Journal of Public Affairs and Development
Vol. 4: 109-142 (2017), ISSN 2718-9228

Decentralization, the Internal Revenue Allotment, and Shared Growth: An Examination of Correlations

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ABSTRACT. This is a macro study on the role of internal revenue allotments in decentralization to help the Philippines achieve shared growth. The research attempted to answer two interrelated development policy questions: 1) has the Philippines achieved shared growth; and 2) does the Internal Revenue Allotment (IRA) have the potential of contributing to shared growth? Patterns of correlation were distilled from available provincial as well as national data on average income, poverty incidence, income distribution, and IRA. Correlation analysis for the second question was supplemented with an analysis of the IRA formula. Results showed that growth in the Philippines has been more of the inclusive than the shared growth type. Moreover, research article tendered arguments against two criticisms of the IRA formula, thereby effectively revealing the potential of the IRA to contribute to shared growth. Recommendations were given for future research on crucial causalities, for example, among IRA, per capita income, population growth through internal migration, as well as the causalities underlying the dynamics among average income, poverty incidence, and income distribution.

Keywords: *inclusive growth, shared growth, internal revenue allotment, decentralization*

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INTRODUCTION

Decentralization has been the intrinsic policy of the Philippine government since the institution of the Local Government Code of 1991 or Republic Act 7160. One important component of decentralization is the internal revenue allotment (IRA), which is a transfer of share in revenues from the central national government to the local government units (LGUs).

While various studies on decentralization have been conducted in the Philippines, review of literature suggests that these were mostly case studies that focused on specific LGUs or government services.

This research sought to provide a macro study on the role of IRA in decentralization to help the Philippines achieve shared growth, which this study defines as growth in income accompanied by improvements in income distribution. It should be noted that the IRA came about because of decentralization. It is the share of LGUs from the national government revenues, as defined by a formula given in Section 284 of the Local Government Code of the Philippines[1]. This study ascertained whether the IRA could be part of an incentive mechanism that affects the behavior of LGU decision-makers, irrespective of whether using the IRA as an incentive mechanism was the intention of the national government or not. The study examined whether the IRA could be considered as a performance-based transfer, where performance is defined as shared growth[2].

Essentially, the paper attempted to answer two questions: "Has the Philippines achieved shared growth," and "Does the IRA have the potential of contributing to shared growth?" These questions were raised in reviewing the country's decentralization policy[3].

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[1]The IRA is such an intrinsic part of the fiscal autonomy of LGUs that even the Supreme Court had to rule against two Presidents, Fidel V. Ramos and Joseph E. Estrada, who ordered the withholding of the allocation of the IRA (Gatmaytan, 2001).

[2]The study is part of an on-going search for mechanisms that could contribute to shared growth. It is based on the premise that there is no single mechanism.

[3]The glaring need to review the LGC has been raised by Dr. Alex B. Brillantes, Jr., one of the resource speakers of the seminar on "Federalism: A Leap of Faith towards Community Development" held on 8 May 2018 at the College of Public Affairs and Development (CPAf), University of the Philippines Los Baños (UPLB) and former Department of the Interior and Local Government Secretary Rafael M. Alunan III as keynote speaker of CPAf's 1st International Conference on Governance and Development held on 20-21 November 2018 at the Acacia Hotel Manila, Alabang, Muntinlupa City, Philippines.

The Philippines is in critical stage of achieving shared growth, the term used by the World Bank in their 1993 East Asian Miracle report to describe the developmental experience of eight highly performing East Asian economies over a period of three decades after the war (The World Bank, 1993). Sadly, the Philippines was not one of the highly performing East Asian economies. Even if the report was updated today, it would still be hard to sell the Philippines as a case of shared growth. Its gross domestic product (GDP) per capita is now nearer to the Indo-China countries than to its cohorts in ASEAN specifically, Thailand, Indonesia, and Malaysia. It is also closer to the younger members of ASEAN than to the older members, indicating that the Philippine growth had been generally slower than its former cohorts Thailand, Indonesia, Malaysia, and Singapore (Table 1).

Table 1. GDP of ASEAN countries estimates as of 2018

COUNTRY	POPULATION IN MILLION	GDP NOMINAL MILLIONS OF USD	GDP NOMINAL PER CAPITA USD	GDP (PPP) MILLIONS OF USD	GDP (PPP) PER CAPITA USD
ASEAN	650.494	2,891,020	4,444	8,555,573	13,155
Indonesia	265.316	1,005,268	3,788	3,495,920	13,176
Thailand	69.182	490,120	7,084	1,323,209	19,126
Malaysia	32.446	347,290	10,703	999,835	30,815
Singapore	5.661	346,621	61,230	556,219	98,255
Philippines	107.018	331,678	3,099	956,030	8,933
Vietnam	94.575	241,434	2,552	707,620	7,482
Myanmar	52.832	71,543	1,354	359,107	6,797
Cambodia	16.253	24,141	1,485	70,265	4,323
Laos	6.777	18,230	2,690	53,912	7,955
Brunei	0.434	14,695	33,824	35,456	81,612

Source: International Monetary Fund (2018)

Table 2 shows the Philippine Gini coefficient compared to other ASEAN countries, which could be considered as the new set of cohorts of the Philippines.

Table 2. Gini coefficients for various East Asian countries

COUNTRY	RANK	DISTRIBUTION OF FAMILY INCOME - GINI INDEX	DATE OF INFORMATION
Philippines	44	44.4	2015 EST.
Cambodia	77	37.9	2008 EST
Laos	86	36.7	2008
Vietnam	98	34.8	2014

Source: Central Intelligence Agency (2018)

Decentralization Studies in the Philippines

Most studies of decentralization in the Philippines were micro studies focused on a specific region and/or a specific government service. One study undertook a regression analysis of survey data of numerous innovations introduced in various cities and municipalities from June 2004 to June 2008 (Capuno, 2011). Another study conducted in 2001-2003 in several selected LGUs in two Philippine provinces found that the knowledge of an index of local government performance had effects on the likelihood of being active in local activities (Capuno & Garcia, 2010). A case on the Mt. Pulag National Park found that decentralization enabled co-management but also rewarded strategic behavior that weakened collaboration (Pinel, 2009). A Metro Manila case study argued that decentralization was influenced by a variety of politically powerful social groups, including civil society organizations, local political families, and international and domestic businesses (Shatkin, 2000). Eaton (2001) showed how legislators in the Philippines attempted to reverse and then circumvent decentralization because it threatened their status as brokers for negotiating fiscal transfers from the central government. A case study in Palawan argued that decentralization may empower when upper-level policies and political networks matched with the concerns of organized institutions at the local level (Dressler, Kull, & Meredith, 2006). A study presented a case of two Philippine cities with different levels of participatory governance but having equally successful pro-poor policies (Ishii, 2007). Another study argued that provincial gubernatorial elections could be an effective mechanism for inducing provincial developmental financing under decentralization (Solon, Fabella, & Capuno, 2009).

A group of studies focused on the aspect of government services. One study investigated the relationship between decentralization and mineral resource conflict in Mindanao (Verbrügge, 2015). There was a study of the differences in human resource management policy arrangements between the central and local government from four case cities (Ishii, Rohitarachoon, & Hossain, 2013). A case in Marikina City studied local government performance (i.e., economic development services, administrative procedures, governance transparency, and social services) in relation to economic concentration with control variables (i.e., regional income, poverty levels, adult literacy, and population density) and confirmed that in three out of four controlled models, a quadratic relationship between economic concentration and government performance existed (Von Lubke, 2012). Davao City study focused on the decentralization of diabetes care (Pilleron et al., 2014). Case studies of the Pasig Green City Program and the Land and Housing Program in Las Piñas City in Metro Manila concluded that decentralization promoted democratization while strengthening 'selectively' traditional political élites and allied power bases in civil society and the business sector (Porio, 2012). One study revealed how decentralization has weakened local commitment to priority health issues and decreased the efficiency and effectiveness of service delivery (Lakshminarayanan, 2003). A case study in Tarlac argued that the province is well poised to take advantage of decentralization with its entrepreneurial leaders (Gomez & Buenaventura, 2012). Furtado (2001) "looked at how efforts to decentralize key social services had been detrimental to the delivery of health care in three moderately poor to very poor municipalities." A case study on two cities, Cebu and Leyte, argued how "the emergence of different elite structures resulted in different path-dependent patterns of economic specialization" (Lange, 2010). Pulhin (2009) showed a paradoxical recentralization in the community-based forest management of Mindanao. These past researches showed the generally mixed results of decentralization studies.

Two studies on the IRA using a wide set of LGUs were reviewed. Manasan (2007) identified and discussed four issues: vertical imbalances leading to the inadequacy of the IRA to fund the devolved expenditure functions; lack of an equalizing feature because some LGUs have positive net transfers while others have negative (horizontal gap); lack of incentive to generate LGU taxes; and poor predictability of IRA making LGU planning very difficult (Manasan, 2007). Another study confirmed the possibility of a negative effect of the IRA on the LGUs, and that the IRA may have exacerbated the horizontal gap (Diana, 2008). In studying the relation between per capita and average family income,

the study also found a counter-equalizing effect across provinces: "IRA somehow increased the level of economic development of provinces during those years" (2002 -2005), where development was measured in the rise in taxable assessed value of properties. A third study on the IRA by Uchimura and Suzuki (2009) clarified the interlinkages among the four IRA issues cited by Manasan (2007), using the fiscal capacity of the LGUs. Unlike Manasan (2007) and this study, however, Uchimura and Suzuki (2009) focused on the differences in fiscal capacity among different types of LGUs, instead of comparing different provinces.

These studies on IRA cited previously proposed a reconsideration of the IRA formula. This paper, therefore, examined this proposal, particularly the issues of horizontal gap and tax generation[4] in the context of a macro evaluation of decentralization and shared growth by looking at the current IRA formula. However, recommendation to change the IRA formula is left for future work where causalities will be examined.

Other studies on the IRA were considered to cast in sharper relief the focus of this current study. Uchimura and Suzuki (2009) clarified the interlinkages among the four IRA issues cited by Manasan (2007) using the fiscal capacity of the LGUs. Unlike Manasan (2007) and the current study, however, Uchimura and Suzuki (2009) focused on the differences in fiscal capacity among different types of LGUs instead of comparing different provinces. Canare (2016) looked at the relationship between IRA and LGU expenditure albeit at a city level. This current study focused on taxes in the provincial level. Martinez-Vazquez and Liu (2011) proposed a formula on the proposed 10-percent addition to the current IRA: the Local Government Enhancement Fund. The disbursement of this fund will depend ex-ante on the fiscal capacity, and ex-post on certain performance indicators. This current study focused on the existing IRA formula. In a project report commissioned by the Population Commission, Florano (2013) recommended further study on the role of IRA with respect to population and development, while reporting that there is disagreement on the need to changing the population weight in the IRA formula. This current study provides an assessment of the importance of population in the IRA formula.

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[4]The Japan International Cooperation Agency (2009) also proposed several ways of redefining the IRA formula addressing both vertical and horizontal concerns.

Conceptual Framework

Decentralization, theoretically, can contribute to shared growth. It brings stronger incentives to grow at the local level because the effect of major policy decisions materialize right at one's backyard. With decentralization, local decision makers also have access to more local information, which ordinarily might be lost at the national level decision making. Such incentive and information can contribute to better policies and, hence, higher level of local development, which ordinarily translates to higher local income. Moreover, such income growth, by definition, occurs at points outside of traditional growth centers, when local decision-makers are also more sensitive to inequalities in income distribution among their constituents. This results in better income distribution among LGUs as well as within LGUs.

The two questions addressed by this paper are, therefore, interrelated. A negative answer to the first one indicates that decentralization has not achieved its full potential of contributing to shared growth. In which case, a review of an important component of decentralization, the IRA, would be necessary. Moreover, any evaluation of the IRA (the second question of this study) should be based on clear criteria, which in this study is shared growth (hence, the first question of this study). Clear criteria is needed prior to the evaluation. Answering the first question contributes to this clarification. In the next discussions, major criticisms of the IRA tend to be inconsistent with their criteria.

The distinction made between shared growth and inclusive growth was based on this author's question to the panel of ADB economists in the 14th Annual Global Development Conference held at the ADB Headquarters in Manila on June 2013 on "how different is the newer and current policy thrust of inclusive growth from the older (circa early 1990s) concept of shared growth?" The answer given was "shared growth referred to the equality of outcomes (e.g., income, wealth) while inclusive growth referred to the equality of opportunities."

The reply confirmed this author's suspicions that the two concepts of growth, while at first glance may appear similar, are in fact different. The definition of shared growth was consistent with that given in the East Asian Miracle report of The World Bank, which stressed growth accompanied by improvements in income distribution. The definition of inclusive growth would be the logically appropriate alternate. This is consistent with the Philippine government's thrust of growing the economy while reducing poverty.

METHODOLOGY

This study serves as a prelude to a more in-depth analysis of the IRA toward a macro evaluation of decentralization and shared growth. For this purpose, the analysis was limited to correlation to identify patterns that could propose answers to the two basic questions posed. Admittedly, the answers would not, at this juncture, be able to support any policy recommendation with regards to the IRA formula itself, but these answers would be very helpful in distilling patterns usable in an examination of causalities in future research, from which policy recommendations will be extracted. Sound policy recommendations are based on properly established causalities between proposed policy interventions and outcomes. Correlation is a necessary, but insufficient condition for establishing causality. Although limited, this study is an unavoidable first step in reaching sound policy recommendations. As such, this study could be considered more as inductive rather than deductive in approach. The focus, therefore, is more on theory creation or explanation rather than in theory testing or prediction.

Given this, the interest in this study is not to establish causality but to basically assess the strength of relationships, and correlation analysis is deemed here as an appropriate tool for analysis. The ability of this tool to identify statistically significant correlations from an ex-post perspective also makes it an appropriate tool.

Multivariate regression would be the main methodology of future research involving an analysis of causality. Such analysis is expected to go beyond simply including all possible explanatory variables. It will require the formulation of a theoretical framework that identifies possible instrumental variables. An inductive analysis such as the one carried out in this study is indispensable to the future analysis of causality.

Regression of y on x and controlling for an additional variable set z does not necessarily mean x causes y even with good statistical results because a proper screening of z is necessary to establish causality. A more nuanced regression analysis is generally required to establish causality, such as Propensity Score Matching, Regression Discontinuity Design, Difference-in-Differences, and Instrumental Variables[5].

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[5]*For example, see Brewer and McEwan (2010) and de Janvry and Sadoulet (2015)*

To answer the first question of this study on the achievement of shared growth in the country, correlation patterns, based on Pearson product-moment correlation coefficient, of available macro performance indicators on income per unit, poverty incidence, and income distribution on both national and provincial levels were looked into. Due to difficulties in acquiring the necessary data, the database of Kurita and Kurosaki (2011) was used to discern the patterns in the performance metrics. The database covered the years 1985, 1988, 1991, 1994, 1997, 2000, and 2003. These years were common to all of the 77 provinces covered in this study. The database included data on per capita household income, Gini coefficient, and poverty incidence for 77 provinces, which are all considered as acceptable measures for average income, income distribution, and poverty headcount, respectively.

For a broad coverage, four per unit income variables were selected: household expenditure (HHEXP); per capita expenditure (PCEXP); household income (HHINC); and per capita income (PCINC). For poverty incidence, the poverty gap index or the Foster-Greer-Thorbecke index of degree zero (FGT0) was used, which is defined as the ratio of the number of people living below the poverty line to the total population. Two measures of the Gini coefficient were also used: one based on household income (HI_GINI), and another on household expenditures (HE_GINI).

Table 3 tabulates the indicators of shared and inclusive growth. The four income indicators were used to measure growth, as higher income over time or province, for both shared and inclusive growth. Sharing in shared growth was measured by the two Gini coefficients, while inclusivity in inclusive growth was measured by the poverty gap index.

For the second question, correlation patterns in available data on IRA and poverty incidence on a provincial level were looked at. Having no provincial IRA and related data, the Kurita and Kurosaki database used in discerning the patterns of correlation analysis in the performance metrics could not be used for discerning the patterns of correlation between IRA and performance metrics. Instead, the countryside in figures database of the Philippine Statistics Authority for the IRA-Performance Metrics patterns of correlation was used. Data availability would vary from one statistic to another, but eventually the annual data from 2004 to 2012 for 78 provinces were considered. The resulting patterns were observed.

Table 3. Indicators for shared and inclusive growth

	SHARED GROWTH	INCLUSIVE GROWTH
Growth	Household expenditure (HHEXP) Per capita expenditure (PCEXP) Household income (HHINC) Per capita income (PCINC)	Household expenditure (HHEXP) Per capita expenditure (PCEXP) Household income (HHINC) Per capita income (PCINC)
Sharing/ Inclusivity	Gini coefficient based on household income (HI_GINI) Gini coefficient based on household expenditures (HE_GINI)	Poverty gap index (a.k.a. Foster-Greer-Thorbecke index of degree zero)

Source: Central Intelligence Agency (2018)

Analysis was augmented with an assessment of two criticisms of the IRA formula, that it: tends to widen the income gap between provinces (Criticism 1); and tends to increase dependency of provinces on the IRA as a source of revenue (Criticism 2).

Both criticisms of the IRA formula essentially reject the hypothesis that the IRA formula could contribute to shared growth. Criticism 1 states that there is no sharing of growth among the provinces, while Criticism 2 implies that the growing dependency on the central government effectively reduces incentives of the LGU for self-improvement.

Both criticisms appear to have inconsistent criteria. Criticism 1 uses the yardstick of equity, while Criticism 2 uses efficiency. Criticism 2 laments the possible lack of self-improvement efforts on the part of the provinces, but Criticism 1 is wary of self-improving growth that leads to the possible widening of the gap among the provinces.

The research strategy was to assess the validity of these two criticisms. If such validity is found questionable, a case could be made for the opposite assertion that the IRA formula could contribute to shared growth. Casting doubt on the validity of Criticism 1 would imply validity of the opposite assertion that the IRA contributes to the sharing of growth among provinces. Casting doubt on the validity of Criticism 2 would imply validity of the opposite assertion that the IRA provides incentives for LGUs to actively promote their growth.

Representatives of the provincial heads of Laguna and Benguet were consulted. Since IRA is viewed as an incentive mechanism that could aid or obstruct decentralization, the exploratory analysis will indicate the correlations of IRA with the different measures of shared growth. Based on this indication, the author could tentatively consider any province, such as Laguna, as to whether the IRA could be associated with shared growth. This indication could then be cross-checked with the provincial leaders of Laguna.

Laguna was chosen due to its proximity to UPLB and budgetary constraints. Benguet was chosen as the other province, based on the pattern of correlation observed for provinces (Appendix 3).

RESULTS AND DISCUSSION

Has the Philippines achieved shared growth?

Using pooled and annual data, this study scrutinized the correlation of the provincial performance metrics for average income, poverty incidence, and income distribution; and found patterns (1, 2, and 3) in support of an inclusive type of growth vis-à-vis shared growth. Looking at the correlation of IRA and performance metrics (average income and poverty incidence), a positive correlation was found between IRA and average income (Pattern #4), but no significant correlation between IRA and poverty incidence (Pattern #5).

Patterns of Correlation in Provincial Performance Metrics

Pooled Data. The pooled data basically ignored differences across years and provinces, hence providing one long series of data for each variable. From Appendix 4a, the following patterns were observed in the performance indicators.

Pattern 1: No significant correlation between the levels of average income and the Gini coefficient. The absence of correlation was robust across the different definitions of average income and of Gini coefficient. It implies that higher levels of average income were associated with no significant changes in income distribution.

Pattern 2: A significantly negative correlation between the levels of average income and poverty incidence. This correlation was robust across the different definitions of average income. It implies that higher levels of average income were associated with significant reductions in poverty incidence.

Pattern 3: There was a weak positive to no correlation between levels of poverty incidence and the Gini coefficient. Poverty incidence had a positive correlation with the Gini coefficient based on household income, at 10 percent level of significance, but none between poverty incidence and the Gini coefficient based on household expenditure.

Data by Year. Except for 1997 and 2000 during the Ramos Administration, the correlation matrices for individual years with data (1985, 1988, 1991, 1994, and 2003) corroborated the patterns found in the pooled data. Appendix 4b shows that the average income indicators had a significant negative correlation with poverty incidence and the Gini coefficients for 1997. Similar patterns were indicated for 2000 as shown in Appendix 4c.

Patterns of Correlation Between IRA and Performance Metrics

Pattern 4: There was a significant positive correlation between IRA per capita and average annual family income. The coefficient of correlation between IRA per capita and the average annual family income was 0.22598699. For which, the computed t-statistic was 2.803127193. The two-tailed t-test yielded 0.005749055547, indicating that the coefficient of correlation was statistically significant at the 1-percent level. A total of 148 observations across years and provinces were used in the above computations.

Pattern 5: There was no significant correlation between the IRA per capita and poverty incidence. The coefficient of correlation between IRA per capita and the poverty incidence was -0.002133762042. For which, the computed t-statistic was -0.02595839469. The two-tailed t-test yielded 0.9793254916, indicating that the coefficient of correlation was not statistically significant even at the 10-percent level. A total of 150 observations across years and provinces were used in the above computations.

Patterns of Correlation in National Performance Metrics

To place the above provincial correlations to the national context, the correlation among the national performance metrics was also investigated: Gini coefficient (Gini); poverty incidence (PI); and real GDP per capita (RGDPPC). However, due to limited data, the correlations of IRA with the performance metrics were not investigated. As for the correlations among the national performance metrics, the study was limited to the following years, where data were available: 1985, 1988, 1991, 1994, 1997, 2000, 2003, 2006, 2009, 2012, and 2015.

The correlation matrix analysis in Appendix 4d essentially corroborated the findings at the provincial level. There was no significant correlation between real per capita GDP and the Gini coefficient while a significant negative correlation resulted between real per capita income and the poverty incidence.

Does IRA have the potential of contributing to shared growth?

Overall, Patterns 1 and 2 suggested that growth of per capita income was more of the inclusive type rather than the shared type. In short, provincial performance was more inclusive growth than shared growth. This type of growth was associated more with a reduction in poverty incidence but with no significant change in income distribution. The correlations for national performance metrics appeared to support Patterns 1 and 2, albeit on a real-basis only.

A reduction in poverty incidence is theoretically compatible with no change in the Gini coefficient. There could be fewer people in poverty with no improvement in the distribution of income. Theoretically, one way that this could happen is when the income of the upper income percentiles grow faster than that of the lower income percentiles. The correlation matrix analysis for the performance indicators revealed no significant correlation between poverty incidence and the Gini coefficient indicators.

The following section discusses the above correlation results in relation to the two criticisms of the IRA formula after presenting the definition of the current IRA formula.

Definition of IRA Formula

Figure 1 is a flowchart of the current IRA Formula. The IRA is 40 percent of the gross internal revenue of the national government on the third preceding fiscal year. This amount is vertically distributed among the LGUs as follows: 23 percent to provinces, 23 percent to cities, 34 percent to municipalities, and 20 percent to *barangays*. The amount each type of LGU has received is horizontally distributed among its components generally based on population, land area, and equal sharing. For provinces, cities, and municipalities:

1. 50 percent of the total amount allocated to their LGU type will be allocated to each of their respective components in proportion to their population;
2. 25 percent of the total amount allocated to their LGU type will be allocated to each of their respective components in proportion to their land area; and
3. the remaining 25 percent of the total amount allocated to their LGU type will be shared equally among their respective components.

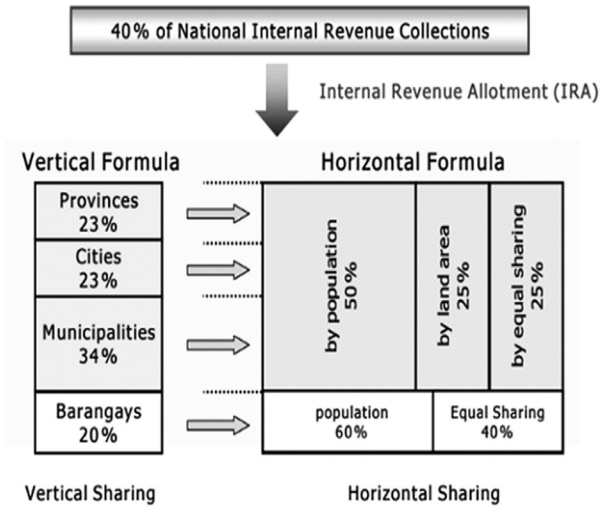

Figure 1. IRA Definition
(Adapted from JICA, 2009)

The horizontal distribution among *barangays* is based only on population and equal sharing:

1. 60 percent of the total amount allocated to *barangays* will be allocated to each *barangay i*n proportion to its population; and
2. 40 percent of the total amount allocated to *barangays* will be shared equally among all *barangays*.

It could be noted, for all LGU types, population gets the biggest weight in the horizontal distribution.

Criticism 1 of the IRA Formula

The IRA is not horizontally equitable. This is based on the observation that IRA is correlated with income per capita. This observation is taken to imply that the IRA contributes to the widening of the gap among the provinces. Such a criticism was aired by Manasan (2007), p. 4:

> *"At the same time, when all LGUs are aggregated at the provincial level, their combined per capita IRA is found to be positively related to per capita household income in 1995–1999, suggesting that the IRA distribution formula has been counter-equalizing with respect to the fiscal capacities of LGUs."*

Criticism 1 is essentially founded on the observation that there is a positive correlation between IRA per capita and income per capita. It was confirmed that a similar correlation is present in the positive correlation between IRA per capita and average annual family income, on a provincial level.

This criticism has a problem and it seems to assume causality between the two variables. However, correlation does not necessarily establish causality. Correlation results do not distinguish between which variable is the cause and which is the effect. Neither does regression, bivariate or multivariate[6]. Manasan (2007) was not clear as to how the correlation gave light to these limitations of the regression analysis. Moreover, it is not obvious which kind of causality was being assumed.

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[6]*Regression of y on x does not necessarily mean x causes y even though the regression results are significant, since regressing x on y will yield similarly significant regression results. Regression of y on x and controlling for an additional variable set z does not necessarily mean x causes y even with good statistical results, since a proper screening of z is necessary to establish causality (see De Janvry and Sadoulet (2015) , for example).*

There are at least two relevant causalities:
Causality 1: higher IRA per capita causes higher income per capita
Causality 2: higher income per capita causes higher IRA per capita

Given the negative tone of the Criticism 1, it could be inferred that Causality 1 is being assumed, since it is compatible with the "rich-are-getting-richer" tone of the criticism. Causality 2 gives a more positive nuance, since it would imply that IRA allocation promotes income per capita growth. In fact, Causality 2 is compatible with a performance-based allocation of IRA, wherein higher income per capita is rewarded with higher IRA per capita.

Though establishing causality is not within the scope of this study, IRA formula can be examined to elaborate on the above causalities. Based on an inspection of the IRA formula, there are at least two possibilities where the positive correlation between income per capita and IRA per capita could occur.

Possiblity 1 (Appendix 1):

1. IRA per capita would be negatively correlated with population through the IRA formula.
2. Population would be negatively correlated with income per capita, assuming a production function with population and land as inputs to production.

These two parts of Possibility 1 are illustrated in Figure 2 below:

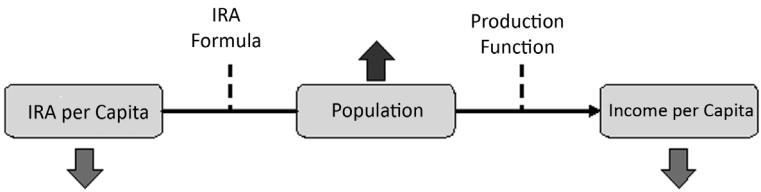

Figure 2. Possibility 1 where positive correlation between income per capita and IRA per capita could occur

An increase in population is associated with a decrease in both IRA per capita via the IRA formula, and income per capita via the production function. The arrowhead between population and income per capita indicates population causes income per capita, under the assumption that population is an input to production. The line between

IRA per capita and population does not have an arrowhead indicating no causality. This follows from the accounting identity underlying the relationship between IRA per capita and population.

Possibility 2 (Appendix 2):

1. IRA would be positively correlated with population through the IRA formula.
2. Population would be positively correlated with higher income through dynamics of an inter-province migration. Treating income per capita as a proxy for wage, a province with a higher income per capita induces immigration.

The two parts of Possibility 2 are illustrated in Figure 3 below.

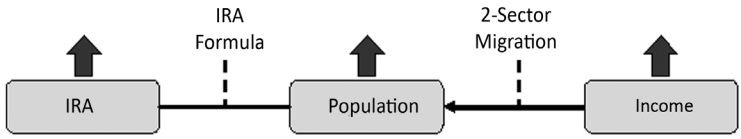

Figure 3. Possibility 2 where positive correlation between income per capita and IRA per capita could occur

An increase in population is associated with an increase in IRA, via the IRA formula; and income, via the two-sector migration hypothesis. The arrowhead between population and income indicates that income causes population increase, as implied by an inter-province migration driven by higher income at the destination province.

While the two possibilities support the income-IRA positive correlation, it is Possibility 2 that is more compatible with a performance-based IRA allocation. The causality implied between population and income in Possiblity 2 is very similar to Causality 2, wherein higher income per capita causes higher IRA per capita.

Some evidence that weakened the case for the existence of a Causality 1 was found. There were indications of unconditional beta-convergence in the average annual family income of the provinces, through an OLS estimation of the following relationship:

%GR = ALPHA + BETA ∗TZERO

where:
%GR is the average growth rate of average annual family income (in pesos), over the period 2006 - 2012
ALPHA is a constant
BETA is the measure for beta convergence
TZERO is the average annual family income (in pesos) in the initial year in the period being studied, in this case 2006.

The following OLS estimates were obtained:

Table A4.5. Unconditional Beta convergence estimates (n=75)

MODEL	B	STD ERROR	t	SIG.
Alpha	0.30671647652	0.1008644329	3.040878412	0.00
Beta	-0.00000284022	0.00000068637	-4.138040881	0

The significantly negative sign of the beta estimate indicated unconditional beta convergence, wherein poorer provinces were growing faster than richer provinces, hence, suggesting convergence of average annual income per family among the provinces, as the poorer provinces drew nearer to the richer ones. As to whether this convergence was attributable or not to the IRA allocation, however, is beyond the scope of this study.

Criticism 2 of the IRA Formula

IRA weakens efforts of LGUs to generate their own revenues. This was also observed from the increasing dependence on IRA by the LGUs.

Manasan (2007, p.5) raised this criticism:
"While intergovernmental transfers had a neutral effect on local revenue performance in 1985 (prior to the [Local Government] Code), there is some evidence that the IRA tended to substitute for local tax revenues of provinces and cities in the post-Code period (1992–2000). The analysis suggests that LGUs which received higher IRA (whether in absolute terms or relative to their expenditure responsibilities) tended to be lax in their tax effort. Thus, the need to alter the IRA distribution formula emerges to provide incentives for local tax effort."

Criticism 2 is largely based on the observation that LGUs have growing dependence on IRA as a source of revenue for expenditures. This criticism, however, borders on being misleading given the observed positive correlation between IRA and BIR provincial collections. This type of correlation was found from a correlation analysis of the two variables.

The coefficient of correlation between IRA and the BIR provincial was 0.9637379471. For which, the computed t-statistic was 46.1089043. The two-tailed t-test yielded 0.000000000, indicating that the coefficient of correlation was statistically significant at 1 percent level. A total of 165 observations across years and provinces were used in the above computations. In fact, Capuno (2001) found BIR collection to be elastic.

Referring again to the IRA formula, a plausible explanation was readily found for the positive correlation between IRA and BIR collection. An increase in population was accompanied by an increase in IRA allocation, based on the IRA formula. An increase in population could also be associated with an increase in BIR collections, due to an increase in the tax paying base. Both led to a positive correlation between IRA and BIR collection, due to changes in population.

Evaluation of IRA Formula Criticisms

The arguments presented are stacked against Criticism 1 and Criticism 2. A recent study (Balisacan, 2016) basically reached similar conclusions.

In sum, based on all the statistical tests performed in this study, the evidence appears to be in favor of the "stimulative effect", rather than the "substitutive effect" hypothesis. It also appears that there is a statistically significant positive correlation between IRA and local income, such that an increase in IRA can be correlated with or associated to an increase in an LGU's locally-generated income (Balisacan, 2016).

The failure of the correlation analysis to support Criticism 1 and Criticism 2 of the IRA formula led to the surprising but interesting conclusion that the IRA formula may be performance-based in terms of promoting growth of average annual family income and BIR collection, on a provincial level.

This conclusion is very remarkable considering that the IRA formula was not really meant to be performance-based. On the contrary, the IRA formula was primarily meant to support the devolution of government functions. The emphasis was more toward dividing the internal revenues as equally as possible among the LGUs. Anticipating, however, that implementation of devolved functions would be more difficult for LGUs with larger populations or land areas, the IRA formula explicitly included adjustments for these factors. It was quite unexpected then that the IRA appeared to be performance-based.

The crucial element in this startling conclusion appears to be the population. Below is the discussion on how population theoretically contributes to this conclusion.

Related to Criticism 1, population served as a mechanism for people to "vote with their feet" (Tiebout, 1956). People migrate toward provinces, which have higher average annual family income. Mobility of Filipinos is an important principle that promotes decentralization in the Philippines. It provides an incentive for the governance of LGUs to formulate and implement policies that would improve family incomes. The inability to do so risks emigration of a province's constituents.

Referring to Criticism 2, population served as a mechanism for people to "vote with their pockets" through their taxes. This complemented the incentives for good governance arising from the voting-with-feet. This is particularly true in the case of local taxes, which are directly under the control of LGUs.

Benchmarking with the SGLG

The Seal of Good Local Governance (SGLG) discussion was included to add more depth to the preceding scrutiny on IRA, as well as to the key informant interviews.

Although much appreciated, the IRA was considered by both Laguna and Benguet cases as not being performance-based, and as such does little to really motivate developmental efforts in their provinces. This stems from the IRA formula itself which is not directly related to development efforts of the LGUs.

Laguna shared that the Supreme Court recently ruled the inclusion of customs collections in the internal revenue amount that is used to compute the 40 percent that forms the basic source of the IRA. Implementation of the ruling, however, is a different issue and will depend on the government's financial situation.

Benguet, on the other hand, looks keener on adjusting the land area and population components of the IRA formula. It raised the issue of discrepancies in the estimation of provincial population by the Philippine Statistics Authority, which forms the basis for the IRA computation and the BMPS estimates. The latter estimate was claimed to be larger. Benguet also pointed to the issue of including the disputed areas of the province in computing the IRA.

Laguna mentioned that to be fairer, the IRA should be based on a formula that is primarily determined by the LGUs. Benguet province bemoaned that the projects funded by the IRA lacked flexibility in terms of really addressing the developmental needs of the LGU. Laguna also proposed an SGLG-augmented IRA formula, wherein the LGUs that were awarded the SGLG would get a significantly larger IRA.

Both cases assessed the SGLG as generally fair but tended to come across as discretionary since the criteria seems to be changing. It started out as a 3+1 scheme, then became 4+1. Now, it is awarded to provinces if all the seven criteria are satisfied, and at least 10 percent of its municipalities are SGLG awardees. According to a DILG representative, the continuous raising of the bar was intentional to push the upgrading of LGU governance and enhance the motivational effects of the SGLG. Lesser number of awardees tended to increase the monetary incentive for the award.

Laguna placed more emphasis in the reduction of poverty incidence in line with the national thrust toward inclusive growth. Interestingly, Benguet gave more emphasis on reduction of the Gini coefficient. Improvement of the distribution of income was considered to contribute more to the entrepreneurial drive of the LGU.

CONCLUSIONS

Based on the statistical patterns, this study established that: 1) growth of per capita income in the provinces has been more of the inclusive rather than the shared variety; and 2) the IRA could potentially contribute to shared growth. Higher levels of per capita income was accompanied by reductions in poverty incidence with no significant change in the gap between the rich and the poor. Counter arguments to two major criticisms of the IRA were formulated.

The correlation analysis unearthed one surprising result. Unlike the SGLG, the IRA appeared at first glance as a government transfer device that was not performance-based. Interviews with the two LGUs generally confirmed this observation. The patterns of correlation, however, appeared to suggest a different story, wherein the IRA may be a potent force for development-driven decentralization through the principles of "voting with feet" and "voting with pockets". Though LGUs are not fully aware, this possibility indicates the potential of using the IRA more effectively for local development. On a national level, policy should provide maximum mobility of people to allow them most fully to exercise their right to "vote with their feet", as well as to ensure that the positive correlation between population, internal revenue collections, and IRA remains strongly positive.

The said two principles or rights should greatly contribute to the ability of decentralization to promote shared growth. Provincial LGUs are spurred to exert genuine efforts to develop. Doing otherwise would set off a chain of out-migration and reduced internal revenue collections that would eventually lead to getting lower IRA. However, development efforts should be keen in avoiding congestion that diminishes the efficiency gains. Perhaps even more important is that LGUs need to be more aware of such dynamics.

The previous analysis has been very useful in pointing out a few interesting causalities, which would be the subject of the next phase of this research. One is the causality between income per capita and the IRA, which is crucial in correctly assessing the IRA formula. Another is the causality between income per capita and in-migration leading to an increase in provincial population. Lastly, the causality among the three performance indicators, i.e., per capita income, poverty incidence, and income distribution, would be interesting to discern in order to understand the dynamics of these performance indicators. Inclusive

growth should be complemented with shared growth if the fight against poverty is to be sustainable.

Apart from pre-set assemblies, there are many other institutional settings in which these mayors have opportunities for various forms of interaction. Such occasions can serve as venues for activities, workshops, and other programs designed to educate mayors about the advantages of networking with peers and about the skills and approaches that help create strategic ties. Networks that can arise from these efforts are ones strategically formed for smoother exchange of information regarding current policy issues and initiatives as well as regional and national policy agenda.

RECOMMENDATIONS

Nearly three decades have passed since the institution of the Local Government Code, with the IRA as one of its major enabling components. The re-evaluation of the country's decentralization and IRA are long overdue. The criticisms of the IRA formula covered in this study contribute to such re-evaluation but suffer from the application of inconsistent criteria. The two criticisms combined appear to favor provincial level growth but frown on increasing inequity among provinces and worry about tax collection that ultimately moves up with the economic growth.

One recommendation that emerges from this study is to be clear on the criteria when evaluating the IRA. Reforms based on the IRA criticisms with inconsistently applied criteria would have inadvertently sterilized an effective mechanism that could contribute to the achievement of growth that the country badly needs.

Another recommendation is to use shared growth as criteria of assessment of the IRA and the bigger program of decentralization. There are at least two reasons for doing so. One is the close association between decentralization and shared growth, as discussed in this study. Indeed, decentralization could be considered as an overarching principle for shared growth. Another is that, one of the major causes of poverty in the Philippines is the "high and persistent levels of inequality (income and assets), which dampen the positive impacts of economic expansion" (Asian Development Bank, 2015, p. 2).

Even with the application of clear criteria, a re-evaluation of the IRA must also give light on the causal links among the relevant variables, such as that between the IRA and average income of provinces. This inductive study has suggested directions which will be pursued in future deductive research.

ACKNOWLEDGMENT

The author is indebted to the University of the Philippines Los Baños for the Basic Research Grant in conducting the study for this paper. The author is also grateful to Professors Amelia L. Bello and Julieta A. De Los Reyes of the College of Economics and Management of UPLB; Alberto Javier Iniguez-Montiel of the Graduate School of Economics, University of Tokyo for assisting the author in accessing the database of Kurita and Kurosaki (2011); and the author's research grant mentor, Professor Josefina T. Dizon, for the insightful comments on a previous draft. Any remaining errors are truly the author's.

APPENDICES

Appendix 1: Proof of POSSIBILITY 1

Part 1. Based on its qualitative definition, the IRA per province for a certain year "t" would be expressed by the following formula:

$$IRA_i = 0.23 * 0.40 * IR_{t-3}\left(0.50\frac{POP_i}{POP_T} + 0.25\frac{A_i}{A_T} + 0.25\frac{1}{N}\right)$$

where:
IRA_i : IRA for province "i"
IR_{t-3} : (gross) internal revenue of the national government in three fiscal years ago
POP_i : population of province "i" in year "t"
POP_T : total population for all the provinces in year "t"
A_i : land area of province "i"
A_T : total land area of all the provinces in year "t"
N : total number of provinces in year "t"

Assuming that the number of provinces is more or less stable, this formula can be simplified as follows:

$$IRA_i = k_1 \frac{POP_i}{POP_T} + A_i k_2 + k_3$$

where:
k_1, k_2, k_3 : constants

From this, the IRA per capita for each province is:

$$\frac{IRA_i}{POP_i} = \frac{k_1}{POP_T} + \frac{A_i k_2}{POP_i} + \frac{k_3}{POP_i}$$

This proves the first part of Possibility 1, which states that IRA per capita would be negatively correlated with population through the IRA formula.

Part 2. Assuming a standard Cobb-Douglas production function, which includes land and population as inputs to production, Output can be expressed as follows:

$$Q_i = k_4 A_i^{\alpha} POP_i^{\beta}$$

where:
Q_i : output of province "i"
k_1, α, β : constants, and all other variables as defined before

Without loss of generality, α and β are assumed to be less than one. Moreover, at equilibrium, output is equal to income.

Hence, income per capita for province i could be expressed as:

$$\frac{Q_i}{POP_i} = k_4 A_i^{\alpha} POP_i^{\beta - 1}$$

This proves the second part of Possibility 1 which states that population would be negatively correlated with income per capita, assuming a production function with population and land as inputs.

Appendix 2: Proof of Possibility 2

Part 1. From the proof of POSSIBILITY 1, it was found that

$$IRA_i = k_1 \frac{POP_i}{POP_T} + A_i k_2 + k_3$$

The sign of the partial derivative of the provincial IRA with respect to the population of province "$_i$" is the same as that of $\frac{POP_{T-i}}{{POP_T}^2} > 0$ for any population of province "$_i$".

This proves the first part of Possibility 2, which states that IRA would be positively correlated with population through the IRA formula.

Part 2. Based on a two-sector migration model (Harris & Todaro, 1970), it is known that there will be migration from province 1 to province 2 when:

$w_1 < E_2 w_2$

where:
w_1 : average wage in province 1
w_2 : the average wage in province 2
E_2 : the employment rate in province 2

Assuming that wage could be proxied by income per capita, there will be migration from province 1 to province 2 for as long as the above inequality exists. Such migration causes the population of province 2 to grow.

Mathematically, this correlation could be expressed as follows:

$$ln(POP_i) = k_5 + k_6 w_i$$

where:
k_5, k_6 : constants and the other variables are as defined above

This implies that

$$POP_i * [ln\,(POP_i) - k_5] = k_6 Q_i$$

Hence, this proves the second part of Possibility 2, which states that an increase in population would be positively correlated with income per capita through an inter-province migration dynamics.

Appendix 3. Information Related to Case Studies

The Seal for Good Local Governance (SGLG) history and mechanics. As part of the Aquino's administration thrust to actively promote good governance among the LGUs, the Seal of Good Housekeeping (SGH) was introduced in 2010 by the late and former Department of the Interior and Local Government (DILG) Secretary Jesse Robredo. In the same year, the Performance Challenge Fund (PCF) was established as the monetary award to be given to LGUs that garnered the SGH. The PCF was to be used for local projects that were aligned with national priorities.

The basic requirements of the SGH include:

1. Absence of negative Commission of Audit (COA) findings on LGU financial statements;
2. Compliance to Full Disclosure Policy;
3. Compliance to Procurement Act; and
4. Anti-Red Tape Act Report Card Survey of Civil Service Commission.

The Seal for Good Local Governance (SGLG) was implemented in 2014, and has six basic areas of performance: financial administration, disaster preparedness, social protection, business friendliness and competitiveness, environment management, and peace and order.

Originally, in order to receive the SGLG, the LGU must pass the first three performance areas and at least one of the last three. In 2017, the DILG moved from this so-called 3+1 scheme to the 4+1 scheme, with the addition of tourism, culture, and the arts as one of the required performance areas.

In contrast to the vagueness in the IRA allotment, the awarding of the PCF is very clearly based on LGU performance as evidenced by the LGUs having been given a SGLG. Moreover, the SGLG has components that could be more explicitly linked, at least, to inclusive growth. One of the financial administration criteria tracks the implementation of the 20 percent development fund of the IRA. The social protection performance area introduces an emphasis on the marginalized of society. There is, however, no obvious link to the distribution of income, which is a main feature of shared growth.

Appendix 3a. Salient features of the case provinces

	2006	2009	2006	2009
Province	Benguet	Benguet	Laguna	Laguna
Average annual family income (PhP)	279,727	303,525	230,028	249,092
Average annual family expenditures (PhP)	213,878	235,220	202,323	227,155
Internal revenue allotment (PhP, million)	322.1	...	832.2	...
Internal revenue allotment per capita (PhP)	480.7	701.9	370.9	594
BIR revenue collection (PhP, million)	2,155.6	2,074	12,563.4	12,797.4
Poverty incidence of families	4	4.2	4.3	6.2

Selection of Case Studies. Benguet and Laguna were chosen as the two provinces for the case study. The two appear to be typical of the patterns observed in the correlation analysis.

- A higher average annual family income (as well as average annual family expenditure) is associated with a higher IRA per capita allotment and lower poverty incidence.
- A higher IRA allotment is associated with a higher BIR collection.

The difference between the two provinces is that Benguet consistently has a higher income per capita but consistently with lower IRA allotment. With respect to the SGLG, the two provinces exhibited differing performances. Benguet has municipalities that were consistent SGLG awardees from 2015 to 2018. Laguna municipalities, on the other hand, were consistent only for two of the four years.

Based on this selection, key informant interviews of both provinces were broadly undertaken on the following questions:

1. Assessment of the IRA
   - Do you think the IRA provides incentives for the development of your province? Why or why not?
   - Do you think the IRA is fair? Why or why not?
   - If you had the chance, what kind of revisions would you like to see in the IRA formula? Please explain.

2. Assessment of the SGLG
   - Could you provide us with the details of your SGLG scorecard for the past four years?
   - Do you think the IRA provides incentives for the development of your province?
   - Do you think the SGLG is fair?

3. SGLG Awardees. For the past four years of the SGLG, what was the greatest number of times that a municipality of your province has been awarded the SGLG?
   - Could you explain the factors leading to be a consistent SGLG awardee?
   - Could you explain the factors leading to being a less consistent SGLG awardee?

4. Which is more important to you, reduction of poverty or reduction of the Gini coefficient? Please explain.

5. Which is more important to you, growth with reduction of poverty or growth with reduction of the Gini coefficient? Please explain.

Appendix 4a. Correlation matrix for performance indicators (levels)

ALL	AVG	STD	HHEXP	PCEXP	HHINC	PCINC	FGT0	HI_GINI	HE_GINI
HHEXP	25625.20	9304.40	1.000	0.970***	0.979***	0.943***	-0.819***	-0.075*	-0.038
PCEXP	5584.40	2187.23		1.000	0.956***	0.979***	-0.838***	-0.026	0.003
HHINC	30641.35	11406.84			1.000	0.969***	-0.843***	-0.066	-0.045
PCINC	6736.18	2708.32				1.000	-0.854***	-0.017	-0.003
FGT0	0.43618	0.172					1.000	0.081*	0.037
HI_GINI	0.370	0.053						1.000	0.905***
HE_GINI	0.334	0.048							1.000

AVG : average, STD : Standard Deviation; *p < 0.10, **p < 0.05, ***p < 0.01; n = 538

Appendix 4b. Correlation matrix for performance indicators of 1997

1997	AVG	STD	HHEXP	PCEXP	HHINC	PCINC	FGT0	HI_GINI	HE_GINI
HHEXP	28531.45	10004.05	1.000	0.981***	0.985***	0.963***	-0.822***	-0.486***	-0.379***
PCEXP	6313.04	2324.40		1.000	0.968***	0.985***	-0.847***	-0.441***	-0.333***
HHINC	34486.91	12176.68			1.000	0.979***	-0.855***	-0.496***	-0.395***
PCINC	7703.35	2838.79				1.000	-0.877***	-0.447***	-0.345***
FGT0	0.3885	0.1680					1.000	0.459***	0.357***
HI_GINI	0.3894	0.0441						1.000	0.932***
HE_GINI	0.3425	0.0428							1.000

AVG : average, STD : Standard Deviation; *p < 0.10, **p < 0.05, ***p < 0.01; n = 77

Appendix 4c. Correlation matrix of performance indicators for 2000

2000	AVG	STD	HHEXP	PCEXP	HHINC	PCINC	FGT0	HI_GINI	HE_GINI
HHEXP	27365.45	9521.96	1.000	0.983***	0.990***	0.974***	-0.875***	-0.396***	-0.232**
PCEXP	6123.46	2338.27		1.000	0.975***	0.991***	-0.894***	-0.361***	-0.193*
HHINC	32710.83	11688.59			1.000	0.984***	-0.883***	-0.383***	-0.227**
PCINC	7382.75	2870.36				1.000	-0.900***	-0.353***	-0.193*
FGT0	0.41335	0.1705					1.000	0.276**	0.105
HI_GINI	0.38518	0.0484						1.000	0.944***
HE_GINI	0.33777	0.0471							1.000

AVG : average, STD : Standard Deviation; *p < 0.10, **p < 0.05, ***p < 0.01; n = 77

Appendix 4d. Correlation matrix of national performance indicators

	AVG	STD	GINI	PI	RGDPPC
Gini	42.3454546	1.62994702	1	0.277	-0.354
PI	32.7272727	7.98512253		1	0.8425***
RGDPPC	1771.53372	389.877849			1

AVG : average, STD : Standard Deviation; ***p < 0.01; n = 11

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