stokes (2005)	Clientelistic response	Dummy variable representing questions such as whether the respondent approached or would approach local political actor for help or job	Cross-sectional; logit; Argentina (2001–2002)
Keefer (2007)	Rent seeking, non-targeted goods, targeted goods	Government wage bill as a fraction of GDP; public investment spending as a fraction of GDP; Corruption indicator	Panel; OLS, fixed effects; 113 countries (1975–2000)
Arriola (2009)	Regime duration	Number of individuals accorded full ministerial rank	Panel; proportional hazards; 40 African countries (1970–2000)
Markussen (2011)	Beneficiary status of household head in a policy program	Partial correlation between membership in the party of the local government leader and allocation of Below Poverty Line (BPL) cards	Cross-sectional survey, OLS, 2SLS; India (2002)
Weitz-Shapiro (2012)	Clientelism	Dummy variable denoting whether the mayor suggested names either in the making of the beneficiary list for national food program or in bringing changes to it	Cross-sectional; logistic; Argentina (2006)
Nannicini et al. (2013)	Political (mis)behavior	Number of targeted bills, i.e., bills that are presented as main sponsor to a specific target, such as a geographical entity	Panel; probit, OLS; Italy (1948–1987, 1994–2001)

Source: Prepared by the authors based on Gordin (2002), Wantchekon (2003), Stokes (2005), Keefer (2007), Arriola (2009), Markussen (2011), Weitz-Shapiro (2012), and Nannicini et al. (2013).

According to Kopecký and Spirova (2012), purely quantitative measures of patron-client relationship can be formulated and utilized rather easily in a variety of contexts and are best for comparative purposes. The challenge or debate, however, still infers that clientelism is a multidimensional concept and it is difficult to include all the dimensions when developing a measure. So far, the proxies proposed by Keefer (2007) have attempted to do justice to this multidimensional nature of clientelism. Criticism, however, still abounds:

> Using corruption as a proxy for clientelism seems to be an acceptable strategy. But there are two problems. First, as shown above, clientelism is a special form of corruption. It is questionable whether corruption indicators in general capture the special variant represented by clientelism. Second, proxies are variables which substitute for other variables that are too complex to be measured easily or directly... Using a rule of law indicator instead is not much better. Is rule of law observable and easily measurable? Does a weak performance in rule of law necessarily have something to do with clientelism? (Muno, 2013)

Indeed, using only corruption as proxy, as is done by Manow (2002), hardly has any merit. Moreover, it does not discriminate between clientelism and corruption and treats them interchangeably. On the other hand, the proxy developed by Keefer (2007) suffers from questionable variables such as school enrolment. Furthermore, it also takes the whole movement of the component variables as an indication of change in clientelist activities. It, therefore, remains important to develop a measure for this purpose that refers to the variable of interest, i.e. "the extent and nature of patronage practices" more appropriately (Kopecký & Spirova, 2012).

Despite these criticisms, corruption, rule of law and bureaucratic quality seem to be valid instruments for proxy development. Patron-client relationships are "... often characterized as a form of corruption that serves individuals' needs while undercutting the process of governance" (Willerton, 1992). There is evidence found in societies such as the Philippines that it is the patrons' efforts to direct the flow of resources to the clients that constitute a major source of corruption throughout the society (Neher, 1985). The broader indication mainly provides support to "... the notion that clientelist governments have a stronger than average preference for targeted infrastructure provision, are more corrupt than average, and underprovide education." (Keefer & Khemani, 2005). Despite criticism of corruption as a valid proxy for clientelism, Muno (2013) himself provided a good reason to keep faith in corruption index as a component of clientelism:

> Variants of clientelism when patrons use their private resources cannot be integrated into the concept of corruption. Nowadays, though, this

> is a rather rare form. The prevailing form of clientelism involves the misuse of public resources, which clearly is an essential characteristic of corruption; therefore, clientelism can be interpreted as form of corruption. The special feature of clientelism, differentiating it from other forms of corruption, is the personal and enduring character, as mentioned above. Additionally, clientelism usually has the form of networks. The term "clientelist corruption networks" seems to be adequate.

In addition to corruption, the clientelist system violates the principle of independence of bureaucracy from political pressure, leading to degradation of the quality of service delivery. Patrons' need of allocating resources to benefit the few usually occurs against the "accepted legal and bureaucratic procedures" (Kurer, 1993, p. 260). In a clientele network, "... officials are often part of a clientele network, and it is ultimately the patron, the politician in power, who makes decisions, at least those of substance" (Kurer, 1993, p. 263). Moreover, in such a system, those policies get promoted which have more potential of producing income and political support for the network (Kurer, 1993, p. 261). Indeed, in its attempt to ensure mass exploitation for the purpose of reproducing elite power, clientelism sabotages the provision of public services (Martin, 2014).

Additionally, although the degree of association may vary, the violation of the rule of law along with crude use of force also constitutes an integral part of the clientelist system. In many cases observed, for example, in Japan, Mexico, Israel, Italy, Malaysia, Taiwan, Russia, and other Former Soviet Republics, clientelist practices were often fortified because of the threat of direct coercion (Trantidis, 2013). It sometimes can take a very subversive form as has been found in the Pakistani district of Sargodha where the patronage of landlord–politicians enables the criminals involved in crimes of various degrees receive immunity from prosecution (Martin, 2014). To understand the true extent of the effect of clientelism on the rule of law, it is important to look beyond such direct ways to consider how clientelist corruption affect rule of law as well: "The targeted allocation of resources to partisan supporters practiced by clientelistic exchange relations often involves a violation of the rule of law, based on universalistic norms enabling market participants to predict the conduct of state agents, and commonly leads to outright corruption" (Kitschelt & Wilkinson, 2007, p. 330).

On the basis of the above discussion, it can be argued that clientelism is one factor that affects all these three elements, i.e., corruption, rule of law and both independence and quality of civil services, at the same time. For example, clientelism facilitates corruption, breaking of the law and degradation of the bureaucratic quality simultaneously when patrons appoint clients in the administration to get assistance in their corrupt activities (Trantidis & Tsagkroni, 2017). Accordingly, this

paper employs factor analysis[1] using principal components to develop a proxy for clientelism from three broad dimensions of governance of the Worldwide Governance Indicators. The dimensions are: 'control of corruption', prevalence of 'rule of law', and 'government effectiveness' (measuring independence and quality of civil services) of the Worldwide Governance Indicators and their values range from approximately -2.5 (weak) to 2.5 (strong) in governance performance (World Bank, 2016c).

3.2 Estimation Model and Data

The determinants of income distribution can broadly be divided into two categories: economic and socio-institutional. While variables such as per capita GDP and trade liberalization belong to the first group, variables such as democracy fall within the second category (Perugini & Martino, 2008). The literature on income inequality is vast and so is the possibility for variable inclusions in inequality equations.

To examine the relationship between income inequality and clientelism, this study therefore includes five such variables to control for other important factors that could also be affecting income inequality based on the works of several researchers (i.e., Gatson & Rajaguru, 2009; Jauch & Watzka, 2016; Minnich, 2003; Neal, 2013; Perugini & Martino, 2008; Roine, Vlachos, & Waldenström, 2009).This results in the estimation of the following equation:

$$\begin{aligned} Inequality_{i,t} = \beta_0 + \beta_1 Clientelism_{i,t} + \beta_2 GovSpend_{i,t} + \beta_3 FinanDev_{i,t} \\ + \beta_4 Openness_{i,t} + \beta_5 GDPpc_{i,t} + \beta_6 Democracy_{i,t} + \varepsilon_{i,t} \end{aligned}$$

where the dependent variable is the GINI index (*Inequality*) and the independent variables are clientelism proxy (*Clientelism*), financial development measured as the share of bank deposits in GDP (*FinanDev*), trade as a percentage of GDP (*Openness*), share of government expenditure in GDP (*GovSpend*), per capita real GDP in purchasing power parity (PPP) (*GDPpc*) and a democracy proxy (*Democracy*). ε is the error term while i and t represents country and time respectively.

The proxy variable for clientelism is expected to have a negative impact on the measure of income inequality. The impact of the control variables, however, can be either positive or negative since both outcomes are consistent with existing theories. For example, a large share of government in national spending can be considered a sign of the government's strong commitment towards reducing income inequality through redistribution (Jauch & Watzka, 2016). However, if such spending is not targeted well, the benefits can be captured disproportionately by the middle and higher income groups (Anderson et al., 2016). Like government spending, the typical expectation for financial development is to diminish income inequality by providing credit constrained individuals better access to capital. It

thus extends economic opportunities to the less wealthy, which no longer are limited by inherited wealth. Moreover, it can help the less wealthy to overcome many types of entry barriers, e.g., buying of licenses (Claessens & Perotti, 2005; Jauch & Watzka, 2016; Roine, Vlachos, & Waldenström, 2009). However, there are certain channels through which financial development and financial sector reforms may worsen inequality situation. First, the wealthy and the politically powerful may keep promoting a regulatory and institutional framework which is heavily skewed in their favour. This naturally limits people living in the lower end of income distribution from reaping any benefits produced by financial development or financial reforms. Second, because of such elite capture, the reformed financial sector can bring out disproportionate rewards to insiders. The experiences of countries like Malaysia and Thailand show that the new system can be designed in a way to stack against newcomers (Claessens & Perotti, 2005).

The effect of openness on income distribution also cannot be predicted beforehand. Openness is generally believed to improve a country's level of income equality and the justification for this position mainly comes from the Stolper-Samuelson theorem. According to the Stolper-Samuelson theorem, trade liberalization increases remuneration to a country's relatively abundant factor. Since developing countries are generally abundant in unskilled labor, trade liberalization would increase the income of the unskilled labours with respect to the wealthy and the skilled labours. However, a positive influence is not guaranteed and many empirical studies have found exactly opposite results. First, although a country can be identified as labour abundant in the global sphere, it can still be a capital abundant country compared to the set of countries within its reference range. In this case, the distributional consequences on income distribution would be opposite than what is predicted by the Stolper-Samuelson theorem due to more benefits accruing to capital (Davis 1996). Second, trade openness involves faster rate of technology transfer, which increases the relative demand and therefore income of the skilled labour. If the transferred technology is neutral in nature, the gains of the skilled labour would be temporary. On the other hand, if it is skill-biased technology transfer, the income of the skilled labour would rise permanently and income distribution would worsen in the same way (Pissarides, 1997). Finally, if trade barriers are imposed to protect the economically weak sectors, their removal could result in greater income inequality (Bahmani-Oskooee, Hegerty, & Wilmeth, 2008).

The effect of increasing national income on income inequality also appears to be extremely unpredictable. Theoretically, rising national income is anticipated to lower the level of income inequality as it means more employment opportunities outside agriculture as well as greater availability of better paying manufacturing jobs (Bahmani-Oskooee, Hegerty, & Wilmeth, 2008). However, higher rent extraction by a small group is also possible after the economy's moving to a specific development level as the group would be better able to utilize their individual abil-

ities and/or inherited wealth at that stage (Jauch & Watzka, 2016). Empirically, Jauch and Watzka (2016) observed income inequality to first show a decreasing trend, and then again an increasing trend after income reaching a certain level, which interestingly contradicts Kuznets' inverted U-shaped hypothesis.

Finally, the impact of improvement in democratic indicators is also mixed in the literature. In general, nondemocratic regimes are typically associated with greater inequality. It is believed that such regimes adopt various policies that benefit the wealthy and powerful few and repress the rest. For example, occupational and residential choices of black Africans were restricted and their wages were suppressed in Apartheid South Africa, which produced undue economic advantage (e.g., by reduction in competition in skilled occupations) for the minority white population. However, democratic system does not invariably bring positive changes in income distribution. First, powerful interests groups can continue to function and flourish within such a system. Second, if there is widespread inequality within a society, democracy can worsen already existing inequality of opportunities in the marketplace. Finally, democracy may lead to the containment of political power and, thereby the opportunity of redistribution, in the hands of the middle class rather than the poor (Acemoglu et al., 2013).

Table 2 defines the variables used, and presents their sources and summary statistics. It should be noted here that due to missing observations on three of the variables (i.e., Inequality, Democracy and Clientelism) during the study period (i.e., 1996-2014), the sample was transformed to achieve a balanced panel. The transformation provided us with the opportunity to use a number of estimation techniques, such as the user-written Stata routine of xtcips. Such transformation of unbalanced panel to balanced panel for estimation purposes is not uncommon (e.g, Deschênes & Greenstone, 2007), and to achieve the balance, the present study applied several techniques. First, case-wise deletion was carried out to remove all panels that have data missing on two or more consecutive data points, which is a standard practice in the literature (e.g., Braunstein & Heintz, 2009). Next linear interpolation was employed to generate the missing values as has been done by others in similar cases (e.g. Fan & Rao, 2008; Ito, 2004; Kato, 2003; Yasar, Nelson, & Rejesus, 2006).

Finally, when there were missing observations for a country in 1996 or in 2014, it was possible to drop either the entire year or the entire panel. In the present study, the year 1996 was dropped instead of deleting the cross-sectional units as it would mean losing a number of countries (i.e., Bolivia, El Salvador, Mexico, Moldova, Panama, Paraguay, Peru and Poland) and thus introducing potential bias in the chosen estimator from sample size falling even below "extreme cases" (Pedroni, 2000, p. 111). On the other hand, since it is also shown in Pedroni (2000) that the bias decreases more rapidly with the growth of the time dimension than with the growth of the cross-sectional units, therefore, the entire panel of Thailand has been dropped for having missing values for 2014 as the trade-off has not been costly compared

to the previous case. Thus the final sample is balanced and covers variables from 14 countries over the period 1997-2014. These countries are Argentina, Bolivia, Brazil, Costa Rica, El Salvador, Georgia, Honduras, Mexico, Moldova, Panama, Paraguay, Peru, Poland, and Uruguay.

Table 2: Variables, definitions, sources, and summary statistics

Variables	Description and Source	Mean	Std. Dev.	Min	Max
Inequality	Gini index (World Bank estimate), from World Development Indicators of the World Bank (2016b); A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.	47.842	7.663	26.83	63
Clientelism	Authors' calculation as described in section 3.1; Higher value represents less clientelist practices	-0.0007	0.992	-1.90	2.079
GovSpend	General government final consumption expenditure (% of GDP), from World Development Indicators of the World Bank (2016b)	14.128	3.625	8.522	25.878
FinanDev	Bank deposits (as % of GDP), from Global Financial Development database of the World Bank (2016a)	36.443	21.240	2.447	104.967
Openness	Trade (% of GDP), from World Development Indicators of the World Bank (2016b)	75.359	34.991	16.439	165.344
GDPpc	GDP per capita, PPP(constant 2011 international$), from World Development Indicators of the World Bank (2016b)	10153.01	5211.871	2268.499	23998.03
Democracy	Voice and accountability dimension – reflecting citizen's perceptions of the extent to which they are able to participate in selecting their government and to exercise freedom of expression and freedom of association – from Worldwide Governance Indicator of the World Bank (2016c) that ranges from approximately -2.5 (weak) to 2.5 (strong) in governance performance	0.225	0.495	-0.653	1.142

Note: Total number of observations is 252 per variable from 14 countries over the period 1997-2014. The number of missing values has been 20 for the Inequality variable, three for the Democracy proxy and three for each of the dimensions from which Clientelism proxy has been calculated

3.3 Estimation Methodology

The first step in the analysis involves testing for unit roots to ascertain whether the continuous variables used in our study are stationary or non-stationary. Panel

unit root tests developed so far broadly fall within two groups: first generation panel unit root tests assuming cross-sectional independence and second generation panel unit root tests allowing for cross-sectional dependence (CD). However, since the cross-sectional independence assumption is limiting in macro time series as it shows significant cross-sectional correlation among the countries in the panel setting (Baltagi, 2005), we employ the Pesaran (2004) and Pesaran (2015)'s CD tests for the examination of cross-section dependence. Since sizable amount of cross country dependence is detected in the CD tests as reported in Table 3, this study uses the second generation cross-sectionally augmented panel unit root test (CIPS test) for the testing of unit roots.

Having established that the variables are I(1) variables, this study next proceeds to test cointegration and employs the standard panel cointegration test of Pedroni (1999, 2004) for the purpose. Pedroni's cointegration test allows for individual-specific fixed effects, time trends and significant heterogeneity across individual panel members with regard to the associated cointegrating vectors (Baltagi, 2005). Additionally, it could compensate for some cross-section dependence arising from disturbances shared across the different members of the panel when a set of common time dummies is included. The test involves seven panel cointegration statistics, four of which are within-dimension-based statistics or panel cointegration statistics while the other three are between-dimension-based statistics or group mean panel cointegration statistics (Pedroni, 1999).

In this study, Pedroni (2000)'s group-mean fully modified OLS (group mean FMOLS) estimator is employed as the primary estimator. A pooling of data enables nonstationary panel methods to better address the limitations posed by small sample (Pedroni, 2000). Moreover, in contrast to other panel FMOLS estimators, size distortions of group mean FMOLS are little in small samples (Harris & Sollis, 2003). However, in long-run hypotheses testing, the estimator pools information regarding only the long-run hypothesis and permits short-run dynamics to be heterogeneous. Pedroni's FMOLS estimator is developed along this theme (Pedroni, 2001). There is also a parametric dynamic OLS (DOLS) estimator possessing the same asymptotic distribution as that of the panel FMOLS estimator and in some Monte Carlo simulations showing less size distortions in small samples than its non-parametric FMOLS counterpart (Pedroni, 2001). Besides, both FMOLS and DOLS have the capacity to handle endogenous regressors (Herzer & Nunnenkamp, 2012). However, as DOLS estimator applies parametric approach of using lags, leads and first-differenced terms to adjust for autocorrelation, it sometimes cannot be used in cases when the sample size is comparatively small and the number of regressors is relatively large, as in the case of present study. And even if it can be hardly used, it produces inconsistent results due to sensitivity of the test to the number of included lags. Therefore, group-mean FMOLS remains the primary choice for this paper. Finally, three additional estimators are employed to

check the consistency in the results. The first estimator to be used for the purpose is a static pooled OLS (POLS) estimator with time dummies, assuming homogenous cointegrating parameters and cross-sectional dependence arising from shared disturbances across countries. The second estimator is Pesaran (2006)'s demeaned mean group (DMG) estimator that although follows previous common disturbances assumption, it nevertheless allows heterogeneity in the cointegrating vectors. The final estimator of mean-group (MG) estimator is again from Pesaran (2006). In this case, the assumptions of both cross-sectional dependence from shared disturbances and common long-run relationships are relaxed.

4 Results and Discussions

The results of the panel unit root tests are presented in Table 3. It can be inferred from the Table that the hypothesis of unit root cannot be rejected when the variables are taken in levels. However, when the first differences are considered, the hypothesis of non-stationarity is rejected at the 1% level of significance. These results indicate that since the variables are at levels, I(1) and at first differences l(0), irrespective of whether a constant and both a constant and trend are included in the equation, they can be treated as trend stationary at first differences.

Table 3: Cross-section dependence and panel unit root tests

Variables	**CD test statistic**		**CIPS statistics**			
	Strong	Weak	Constant		Constant, trend	
	independence	dependence	Levels	First differences	Levels	First differences
Inequality	13.79***	40.384***	-2.079	-4.083***	-2.481	-4.040***
Clientelism	2.21**	-2.204**	-1.511	-3.455***	-2.266	-3.568***
GovSpend	6.28***	39.805***	-1.281	-3.034***	-1.366	-3.312***
FinanDev	9.97***	38.684***	-0.791	-2.589***	-1.425	-3.156***
Openness	15.20***	39.882***	-1.404	-3.597***	-1.992	-3.662***
GDPpc	37.27***	40.178***	-1.580	-3.110***	-2.063	-3.641***
Democracy	0.81	0.144	-1.850	-2.826***	-1.724	-3.003***

Note: Strong independence is tested under the null hypothesis of cross-section independence. On the other hand, the null hypothesis of weak dependence test is that errors are weakly cross-sectionally dependent. In the CIPS tests, the maximum number of lags was set to seven to adjust for autocorrelation following the formula of Hayashi (2000, p. 594). Moreover, the lags criterion decision was based on F joint test proceeding from the general to the specific. The null hypothesis of CIPS test is that all series are nonstationary. In carrying out these test, the present study employed a number of user-written Stata routines: xtcd by Markus Eberhardt, xtcd2 by Jan Ditzen, and xtcips by Maximo Sangiacomo; ***, ** and * denote statistical significance at the 1, 5 and 10 percent level respectively.

The results for the Pedroni's cointegration test statistics are displayed in Table 4. As it reveals, different test statistics appear to provide contradictory results, which often happens for this test (Harris & Sollis, 2003; Lee, 2007; Neal, 2013; Pedroni, 2004). In this case, panel rho-statistic and v-statistic as well as group

rho-statistic fail to reject the null hypothesis of no cointegration. However, most importantly, both panel and group t and ADF statistics reject the null hypothesis. In the case of a small sample such as the one used in this paper, the group estimators suffer less from size distortions than panel estimators (Harris & Sollis, 2003). Additionally, group rho-statistic performs comparatively worse when the time period is less than 100 (Neal, 2013). Thus, group t and ADF statistics are more reliable in small samples. It is also found that panel and group ADF statistics have the best power properties when the sample size is small (McLoughlin & Kinoshita, 2012; Neal, 2013). Taking all these into consideration, it can be said that the cointegration test provides fairly strong support in favor of rejecting the null hypothesis of no cointegration in this study.

Table 4: Pedroni's panel cointegration test

Panel v-statistic	-2.00		
Panel rho-statistic	3.78	Group rho-statistic	4.84
Panel t-statistic (non-parametric)	-8.74***	Group t-statistic (non-parametric)	-10.91***
Panel ADF-statistic (parametric)	-4.96***	Group ADF-statistic (parametric)	-5.44***

Note: The lag length was determined by the Schwarz criterion. The maximum number of lags was set at seven. For Pedroni's cointegration test, trend is also included along with a constant. The test also includes time dummies to subtract out common time effects as suggested by Pedroni (1999). In the test, the null hypothesis is that of no cointegration; *** denotes statistical significance at the 1 percent level.

The estimation results of the long-run cointegrating vectors are presented in Table 5. The group-mean FMOLS results show that only financial development loses its significance for being barely over the 10 percent level of significance among all the variables (its p-value is 0.1004), and except for Openness in the static POLS regression, the results of the FMOLS estimator can be considered fairly robust after considering the sign and significance of the coefficients in the alternative specifications. As can be seen from the group-mean FMOLS results, the proxy for clientelism and the measure of income inequality is negatively associated with each other. That is, when a country is successful in reducing the extent of clientelist practices, it enjoys greater equality in income distribution. Furthermore, government spending also improves income equality. On the other hand, increase in per capita income, improvement in democratic condition, and economic openness are found to give rise to income inequality. It is also noticeable that although the clientelism proxy is developed from several dimensions of governance, its effect on income inequality is found to be opposite to that of the other dimension of governance, i.e. the democracy proxy.

The effects of the control variables are consistent with previous literature. For example, Shen and Yao (2008, p. 2182) found in China that "... elections' positive role in reducing income inequality is not played through more income redistribu-

Table 5: Estimates of the long-run effect on income inequality

Variable	POLS	Group-Mean FMOLS	DMG	MG
Clientelism	-4.435***	-3.189***	-2.462***	-1.867**
	(-5.39)	(-10.877)	(-3.058)	(-2.1)
GovSpend	-0.298**	-0.202***	-0.096	0.065
	(-1.98)	(-6.354)	(-0.468)	(0.2)
FinanDev	0.093***	0.032	0.046	0.068
	(3.90)	(1.643)	(0.608)	(0.74)
Openness	-0.044***	0.011***	-0.002	0.001
	(-2.94)	(5.618)	(-0.043)	(0.03)
GDPpc	0.00001	0.0007***	0.0002	0.0002
	(0.11)	(3.006)	(0.332)	(0.33)
Democracy	4.224**	0.606**	1.510	2.751*
	(2.09)	(-2.323)	(0.481)	(1.75)

Note: For POLS and group-mean FMOLS, t-statistics are in parentheses. For DMG and MG, z-values are in parentheses. All the specifications, except POLS, include both intercept and time trend. Time dummies have been added in POLS and group-mean FMOLS. For group-mean FMOLS estimator, the lag length was determined by the Schwarz criterion, and the maximum number of lags for the barlett kernel was set at three; ***, ** and * denote statistical significance at the 1, 5 and 10 percent level, respectively.

tion, but through more pro-poor public investment." Similarly, after failing to find evidence in favor of democratic theory of redistribution, Pecoraro (2014, p. 401) argued that the inability of empirical studies to find such evidence incapacitates the proposition that "... democracies contain a built-in mechanism to offset rising income inequality through expanding redistributive policies." In the case of financial development, Jauch and Watzka (2016) found a negative effect on income inequality in their panel dataset. Similar negative impact of rising per capita GDP and openness on income inequality was found in Jauch and Watzka (2016) and Bahmani-Oskooee et al. (2008) respectively.

5 Conclusions

This study examined the long-run relationship between income inequality and clientelism in the panel framework of 14 countries over the period from 1997 to 2014. To substantiate the theory that clientelism worsens income inequality, this paper first developed a more appropriate measure of clientelism from several broad dimensions of governance of the Worldwide Governance Indicators. This study then used the newly developed measure with a number of control variables in the empirical models.

The results show that reduction in clientelist activities improves income equality in a country. An increase in government spending also has an important role to play in this regard. Adoption of a fiscal policy that channels adequate resources

to productive sectors and consequently ensures a suitable reassignment of initial endowments can also help in ensuring distributional fairness and thus reduce clientelist practices. Finally, it is more of political commitments than of governance forms or approaches that determine how to deal with distributional unfairness. Thus, the findings of this study have important implications for fiscal management strategies and political regime choice in a society in its attempt to fight against clientelism and income inequality.

The present paper provides a first tentative result to establish the importance of clientelism in determining a country's income distribution. To strengthen the basis of such finding, further research needs to be carried out in the future, especially on bigger panels or longer time series-data of individual countries. Another important extension in this regard could be an assessment of the relationship based on primary survey data.

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Notes

[1]Factor analysis is a data reduction technique that reduces multiple variables into a smaller number of underlying dimensions. It is often used to create indexes from a number of correlated variables (e.g., Hahn, Islam, Nuzhat, Smyth, & Yang, 2018).