

ABSTRACT OF PAPERS



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Spearheaded by the PHILIPPINE STATISTICS AUTHORITY**



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Demographic Analysis of Illegitimate Babies in the Philippines, 2006-2014

By

Wilma Abarsosa Perante

Abstract

The Philippine National Strategic Framework of Plan Development for Children or Child 21 inculcates the role of a nurturing family environment ensuring parental care and support of the child without gender discrimination through all the stages of the life cycle. Changes in the structure of the family have been observed at the end of the twentieth and the beginning of the twenty-first century due to globalization, trade liberalization, overseas labor migration and urban-to-rural movement of the population. Due to these developments, a rise of illegitimate children is now being an issue. Hence, this paper is prepared to examine the demographic characteristics of illegitimate babies in the Philippines using the registered live births from all City and Municipal Civil Registrars in the Philippines and from the Department of Foreign Affairs occurred during 2006 to 2014.

The results indicate that there is an increasing trend of illegitimate babies in the country and may suggest the there is a greater risk of poorer outcomes for illegitimate children because most of the mothers are not engaged in economic activities and there is significant number of teenage parents. One of the challenges identified from the results is for the government to provide resources and education to parents who are not adequately prepared for the responsibilities and challenges of parenting because childbearing at younger age as such is a social problem.

Keywords

Illegitimate babies, illegitimate children, babies born illegitimate

Barangay Civil Registration System: Pampanga Experience

By

Arlene M. Divino

Abstract

The Barangay Civil Registration System (BCRS) is a strategy to make civil registration services available at the grassroots level in line with the vision of 100 percent timely registration of all vital events in the country. It empowers the barangay secretary in assisting the City/Municipal Registrars in the civil registration aspect.

The BCRS has an attached Information System geared towards establishing a basic community-based information archives that will provide regular updates on the occurrences of vital events as well as indicators of population growth and changes. It is useful in consolidation, analysis, retrieval and reporting regarding the occurrence and subsequent registration of vital events in the barangay.

This paper presents the innovations made in the information system for BCRS, which was now called BCRS-CDIS or BCRS-Community Database Information System. It was developed with a more user-friendly interface and was designed to readily respond in the specific data needs of the LGU at any point in time.

The project was piloted in the Municipality of Lubao, Pampanga and is now being replicated in the whole province.

**Trends and Patterns of Filipino Cross-border Marriages:
A View from the Philippines**

By

Maria Midea M. Kabamalan and Marjorie B. Villaver

Abstract

International migration from the Philippines is dominantly work-driven and as such, much of the scholarship focuses on international labor migration. In recent years however, marriage migrations rapidly increased involving nationals of East and Southeast Asia, including the Philippines as one of the “sending” countries. With globalization and changing demographics, it is likely that marriage migration will likely be sustained.

Studies on international marriages or marriage migration were viewed through many lenses including a focus on its social and demographic causes and consequences as well as its features. It was noted that with rising levels of education, which partly explains trends in delayed and non-marriage for women, highly-educated women and poorly-educated men have the greatest difficulty in finding marriage partners and, thus, men resort to finding prospective brides from outside their countries. It was also noted that a consequence of skewed sex ratios is the expansion of marriage migration.

Using data based on the Certificate of Marriage for years 2006-2012 from the Vital Registration System (VRS), this paper describes the trends and patterns of marriages between a Filipino national and a foreign national, and compares these trends and patterns with those marriages between two Filipino nationals. Particular attention is on the age differences between the bride and the groom. Examination of these trends and patterns will inform our knowledge base on the marriage migration involving Filipino nationals. Census data and data from the Commission on Filipino Overseas (CFO) on Filipinos and their foreign spouses are also used to complement the data from the VRS.

Results show that Filipino brides often marry older grooms, much older grooms if they are of a different nationality. In contrast, Filipino grooms often marry younger brides, but if they marry Americans, Canadians, Japanese, or Korean brides, they are, on average, younger than their foreign brides.

Assessment of the Quality of Mortality Data using ANACONDA

By

Aurora G. Talan-Reolalas

Abstract

A common concern with mortality data produced from civil registration systems is how reliable they are in describing the actual mortality patterns in the population to which they refer. In the Philippines civil registration system is the only source covering the entire country where all deaths being medically certified as to the underlying cause. This paper aims to assess the quality of mortality data using ANACONDA, a tool designed to help users of routine mortality data understand how fit-for-purpose the data are. ANACONDA is designed to identify problems that need to be addressed to improve the value of mortality data to guide health policies and practices to improve health. This tool will also check the accuracy of mortality data such as the extent of under-registration of deaths across all ages and both sexes; estimates the likely undercount of child deaths at ages 0-4 years; identifies the type and amount of “garbage” codes in the cause of death; examines the age pattern of deaths; and calculates an overall index of mortality data quality based on the Vital Statistics Performance Index (VSPI). The VSPI captures six (6) important dimensions of the public policy utility of mortality and cause of death data, 5 (completeness of registration, extent of garbage coding, amount of cause of death detail reported, biologically implausible causes and deaths with no age or sex reported) of which measure the quality of data, while a 6th dimension measures the timeliness and availability of data, an often overlooked dimension of data utility for policy. The 2010 to 2014 data on deaths from civil registration system will be utilized in this paper.

**Weather and Prevalence of Diseases in the Philippines:
Evidence of Climate Change**

By

Stephen Jun Villejo, Paolo Victor Redondo, Angela Nalica, and Erniel Barrios

Abstract

A dynamic poissonautoregression spatiotemporal model is proposed and estimated through a hybrid of maximum likelihood, forward search, and bootstrap in the context of the backfitting algorithm. The model is then used in understanding space-time dynamics of prevalence rate of some diseases in various provinces of the Philippines. Climate change is formulated as structural change in the model with weather indicators as covariate. Structural change is then tested through a nonparametric bootstrap-based approach.

Keywords: poissonautoregression, spatiotemporal models, bootstrap, backfitting

Does Government Matter to Health of its People? A Cross-Country Linkage Between Health Indicators, Health Expenditure, and the Macroeconomy

By

Angela Nalica, Paolo Victor Redondo, Stephen Jun Villejo, and Erniel Barrios

Abstract

We develop a panel multilevel count data model. The model is estimated using the backfitting algorithm imbedded with bootstrap, forward search, and maximum likelihood estimation. With health indicators as the outcome, its linkage with some indicators like per capita income, economic growth, government expenditures on health, etc. is established using the postulated model. The model is then used in testing for health convergence of developing countries with government contribution to health outcomes as the facilitating factor of convergence.

Keywords: panel data, multilevel count model, backfitting, convergence

Mining Insights on the Quality of Life Across Countries: Learning from Official Statistics

By

Joseph Ryan G. Lansangan and Erniel Barrios

Abstract

We define quality of life by deriving an index (QoLI) that aggregates some indicators of morality across various countries. Using the LaNS algorithm that simultaneously optimize the objective function that aims to estimate the model that fits the data well while reducing data dimension, QoLI is regressed on a very high dimensional set of predictors. There is empirical evidence from official statistics that to improve quality of life, the government should spend more for health services and implement policies and programs that will enhance health conditions of women and children.

Keywords: high dimensional data, quality of life index, dimension reduction, variable selection, sparsity

Estimation of Vulnerability to Poverty using a Multilevel Longitudinal Model: Evidence from the Philippines

By

Christian D. Mina and Katsushi S. Imai¹

Abstract

Using the household-level panel data for the Philippines in 2003-2009, a three-level random coefficient model was estimated to measure household vulnerability and to decompose it into idiosyncratic and covariate components. The Bell and Jones's (2015) 'within-between' formulation was also employed in order to correct for the possible heterogeneity bias. Based on the econometric results, it was found that a majority of the poor and around 18 percent of the non-poor are vulnerable to unobservable shocks, while both groups of households are more susceptible to idiosyncratic shocks than to covariate shocks. Adequate safety nets should be provided to vulnerable households that lack access to infrastructure, or are larger in size with more dependents and less-educated heads.

Keywords: Vulnerability, Poverty, Multilevel Model, Panel Data, the Philippines

¹ Supervising Research Specialist at the Philippine Institute for Development Studies (Email: cmina@mail.pids.gov.ph; cdgmina@gmail.com) and Associate Professor in Development Economics, Department of Economics, School of Social Sciences, The University of Manchester (Email: Katsushi.Imai@manchester.ac.uk), respectively

Multidimensional Poverty in the Philippines: 2004-13

By

Gaurav Datt¹

Abstract

Multidimensional poverty comparisons can be sensitive to the choice of welfare indicators, the weights assigned to the indicators, as well as the choice of the aggregate poverty measure. This paper examines the robustness of trends in multidimensional poverty in the Philippines to these choices by presenting estimates for three alternative weighting schemes and three alternative measures of multidimensional poverty. The weighting schemes range from uniform weights similar to those used in the global multidimensional poverty indices (MPI) produced by the UNDP, to weights based on inverse incidence of different deprivations and those derived from the estimated relationship of deprivations to a survey-based measure of subjective welfare. The multidimensional poverty measures similarly range from the “dual cut-off” indices analogous to UNDP’s global MPI, to “union-based” indices that count all deprivations, to indices that are also responsive to the dispersion of deprivations. Using data from the Annual Poverty Indicators Survey for 2004-13, the paper finds evidence of a significant decline in multidimensional poverty that is robust to these alternatives. The reduction in multidimensional poverty tends to be largest for subjective welfare weights and for union-based dispersion-sensitive measures.

¹ He serves as Associate Professor in the Department of Economics and the Deputy Director of the Centre for Development Economics and Sustainability at Monash University. He has worked in research and operational positions at the International Food Policy Research Institute (IFPRI) and the World Bank.

Did the Filipino Middle Income Class Grow Substantially After the Robust Economic Growth Regime of the B. Aquino Administration?

By

Romulo A. Virola, Jessamyn O. Encarnacion, Bernadette B. Balamban, Mildred B. Addawe, Mechelle M. Viernes, and Anna Jean Casañas¹

Abstract

For the Philippines to finally join the Asian tigers, the Filipino middle class must grow. But despite the modest economic growth experienced in the recent past, the size of the middle class has grown only marginally from 2003 to 2009.

With the ASEAN integration in 2015, the Philippine economy will face many opportunities and many challenges. The competition ushered by the ASEAN integration can greatly affect the growth of the Philippine economy in the near future. One way of assessing the readiness of the Philippines to cope with these challenges is by looking at the size of its middle class, who will probably be in the best position to grab the many opportunities that integration offers.

Likewise, the adoption by the UN General Assembly of the Sustainable Development Goals (SDGs) on 25 September 2015 and the endorsement of the SDG statistical framework by the UN Statistical Commission in March 2016 will pose great challenges to national statistical systems all over the world, including the Philippine Statistical System (PSS). The role of the middle class towards the attainment of the SDG targets certainly cannot be overemphasized.

During the 10th, 11th and 12th National Conventions on Statistics (NCS), the authors presented papers on the Filipino middle income class using the results of the 2000, 2003, 2006, and 2009 FIES, which indicated that the middle income class had not grown much, with a share of at most 25% of the distribution of families. Unfortunately, generating statistics on the middle class has not been one of the priorities of the PSS nor of the Philippine Statistics Authority (PSA).

This paper continues the efforts of the authors in measuring and presenting the socio-economic and demographic characteristics of the Filipino middle income class, using additional results from the 2012 FIES and using statistical tool like cluster analyses. In particular, it will assess the growth of the middle income class after experiencing relatively robust growths during the B. Aquino administration. In addition, it provides a slightly different regional/local

perspective to the study on the middle class by analyzing the middle income class data for the NCR, Areas Outside NCR (AONCR), Visayas, and Mindanao.

Key words and phrases: middle-income class; cluster analysis; multiple regression; socio-economic characteristics; demographic characteristics analysis.

¹ Former Secretary General of the National Statistical Coordination Board, Policy Specialist of UN Women, and Chief Statistical Specialist, Supervising Statistical Specialist, Statistical Specialist II, and Senior Statistical Specialist, respectively, of the Philippine Statistics Authority. The views expressed in this paper are those of the authors and do not necessarily reflect the views of their organizations.

A Reassessment of Kaldar's Laws: What Do Data Tell Us?

By

**Richard Emerson D. Ballester, Melanie A. Quintos,
and Ma. Josephine Therese Emily G Teves**

Abstract

Economic growth has long been associated with the expansion of manufacturing industry as productivity, specialization, extensive forward and backward linkages, and positive externalities are among its critical features that continually boost expansion. Nicholas Kaldor formally laid down the relationship through the so-called 'Kaldor's Laws' which specifically hypothesized that (i) the faster the growth of manufacturing output, the faster the growth of GDP; (ii) there is a strong positive association between manufacturing growth and manufacturing productivity, and (iii) the faster manufacturing grows, the faster productivity will spillover in other industries. In this paper, we reinvestigate these laws applying them on cross-country data and for the Philippines. We generally conclude from our estimates that manufacturing remains to be a valid engine of growth but other sources of growth such as services are now increasingly behaving similar to the former.

Keywords: Kaldor's laws, productivity growth, economic growth, industries, manufacturing

**Reexamination of the Feldstein–Horioka (FH) Puzzle:
A Cross-country Analysis**

By

Richard Emerson D. Ballester and Carlos Vincent L Chua

Abstract

The FH puzzle is one of the major puzzles in international macroeconomics. It posits that in the assumption of perfect capital mobility, there should be a low correlation between domestic investment and savings. In this paper, we reexamine the puzzle using three different datasets at the global, regional and country level. Panel estimates for the global and regional levels were conducted through the use of FH specification with the modification of Obstfeld and Rogoff (2000) and its equivalent times-series specification for the Philippines. We then compare this with our runs that have controls for perfect capital mobility. We further strengthen our case with the use of panel and time-series cointegration tests. Estimates in the exercise yielded diverging and contrasting results hence the likely need for a more standardized measurement for savings and investment across countries to provide appropriate policy prescriptions. The puzzle thus remains an issue in the contemporary macroeconomic environment.

Keywords: Feldstein–Horioka (FH) Puzzle, cointegration, savings, investment

Evaluation of Water Quality of Major Rivers in Palawan, Philippines Using Physico-Chemical Parameters and Water Quality Index

By

**Marianne Faith G. Martinico-Perez, Jenevieve P. Hara,
and Madrono P. Cabrestante, Jr.**

Abstract

The rivers in Palawan have fundamental roles in local society as source of water for domestic use; irrigation; and as sink for agricultural and domestic waste. In order to characterize the water quality of the major rivers in the province, a water quality index (WQI) developed by the Canadian Council of Ministries of the Environment was calculated for thirty six (36) river monitoring stations, based on nine (9) parameters measured in comparison with the classification standards for freshwaters based on DENR Administrative Order 34, series of 1990. Results indicated a good water quality in the upstream than the downstream portion of the rivers monitored. Water quality indicators show that while all river monitoring stations are good to excellent if utilized for agriculture, irrigation, and other use under (Class D), only five (5) river monitoring stations gave good to excellent rating as sources of drinking water supply after complete treatment (Class A). This study suggests proper water management and protection of water quality to maximize the beneficial usage of major river systems. The WQI also provides a convenient method of summarizing complex water quality data, thus, potentially useful decision tool towards a sustainable water resource management in Palawan.

**Hybrid Forecasting of Monthly Average Ozone Layer Depletion
from 1958 To 2015**

By

Enrie Manuel Samson Gatchalian and Eiffel D. Manlapig

Abstract

Autoregressive Integrated Moving Average (ARIMA) and Artificial Neural Network (ANN) are commonly compared with mixed conclusions in terms of their power in predicting performance. This paper made use of a hybrid methodology that combines both ARIMA and ANN models to take improvement of the unique power of ARIMA and ANN in linear and nonlinear modeling. The monthly ozone layer data sets denote that the Hybrid model can be an effective way to improve forecasting accuracy. The model was compared using Root Mean Square Error (RMSE), Mean Absolute Deviation (MAD), Mean Absolute Percentage Error (MAPE) and Efficiency Coefficient (EC). It was found out that the Hybrid model has a low RMSE, MAD and MAPE. Based on EC, the Hybrid model has a high and acceptable value. Overall, the Hybrid model was the most accurate in forecasting the monthly average ozone.

Keywords: Seasonal ARIMA, Artificial Neural Network, Nonlinear Autoregressive Neural Network, Combined forecasting

**Rural Coastal Households' Cognition of Sea Level Rise:
The Case of Zambales, Philippines**

By

Carmela G. Taguiam and Cecille B. Quiambao-Marquez

Abstract

Sea level rise (SLR) is caused by the melting of glacier ice and thermal expansion due to the climate change phenomenon. Scientists are continuously monitoring SLR as a change in the mean of sea levels poses a threat in low lying coastal zone. With 60% of the Philippine population living in low lying coastal zone, they are exposed to the hazards of coastal environment.

To understand cognition of SLR, a descriptive research was conducted in four rural coastal settlements facing West Philippine Sea in Zambales composed of 210 men and women households. Twelve SLR statements were prepared and answered by households following the Likert-type scale. Results of the factor analysis showed that SLR was perceived by households in three dimensions and these are: affected the social well-being of households, changed the seascape of the coastal environment, and increased of sea water. The Pearson correlation showed that the first dimension was correlated to the households educational attainment (-0.139 at 0.05 level). The second dimension was correlated to the households' years of fishing experience (0.183 at 0.05 level) while the third dimension was found to be highly correlated to the households' length of residence along the coastline (0.224 at 0.01 level).

Development of the Philippine Crime Classification System for Statistical Purposes ¹

By

Candido J. Astrologo, Jr., Louella R. Ragos, and Marietta V. Gumela²

Abstract

During its 46th Session in March 2015, the United Nations Statistical Commission endorsed the International Classification of Crime for Statistical Purposes (ICCS) as an international statistical standard for data collection, compilation and dissemination. The ICCS is a classification of criminal offenses which is based on internationally agreed concepts, definitions and principles in order to enhance consistency and comparability of crime statistics across countries and over time.

As a UN-approved statistical classification system, member countries are enjoined to adopt and implement the ICCS at the country level. In the Philippines, the Philippine Statistics Authority through its Standards Service, is the agency mandated to formulate and monitor standards and classification systems.

In the context of the ICCS, this paper presents the various statistical coordination mechanisms that are essential in the development, adoption and implementation of the ICCS in the Philippines. The paper further reviews the ICCS taking into consideration the existing definitions, concepts and classifications of crimes in the Philippines based on the penal code, criminal code, among others.

Keywords: crime, statistical classification system

¹ Paper proposed to be presented during the 13th National Convention on Statistics

² Assistant National Statistician and Senior Statistical Specialists, Philippine Statistics Authority

Measuring Peace and Security: Towards a Philippine Internal Peace and Security Index

By

Kathline Anne S. Tolosa

Abstract

The Philippine has long been saddled with internal security concerns. Under Republic Act 8551, the primary task of suppressing insurgency has been given to the Armed Forces of the Philippines (AFP) while the Philippine National Police (PNP) was directed to support the AFP through information operation and the performance of its ordinary police functions.

This has inevitably led to the shifting of military capability development priorities from territorial defense to internal security operations. It is only in recent years, with the rise of incursions in the Philippine Exclusive Economic Zone (EEZ) in the West Philippine Sea, that the country sought to build a credible defense capability.

Moreover, recent developments in the country's internal security landscape have likewise facilitated this increased attention to territorial defense. The government has already entered into peace agreements with the MILF, MNLF, and the CBA-CPLA. The government is likewise pushing for the closure of the negotiated political settlement with the RPMP/RPA/ABB. Just recently, formal peace talks have once again been opened between the government and the CPP/NPA/NDF.

Security sector reform and governance calls for a clear articulation of the role of the military in a democratic state such as the Philippines. This necessitates a clear delineation of roles between the military and the police.

In this regard, we are confronted with the questions of, when can we actually say that insurgency has been "suppressed?" When do we say that an area has "graduated" from being conflict-affected and that it is now "ready for further development?" Given the comprehensive definition of "national security" espoused by the National Security Council and the inherently symbiotic relationship between security and development, how do we measure results in conflict situations?

The paper at makes takes the perspective of security sector reform and governance and makes the case for the need to develop clear metrics for internal peace and security. It outlines the challenges and prospects for building a Philippine Internal Peace and Security Index.

Developing a National Security Index

By

Stephen V. Agtoto

Abstract

The idea of national security may vary in meaning to different people (Wolters, A., 1952), from country to country, and even from institution to institution in the contemporary period (Fitz-Gerald, A., 2008). Nonetheless, national security may be viewed as a consequence of its perception of the threats emanating from its strategic environment (Inbar, E., 1998). Accordingly, this paper attempts to quantify the country's national security through the development of a National Security Index (NSI) as an aggregate of the security in the country's 17 regions expressed in the equation: $NSI = (I: RNcR, \dots RARMM) / 17$ where, R = security by region. It covers 10 security threat indices with a total of 33 indicators using disaggregated datasets by region taken from various national government agencies .

Informal Employment Statistics from Data Users Perspective: Towards Mainstreaming Informal Employment Statistics in Development Agenda and Legislation

By

Susanita “Babes” G. Tesiorna

Abstract

The informal economy statistics, such as, informal economic units, workers in informal economic units, informal workers in households, informal workers in formal workplaces is a big challenge not only for the workers in policy or legislative proposals, but, also for the government service providers of social protection programs as defined under Social Protection Framework. Absence of statistics perpetuates its absence in national legislations.

Art. VIII, Section 36 (a) of the ILO Recommendation 204 “Concerning the Transitioning from the Informal Economy to Formal” requires the appropriate agency of every Member state, on a regular basis to collect, analyze and disseminate statistics disaggregated by sex, workplace, and other specific socio-economic characteristics on the size and composition of the informal economy, including the number of informal economic units, the number of workers employed and their sector. Section 36 (b) also requires monitoring and evaluation towards formalization and should take into consideration relevant guidance on statistical definition of informal employment endorsed by the 17th International Conference of Labor Statisticians (ICLS).

NSCB Resolution No. 15, series of 2002 defines the informal sector in accordance to the 15th ICLS (1993) recommendations. It is limited only to informal sector, an enterprise based definition. In 2008, a nationwide Informal Sector Survey (with ESCAP funding) was attempted but this was not followed up due to several key measurement issues. Since then, the issue of informal sector statistics was relegated to the background - this despite the 17th ICLS adoption and endorsement of a statistical framework, and definition that provides for a broader/comprehensive measure of informal employment that covered the formal and household sectors as a complement to informal sector statistics. With the recent government pronouncement of reducing the practice of “ENDO” work arrangements on top of its agenda, the need for an official statistics on informal employment was again brought into the focus.

The paper summarizes the definitions and measurements of the 15th ICLS (1993) on Informal sectors and the 17th ICLS (2003) framework and guidelines on informal employment, the various issues and challenges of its application in the Philippine context and made recommendation that the 17th ICLS definition and conceptual framework of informal employment together with the Guidelines concerning a

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statistical definition of informal employment be operationalized and mainstream in the Philippine statistical system.

Economic units should be defined also as follows: a) units that employ hired labour, b) units that are owned by individuals working on their own account, either alone or with the help of contributing family workers, and c) cooperatives and social and solidarity economy units. For all data users, PSA should come up with statistics of: a) persons in informal employment, b) persons employed in the informal sector, and, c) persons in informal employment outside the informal sector.

Concern agencies particularly DOLE and NAPC in partnership with PSA should work together for:(1)the adoption an official framework and definition of informal employment and (2) for the mainstreaming of its data collection either as rider or module in the Labor Force Survey.

Revisions on the Direct Measurement Methodology Used for Non-Observed Economy: A Case for Small-Scale Gold Mining

By

Dean Joseph A. Villanueva¹ and Reynaldo F. Fulleros²

Abstract

The primary objective of the National Accounts is to depict a comprehensive description of the economy – both to illustrate the organized and the non-observed economy. For the Mining industry, present systems in measuring small scale mining production uses two major variables; a) captured gold purchases by Banko Sentral ng Pilipinas (BSP) and b) a fixed under coverage ratio based on a 24-year-old study conducted in 1992.

The use of data on gold purchases describes a number of limitations. It ceases to capture the changing behavior of small scale mining producers and sellers during structural changes in the market (e.g. introduction of new taxes, improvements in technology, opening of additional mining sites, among others). This paper proposes the need to revise the benchmark estimates of 1992 by introducing new parameters in order to comprehensively record the heterogeneous characteristic of the small scale gold mining activity. The use of labor productivity is to be used to estimate the total production of small scale gold mining. This benchmark will then be deduced through two approaches, namely the conduct of labor survey and the coordination of identified provincial local government unit administrative data which manages the small scale gold mining industry.

¹ Statistician I, Production Accounts Division, Macroeconomic Accounts Service, Philippine Statistics Authority

² Senior Technical Staff, Philippine Wealth Accounting and Valuation of Ecosystem Services (Phil-WAVES) Project, Macroeconomic Accounts Service Philippine, Statistics Authority

Results of an Impact Evaluation Study of DepED'S School - Based Feeding Program

By

Ana Maria L. Tabunda, Jose Ramon G. Albert, and Imelda Angeles-Agdeppa¹

Abstract

Since 1997, the government, through the Department of Education (DepED), has been conducting a School-Based Feeding Program (SBFP) since 1997. As implemented in Schoolyear (SY) 13-14, the SBFP of DepED involved feeding 40,361 severely wasted (SW) pupils enrolled in Kindergarten to Grade Six in 814 public elementary schools in the country. This paper presents findings from an impact evaluation study of the SY13-14 implementation of the SBFP. The study employed mixed methods research, undertaking quantitative surveys of students who were SBFP participants and matched non-participants, their respective parents, teachers and school heads, as well as undertaking focus group discussions. The findings indicate that, of those children verified to be SW prior to the feeding program, about 62% attained at least normal nutrition status at the end of the feeding program. While the program falls short of the SFP nutrition status target to have at least 70% of the beneficiaries attain normal nutrition status by end of the feeding, there were various factors beyond the control of program implementers, specifically characteristics and practices of beneficiary families or parents/guardians and the children themselves (age and severity of wasting at start of feeding program, in particular), that affected the nutrition outcome. Among pupil beneficiaries verified to be SW prior to feeding and who had school attendance data, about 3%, attended school for less than 85% of total school days. The median percentage attendance for the SW children is 97.5%, which is comparable to school attendance of NB pupils, with 95% of these pupils attending 85% of total school days. Teacher's interviewed pointed out that most of the SBFP children enrolled in their classes improved in attentiveness during the feeding program (96%) as well as after (95%). The children also reportedly became more sociable during the feeding (97%), a development that was sustained after the feeding (96%). Improvement in class attendance was also reported by teachers for 94% of the beneficiary pupils; 92% of the children sustained good attendance. We suggest that DepED provide all schools with standard measurement devices, and review its SBFP nutrition target.

Keywords: health and nutrition, Philippines, school children, school-based feeding program, food for education program, impact evaluation

¹ The authors are, respectively, Philippine Institute for Development Studies (PIDS) econometrics/survey consultant, PIDS senior research fellow, and PIDS nutrition specialist consultant. The authors wish to thank Beverly T. Lumbera and Martin Joseph M. Raymundo of the PIDS for research assistance. Thanks also to Sonny N. Domingo, Winnie A. Gerio, Christine Ma. Grace R. Salinas, Angelica B. Maddawin, Jocelyn P. Almeda, Emma P. Cinco, Lucy Melendez, Susan Pizarro, and Merle Galvan, also of PIDS, for being part of the field data collection and encoding team. The views expressed are those of the authors and do not necessarily reflect those of PIDS or any of the study partners.

Teaching With Error High Aptitude Mathematically – Challenged High School Seniors with Alter Native Conceptions on Exponents and Logarithms

By

Rommel S. de Gracia

Abstract

This action research aimed to determine the mastery level, the common alternative conceptions and the reduction rates of alternative conceptions on exponents and logarithms using Teaching with – Error Analysis (TWEA) as strategic instruction to High Aptitude Mathematically- Challenged (HAMC) high school seniors. It used qualitative and quantitative approach and action research type. TWEA framework utilized the Test for Understanding Exponents and Logarithms (TUEL) and researcher-designed worksheets and activities. HAMC students have difficulty recalling directly and applying the definition, properties, rules and laws of exponents and logarithms. They are incapable of solving exponential and logarithmic equations which require higher cognitive level of thinking due to insufficient knowledge of combining properties, rules and laws to work with exponents and logarithms. TWEA increased students' level of mastery and reduced students' alternative conceptions about exponents and logarithms. The use of mathematical teaching framework like TWEA helps teachers realize students' understanding of mathematics concepts.

Keywords: Teaching with-Error Analysis, High Aptitude Mathematically-Challenged, Alternative Conceptions on Exponents and Logarithms

Effect of Science Learning Modules on Content Mastery and Conceptual Understanding of Grade 9 Students

By

Roly B. Bayo-Ang

Abstract

This action research investigated the effect of science intervention modules in Filipino and English on content mastery and conceptual understanding of 49 Grade 9 students. This quasi-experimental research study utilized the randomized pretest-posttest control-group design.

Analysis of content mastery scores showed significant difference in mean scores of control and experimental group, $t(46) = -2.14, p < .05$. The experimental group achieved MPS of $>75\%$ in three of eight lessons. Comparison of pretest and posttest scores of control group in test for conceptual understanding (TCU) showed no significant difference, $t(18) = 1.44, p > .05$. Pretest and posttest scores of experimental group revealed significant difference, $t(29) = -5.08, p < .05$. Posttest scores comparison of control and experimental group revealed no significant difference $t(42) = 1.67, p > .05$. Performance in TCU and MOC of control group are not significantly correlated, $r(17) = .307, p > .05$; but significantly correlated, $r(27) = .571, p < .05$, for experimental group. The intervention module in Filipino promotes conceptual understanding and mastery of content.

The sample size is not relatively large and the research design limits the generalizability of the findings to the samples only. Learning modules written in Filipino increase students' performance in science. This study supports the mother tongue-based multilingual education (MTB-MLE).

Keywords

Action research, Filipino module, conceptual understanding, content mastery

**Development and Impact of SIM-MOD
(Strategic Intervention Material and Module Combined) on Students' Academic
Achievement in Mathematics at the 8th Grade Level**

By

Josefino G. Saclao

Abstract

This study aimed to develop learning materials known as SIM-MOD (Strategic Intervention Material and Module Combined) and to investigate its impact on the student's achievement in Mathematics. It is used as a treatment of the study covered one of the difficult topics in Grade 8 Mathematics which is "Rational Algebraic Expressions". Descriptive method of research was employed for the development and evaluation of the SIM-MOD. To investigate the impact of these learning materials, a mixed method was used to provide more depth in the study by implementing more than one research methods such as quasi-experimental design (quantitative) along with interview with open ended questions (qualitative). There are two groups, the control and the experimental, each with 45 students, for a total of 90 students from Pulong Buhangin National High School. One group was taught using the SIM-MOD while the other was not. Both the groups were pre and post tested. Further, detailed statistical analysis was conducted for data analysis. There has been a pattern on the preferences of the participants with regards to the design of the SIM-MOD. Most of them have been attracted to the distinct design of the learning materials and they found the tasks contained in the SIM-MOD not that easy to accomplish. There has also been a pattern on the preferences of the participants with regards to the delivery of the intervention program on "Rational Expressions". Majority of them have appreciated the support provided for them before, during and after the intervention program. Most of them have found the allotted time per session, per week, not enough for them to accomplish the tasks contained in the SIM-MODs. The independent sample t-test shows the scores of the control and experimental groups on the pretest do not have significant differences before the SIM-MOD was used by the experimental group (p-value is 0.855). Upon using the SIM-MOD, a posttest was given to the participants. The p-value of 0.000 with a t-value of -11.019 is an indication of the significant differences between the scores of the participants from the control and experimental groups. This implies that the participants who used the SIM-MOD have significant higher scores than those who did not use the learning materials. Also there is a significant difference (p-value of 0.000 and t-value of 7.727) present in the mean gain scores of the participants with regards to their pretest and posttest scores. This is an indication that the use of SIM-MOD is an effective way of improving the achievement of the students in their Mathematics subject. The study recommends teachers to develop and use SIM-MOD in other topics in Grade 8 Math. Conduct similar studies on the use of SIM-MOD in other discipline. Use SIM-MOD as a

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remediation material to enhance the academic achievements of low performing students in Math and as enhancement material to furtherly improve the cognitive skills of above average and average type of students in Math and in other discipline. Encourage administrators, mathematics supervisors, and teachers to make SIM-MOD in all topics not only the least mastered skills in a given subject area. Teachers shall be provided with more seminars and workshops on the principles of SIM-MOD construction.

The Role of Big and Open Data in Disaster Risk Reduction Efforts in the Philippines

By

Ken Adrian B. Aracan and Alfredo Mahar Francisco A. Lagmay

Abstract

According to the World Risk Index, the Philippines ranks third among countries with the highest disaster risk levels. The report cites the archipelago's location in the typhoon and earthquake belts, high degree of exposure and vulnerability and the lack of capacities in coping capacities. Realizing to address these issues, the Department of Science and Technology in its capacity as the Vice Chair for Disaster Prevention and Mitigation of the National Disaster Risk Reduction and Management Council, launched the Nationwide Operational Assessment of Hazards (DOST-Project NOAH). Tasked to provide a more proactive and scientific approach towards disaster risk reduction and management, the program launched scenario-based, high-resolution flood, landslide and storm surge hazard maps, coupled with various technological tools such as Doppler radars, automated weather stations, water level sensors and rain gauges that serve as early warning systems for hydrometeorological hazards. Aside from these, Project NOAH is now strengthening WebSAFE, an online tool providing municipal-level disaster risk and minimum needs assessments based on appraisals on exposure, vulnerability and capacity. These analyses heavily rely on big data and open access products such as satellite imageries, census datasets, administrative statistics and community-contributed information. All of these can be accessed openly by disaster managers and decision makers, local government units, and other DRRM stakeholders through Project NOAH website (<http://noah.dost.gov.ph>), mobile applications and through application programming interfaces (APIs).

Keywords: Project NOAH, disaster prevention, disaster risk assessment, big data, open data

Towards Data Revolution for the SDGs: Evaluating Pseudo-Panel Methods for Economic Mobility Analysis

By

Arturo Martinez Jr.

Abstract

Recent international evidences suggest that the world's poorest 99% have been losing command to global wealth. For instance, a report published recently by Oxfam International predicts that the world's richest 1% will be wealthier than the remaining 99% by 2016. In addition to the income distribution, the widening gap between the rich and the poor has also manifested in other dimensions of living standards such as access to basic health services, quality education, and decent jobs. If left unchecked, the rapidly growing inequalities can spurt social tension, stall poverty reduction and hamper long-term economic growth.

Economic mobility is one of the most commonly used metrics by researchers to gauge equality of economic opportunities. By measuring how a person's initial circumstances shape their future opportunities, economic mobility provides a yardstick for examining how inequalities are reproduced within a person's life cycle and across generations. However, measuring economic mobility requires panel data which are not commonly available in developing countries.

To reconcile the need of providing a more dynamic perspective of the evolution of income distribution with the lack of panel data, several techniques have been offered to construct pseudo-panel data from repeated cross-sectional surveys. Using actual panel data, this study evaluates the performance of four pseudo-panel techniques in measuring a wide array of economic mobility indicators. Preliminary results suggest that methods with more flexible income model specifications perform better than those with highly parameterized models. More importantly, these flexible pseudo-panel procedures produced estimates of poverty dynamics and movement-based indices which are quite close to the estimates computed from the actual panel data. Nevertheless, further improvements are warranted to be able to develop a more satisfactory estimation procedure for indices measuring temporal dependence and the inequality-reducing effect of economic mobility.

Priority Data and Indicators for “MRV”ing the Philippine Road Transport Emissions

By

Alvin Mejia

Abstract

This paper investigated the current state of the priority data for calculating the greenhouse gas emissions from the Philippine road transport sector. The country’s commitment towards actions under the post-2020 climate regime as specified in its intended nationally determined contributions (INDC) submitted last October 2015 provides further justification for improving the collection of and access to these priority data. The global discussions towards the said climate regime underlines the importance of “measurement, reporting and verification” (MRV) of the emissions from relevant sectors, including transportation. The paper utilized the ASIF framework (activity-structure-intensity-factor of emissions) in detailing the current gaps and recommendations for the identified priority data and indicators.

Impact of Paved Roads on Income and Consumption in the Philippines

By

Nikkin L. Beronilla

Abstract

This paper tries to quantify the impact of roads on household welfare either through income or consumption using the quasi-experimental method called regression difference-in-difference. The data used in the analysis are: merged Family Income and Expenditure Survey, Labor Force Survey for two periods, 2009 and 2012; and provincial paved roads for periods 2008 and 2011.

The main results of the paper are fourfold. First, the increase in paved road is associated with the increase in income and consumption. Second, the increase in income is coming mostly from two components: increase in non-agricultural wages and salaries, and remittances from abroad. These two increasing components are usually significant in rural but not in urban areas, indicating that roads are better allocated in rural areas. Third, income source that occupies a small portion of the total income like income from farming (wages and salaries, and farming activities) and domestic remittances are likely to decrease with the increase of paved roads. Fourth, health expenditure, as a component of consumption, increases with increase in paved road while education expenditure, another component of consumption, only increases in urban areas not in the rural areas.

Given the main results, the policy implications are twofold. First, roads would be better allocated in rural areas where road density is low to maximize impact on income which works through improving non-agricultural wages and salaries and facilitating cash transfer from abroad. Second, given that the additional road leads to the decline in farming income, policy that makes farming profitable and less risky are necessary for farmers to stay in agriculture. Without these policies, it would be better for the farming households to move away from agriculture as pathway out of poverty.

A Cross-sectional Study on the Relationship between the Quality of Pedestrian Safety Infrastructures and the Incidence of Pedestrian Casualties along Epifanio de los Santos Avenue

By

Alexis Angela B. Andaya, Pocholo Miguel M. Espina, Daniel Andre F. Labial, Carlos Diego S. Mendoza, Timothy Roger A. Rufino, and Gian Paulo Alberto V. Soliman

Abstract

The main purpose of the cross-sectional study was to determine the relationship between the quality of Pedestrian Safety Infrastructures (PSIs) and incidence of pedestrian casualties in one of the thoroughfares with highest incidence of pedestrian casualties in Metro Manila, namely Epifanio de los Santos Avenue (EDSA).

The unit of analysis in the study was 200-m segments of EDSA. Incidences of pedestrian casualties from 2012-2015 were reviewed from the MMARAS Traffic Accident Reports of MMDA and plotted in a map of EDSA with all its 120 segments marked. To assess the quality of PSIs along EDSA, a pedestrian safety infrastructure evaluation tool (PSIET) was developed from an adaptation of the Global Walkability Index and US Pedestrian Road Safety Audit Manual.

The method of data collection was comprised of video recording PSIs along all the segments of EDSA both northbound and southbound. All recorded videos were reviewed as basis for the rating of PSI quality using the PSIET. An overall percentage score was given to each segment to represent the overall quality of PSIs in the segment. A bivariate analysis using Pearson's r correlation was applied to the data to determine the acceptance or rejection of the alternative hypothesis. In addition, univariate and multivariate analyses were employed in the study to further describe the quality of PSIs in EDSA. A qualitative analysis of pedestrian behavior in selected intersections was also conducted as prompted by the study's results.

The alternative hypothesis of the study is accepted. Results of the study show that the quality of PSIs has a significant inverse relationship with incidence of pedestrian casualties. However, the strength of correlation is only weak to moderate with an r value of -0.356 ($p < 0.001$). These results suggest that PSIs have a relationship with pedestrian casualties but the impact is limited.

Towards Optimizing the Use of Food Balance Sheet/Supply Utilization Accounts

By

Maura S. Lizarondo

Abstract

The paper intends to contribute to the promotion of the use of food balance sheet/supply utilization accounts (FBS/SUA) in policy analysis and decision – making. A brief historical background of these commodity accounts is discussed to understand the present situation or the existing practices in compiling FBS/SUA. To address the general objective of this report, concepts and definitions, basic data inputs and corresponding sources, as well as methodologies used in compilation, analysis and dissemination are tackled herein.

The paper puts forward the important uses of the FBS/SUA not only for policy analysis, monitoring and evaluation, but also, for further development and maintenance of data systems that support the FBS/SUA compilation. The major policy dialogue being addressed is food security. Relevant issues in referring to the accounts versus household survey results as sources of food security indicators are discussed in this report.

The general assessment of the current FBS/SUA compilation system in the Philippines hopes to give way to better appreciation of the system's strengths and weaknesses. This, then, should facilitate the revisiting or review by the Philippine Statistics Authority (PSA) of the existing compilation practices towards the enhancement of the system. All these should translate to optimizing the use of FBS/SUA, particularly, in generating and disseminating food security indicators

Comparison of Philippine Livestock Census and Surveys

By

Anna Maria Lourdes S. Latonio, Isidoro P. David, and Zita VJ Albacea

Abstract

The picture of the country's economy will not be complete without the important and current information about the livestock industry. Before the reorganization of the Philippine Statistical System (Republic Act No. 10625), official total livestock inventory estimates were independently produced by the National Statistics Office (NSO) every ten years through the Census of Agriculture (CA), and by the Bureau of Agricultural Statistics (BAS), semi-annually and/or quarterly through the combined Backyard Livestock and Poultry Surveys (BLPS) and Commercial Livestock and Poultry Surveys (CLPS). The inventory estimates for major livestock types (carabao, cattle, goat and swine) during common years 1980, 1991 and 2002 were observed to exhibit an increasing trend in the magnitude of their differences by as much 0-55 percent at the national level to as high as 0-900 percent at the provincial level. Empirical comparisons of the national and provincial level inventory estimates were performed, and possible sources of observed differences in the estimates were likewise explored.

Labor and Mechanization: Impact on Labor Productivity in Rice Production in the Philippines and Selected Major Rice Producing Countries in Asia

By

Alice B. Mataia, Ronell B. Malasa, Jesusa C. Beltran, Flordeliza H. Bordey, Cheryll C. Launio, Aileen C. Litonjua, Rowena G. Manalili, and Piedad F. Moya

Abstract

Labor is one of the major inputs in rice cultivation and, as such, it accounts for a substantial proportion of total rice production cost. This could be attributed to either the high labor required to produce rice per hectare or to high agricultural wages. Hence, reducing labor cost is one of the major approaches to improve competitiveness and increase labor productivity. The burden to improve competitiveness becomes heavier as the Philippines rice market faces greater pressure to liberalize through the implementation of ASEAN integration in 2015 and the impending removal of quantitative restrictions in 2017. This study examined the status of labor use and mechanization and its implications to labor productivity in Philippines rice production relative to other selected major rice-producing locations in Asia. It covers six countries including Philippines, Indonesia, India, China, Thailand and Vietnam. A quota sample of 100 farmers was set per sample province per season per country with total samples of 600. Data were gathered in all rice planting seasons during crop year 2013-2014 using structured electronic questionnaires in MS Access format. Descriptive statistics were mostly used in the analysis of data.

Results showed that total labor use in rice production exceeds 65 man-days per hectare in the Philippines, Indonesia and India, but it is substantially less in China, Thailand and Vietnam, at roughly 10-20 man-days per hectare. Some of the reasons for the relatively low labor input use in China, Thailand and Vietnam are the widespread use of machine such as four-wheel tractors in land preparation and combine harvesters in harvesting and threshing, and the adoption of direct seeding in crop establishment. On the contrary, transplanting was mostly practiced in the Philippines, Indonesia and India and only land preparation and threshing were mechanized involving the use of two-wheel tractors and axial threshers, respectively. Consequently, China, Thailand and Vietnam are among the countries with high productivity of labor due to less use of labor input and highly mechanized operations. In the Philippines, the low mechanization keeps labor productivity low and makes rice production less competitive. Mechanization (use of four-wheel tractors, combine harvesters and mechanical transplanters) can reduce total production cost and enhance competitiveness, as well as increase labor productivity for higher rural incomes.

Keywords: labor, mechanization, labor productivity, competitiveness

ALUES: R Package for Evaluating Land Suitability for Agricultural Production

By

Al-Ahmadgaid B. Asaad¹, Arnold R. Salvacion², and Bui Tan Yen³

Abstract

The Agricultural Land Use Evaluation System (ALUES) is an R programming (an open- source statistical software) package developed for evaluating land suitability on different crops. The suitability is assessed based on the standards of the crop requirements from Sys et al. (1993). In particular, the classification uses fuzzy logic approach with membership function such as triangular, trapezoidal, and Gaussian functions. The input data are the characteristics of the land units, sub-grouped into rainfall, temperature, topography, and soil properties. ALUES is inspired by a similar tool for land evaluation, the Land Use Suitability Evaluation Tool (LUSET) developed by Yen et al. (2006) at IRRI. The package contains data on crop requirements parameters, and sample land units data for Marinduque, Philippines; and Lao Cai, Vietnam. Finally, the package is capable of suitability score reports and maps.

Keywords: R language, open-source, crop suitability assessment

¹ Statistical Methodology Unit, Office of the National Statistician, Philippine Statistics Authority, East Avenue, Diliman, Quezon City, 1101

² Department of Community and Environmental Resource Planning College of Human Ecology, University of the Philippines Los Baños, College 4031, Laguna

³ Soils and Fertilizers Research Institute, Dong Ngac, Tu Liem, Hanoi, Vietnam

An Exponentially Weighted Moving Average Control Chart for Zero-Truncated Poisson Processes: A Design and Analytic Framework with Fast Initial Response Feature

By

Robert Neil F. Leong, Frumencio F. Co, and Daniel Stanley Y. Tan

Abstract

Inspired by the capability of exponentially-weighted moving average (EWMA) charts to balance sensitivity and false alarm rates, we propose one for a zero-truncated Poisson processes. In particular, we present a systematic design and analytic framework for implementation. Further, we add a fast initial response (FIR) feature which ideally increases sensitivity without compromising false alarm rates. The proposed charts (basic and with FIR feature) were evaluated based on both in-control average run length (ARL₀) to measure false alarm rate and out-of-control average run length (ARL₁) to measure sensitivity to detect unwanted shifts. The evaluation process used a Markov chain intensive simulation study at different settings (i.e., different in-control Poisson rate and different out-of-control shifts) for different weighting parameters (ω). Empirical results suggest that for both scenarios, the basic chart had: (1) exponentially increasing ARLs as a function of the chart threshold L ; and (2) ARLs were longer for smaller ω s. Moreover, the added FIR feature has indeed improved ARL₁ within the range of 5% - 55%, resulting to quicker shift detections at a relatively minimal loss in ARL₀. Finally, a case application in monitoring hospital surgical out-of-controls is presented to demonstrate its usability in a real-world setting.

Keywords. Exponentially - weighted moving average control chart, zero truncated Poisson process, fast initial response feature, average run length, infection control

Improving the Interval Estimation of the Quarterly National Accounts of the Philippines

By

**John Lourenze S. Poquiz, Stephanie Rose R. Moscoso,
and Ellen Grace A. Guiam¹**

Abstract

This paper aims to suggest alternative methods of interval estimation for the Quarterly National Accounts. At present, Philippine Statistics Authority publishes interval estimates of the GDP growth rate alongside the point estimate of the GDP growth. The confidence interval is computed using the methodology proposed by the paper of Virola and Parcon (1996)². The estimation procedure presented in the said paper constructs a confidence interval using a parameter β , which is a ratio between the preliminary and the revised estimates of the GDP growth. A confidence band is then constructed, creating an upper and lower limits to the GDP growth rate. This methodology is not without issues. First, it assumes a normal distribution for the β , whose probability distribution is unknown. Also, the use of the standard error of the sample mean as a proxy for the true standard error of β could lead to the overstatement or understatement of the standard error used in the interval estimation.

This paper explores a methodology of interval estimation using the bootstrap procedure to identify the distribution of the parameter to be used for the approximation of the confidence interval. This study would also explore a methodology of constructing a confidence interval for GDP levels rather than growth rates.

Keyword: Confidence Interval, GDP, National Accounts

¹ Macroeconomic Accounts Service, Philippine Statistics Authority

² Virola, Romulo A. & Parcon, Gaye A. (1996). On Approximate Confidence Intervals for GDP/GNP Growth Rates. 1996 National Convention on Statistics.

**Multilevel Principal Component Regression Model
for High Dimensional Data: A Simulation Study**

By

Ella Joyce S. Paragas and Erniel B. Barrios

Abstract

Data mining has been rising rapidly. It happened after the booming of massive datasets in different field such as bioinformatics and e-commerce. The “large” data can be because of the number of variables, number of observations, or both (Kettenring, 2009). Modeling of high dimensional data is often confounded with multicollinearity and problem with interpretability of the fitted model. General Adaptive Sparse Principal Component Analysis (GAS-PCA) is used in reducing dimensionality that simultaneously induces sparsity. However, selection of few sparse components of the high dimensional predictors leads to specification bias. A random group level effect can help mitigate the bias in a model based on a few principal components. In this study, a two-level principal component regression model for high dimensional data was postulated. This study showed that GAS-PCA captured the structural dependencies of the data. It is showed that multilevel principal component regression model is best fitted to use when there are large number groups and when the variability of the group level effect is large.

Key words: General adaptive sparse principal component, high dimensional data, multilevel model, principal component analysis, principal component regression

2012 Municipal and City Level Poverty Estimates in ARMM

By

Driesch Lucien R. Cortel¹

Abstract

Poverty in the country remains a challenge for many Filipinos. The growing prevalence of poverty needs efficient solutions and this can be done by managing the local cities and municipalities to easily identify the factors that affect poverty. Despite the many efforts of the government and even by some of the non-government organizations in their poverty alleviation programs, the poverty incidences at the city and municipal level in the Autonomous Region in Muslim Mindanao (ARMM) remains alarming. Thus, this paper aims to present the results of a study that generates the city and municipal level poverty statistics of the Philippines and use the statistics to assess the poverty conditions in the region for year 2012. In generating the city and municipal level statistics, an indirect small area estimation (SAE) technique was employed which follows a model-based approach. The city and municipal level estimates of ARMM were generated using the Poisson regression modeling approach based on the income collected through the Family Income and Expenditure Survey, Labour Force Survey (LFS), Census of Population and Housing (CPH), Barangay Listing (BL) and administrative data sets of the region. Through SAE, poor areas are immediately identified wherein programs can be implemented to help them.

¹ Statistical Specialist I of the Philippine Statistics Authority

Building on the Multidimensional Poverty of the Indigenous Peoples of the Philippines

By

Elizabeth F. Milo¹

Abstract

The population of the Indigenous peoples in the Philippines is estimated to be between 14- 17 million which belongs to 110 ethno-linguistic groups. (United Nations Development Program, 2010) The IP cultural communities are dispersed all over the Philippines but are concentrated mainly in Northern Luzon (Cordillera Administrative Region, 33%) and Mindanao (61%). In the 2010 Census of Population and Housing, only 9 million indigenous peoples were identified. The inaccuracies in the identification may be attributed to, first, the lack of consensus on the definition of being a member of the indigenous cultural communities as a result of the assertion to self- identification inherent to the indigenous peoples. Specifically, the number of spans between 110 (UNDP) and 182 specified ethnic classification (CPH) which remains to be officially resolved. Second, on the gamut of social justice and peace, in a community where the IPs are predominant the relevance and recognition of ethnic ascription diminishes and even becomes precarious- a condition which is exacerbated by the social discrimination and prejudicial treatment toward the indigenous cultural communities due to the alleged involvement in insurgency.

In the State of the World of Indigenous Peoples report issued by the United Nations Permanent Forum on Indigenous Issues (January 2010), 33 percent of the world's poorest population is comprised by the IPs. Results from the World Bank study using urban household data from 1989 indicate the high and persistent correlation between the poverty levels and the indigenous population. Equally alarming findings indicate that indigenous people are systematically poor. (Psacharopoulos and Patrinos, 1994) Studies also show the wide gap between indigenous and non-indigenous poverty, a trend that becomes even more pronounced when examined by rural- urban disaggregation. (Klasen, 2004)

Empirical evidence reveals that the high incidence of severe poverty has been consistent for the indigenous peoples in the rural areas in the Philippines. (ADB, 2002) There are, however, diverging issues arising from these findings which are important to consider. First, that income- based poverty is higher in rural areas due to the stark wage differentials. On the other hand, the relative self-sufficiency of the IPs shields them from external shocks in the price volatilities of the market commodities. Second, the geographic isolation of the indigenous peoples, which are primarily attributed to the remote characteristics of their ancestral domains and ancestral lands, limits their access to the basic services provided by the national government.

Moreover, the absence of local roads vis-à-vis the higher transportation costs creates additional access barrier. This spatial inaccessibility vis-à-vis the functional limitations of the IPs have been effectively exploited by the threat groups resulting in a poverty trap. Third, the relative differences in the cost of living between the rural and urban areas presuppose that indigenous people who moved in the urban and peri-urban areas face limited socio-economic opportunities, resort to informal labor and informal settlements, usually lack the necessary documentation to access social services, and therefore experience more social exclusivity.

The study is undertaken to provide evidence of the multidimensional poverty experienced by the Indigenous Cultural Communities in the Philippines recognizing the disaster risk-poverty nexus as depicted by the UNISDR (2009). It seeks to answer the following questions, specifically: What are the demographic and spatial characteristics of the Indigenous peoples in the Philippines? What are the vulnerabilities and deprivations experienced by the indigenous people which contribute to their poverty with respect to the disaster risk-poverty nexus? How effective has the government been in ensuring that social protection programs are provided to alleviate the poverty conditions of the IPs? What are the limiting factors of these interventions as well as the enabling conditions? How do we bridge the gap between effectively identifying the deprivation factors and accurately providing the necessary interventions to address the multidimensional vulnerabilities of the IPs and effectively ensure that the basic services reach the target population? Simply put, how can we make the economic gains from the social reform agenda trickle down to the IPs?

¹ Development Management Officer IV of the National Anti-Poverty Commission under the Office of the President

Intertemporal Life-Cycle Theory of Consumption

By

**Flora Mae Z. Agustin, Patrisha Marie A. Ambrosio, Emerita Mhiro H. Mones,
and Eleanor P. Garoy**

Abstract

This paper looks into the effect of savings, income and age to the consumption of an individual by using a structured questionnaire in gathering the data. The researchers asked 150 respondents about their income, savings, expenditures, and their profile or characteristics such as age, civil status and their educational attainment. This paper found out that the explanatory variables such as income, savings, and age did really affect the consumption of the individual. Income and Age has a positive relationship with consumption. This means that as income and the age of the individual increases, its consumption also increases. This paper also showed that savings has a negative relationship with consumption, which means that as savings increases, consumption for the current period decreases but the consumption for the future increases.

Keywords: intertemporal choice, life-cycle hypothesis, income, savings, age, consumption

Trans Pacific Partnership and the Philippine Local Commodities

By

**Mark C. Pascasio, Polaris C. Bautista, Anthony B. Abalos,
Jonarie R. Vergara, and Sarah Mae A. Manuel**

Abstract

The Trans Pacific Partnership (TPP) is the foundation of the Obama Administration's economic policies in the Asia Pacific. In February 2016, twelve (12) nations signed the agreement which includes: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam and the United States. The main features of this agreement are to strengthen the comprehensive market access, regional approach to commitments, addressing new trade challenges, inclusive trade and platform for regional integration. Philippines could be one of the potential members which announced its interest. However, whether the country would be joining the partnership or not, it is timely and relevant to investigate which commodities should be the country's focus. This paper investigates through the use of available exports and imports of goods data as well as the manufacturing and agriculture sector data to determine which commodities are more likely to have comparative advantage in terms of gross value added ratio.

Key words: trans pacific partnership, trade, goods and services

Construction of a Statistical Index Using the Millennium Development Goal Indicators as a Measure of a Country's Performance

By

Ramoncito G. Cambel

Abstract

Economic growth is expected to enhance the policies for poverty reduction and other social problems. But it is not always the case; economic growth doesn't necessarily reflect human development. This situation can be answered by the fact that economic growth is most commonly measured by GDP. Because of this, researchers have formulated different indices that assess economic and human development. Human Development Index (HDI) measures the basic dimensions of human development and does not take into account other indicators of development. With this in mind, this paper aims to construct an alternative measure of a country's performance using Millennium Development Goals indicators. Initial variables that were considered in the study are the different indicators for monitoring progress of the eight Millennium Development Goals. The analysis of data considered only a specific year which has the most number of available indicators. Variables were then subjected to Principal Component Analysis to reduce its dimensionality. The identified principal components with high loadings were used in the construction of the statistical index as an alternative measure of development. Bootstrap samples were generated to check the statistical properties of the index such as unbiasedness, precision, accuracy, and consistency.

Keywords: Economic growth, Human Development Index, Millennium Development Goals, principal component analysis, bootstrap

Digging Deeper into the Philippine Mineral Resources

By

**Lisa Grace S. Bersales, Edward Eugenio P. Lopez-Dee,
Reynaldo F. Fulleros, Michelle Fatima T. Caranay,
Corina Myra C. Concepcion, and Sarah Mae A. Manuel¹**

Abstract

The Philippines is rich in mineral resources which are considered economic assets and are produced mainly through mining. While the mining industry contributes to the growth of the economy, this sector is also believed to be destructive in the environment. Several studies were undertaken to account for mineral resources. This paper introduces the use of the first international statistical standard for environmental-economic accounting - the System of Environmental-Economic Accounting (SEEA) 2012 Central Framework. The asset accounting in SEEA 2012 Central Framework aims “to measure the quantity and value of environmental assets and to record and explain changes in those assets over time.” It also serves as a tool to link the environmental statistics to the economy. In addition, this paper aims to illustrate the application of the said accounting framework in the Philippines. In connection to the continuing production of minerals, this paper intends to show the stock of mineral resources in the country and to identify the possible reasons in its changes. Moreover, this study aims to provide the benefits the economy and the society receive from the mineral resources apart from being inputs to production. This paper, however, focuses only to four metallic minerals, namely, gold, copper, chromite, and nickel.

Key words: environmental accounting, mineral reserves, asset accounting, opening and closing stocks, resource rent

¹ National Statistician and Civil Registrar General of Philippine Statistics Authority; Statistical Specialist, Environment and Natural Resources Accounts Division; Technical Staff of the Philippine Wealth Accounting and Valuation of Ecosystem Services Project, respectively

Accounting for the Forest Cover of the Philippines: A Tool for Sustainable Forest management

By

**Edward Eugenio P. Lopez-Dee, Virginia M. Bathan, Precious Anne C. Cañete,
Madeth A. Gayosa, and Ellen Grace A. Guiam¹**

Abstract

Forests play crucial role in human development and survival. Forest produces goods and ecosystem services. It is vital as watershed, preserving adequate water supply. It also assist in biodiversity conservation by providing habitat for wildlife. Forest also play major role in climate change mitigation as forest serve as carbon sink, and in disaster risk reduction as forest cover and vegetation moderate floods and drought. Recognizing the importance of forest economically, socially and environmentally, the sustainable use and management of forests has been included in the United Nations Sustainable Development Goals (SDGs) and targets.

One way to realize Target 15.2 of the SDGs of promoting implementation of sustainable management on all type of forest, halting deforestation, restoring degraded forest, and substantially increase afforestation and reforestation by 2020 is by monitoring the change in forest cover, including the drivers of change. Through these efforts, the effectivity and sustainability of current programs and policies can also be analyzed.

This paper aims to present the area of forest cover and the changes in forest cover over time from 2003-2013 following the UN System of Environmental-Economic Accounting (SEEA) 2012 - Central Framework. The SEEA 2012 – Central Framework was adopted as international standard by the United Nations Statistical Commission at its forty third session in March 2012. It is a multipurpose conceptual framework for understanding the interaction between the economy and the environment, and for describing stocks and changes in stocks of environmental assets.

Keywords: land cover, forest, forest cover, forest disturbance, reforestation, addition in stock, reduction in stock, managed expansion, managed regression, sustainable development

¹ OIC-Chief Statistical Specialist, Senior Statistical Specialist, and Junior Technical Staff of the Philippine Economic-Environment and Natural Resources Accounting (PEENRA) Project, respectively of the Philippine Statistics Authority (PSA)

Provincial and Highly Urbanized City Level Estimation of Average Household Saving Rate Using Spatially Correlated Random Area Effects Model¹

By

Jared Jorim O. Mendoza²

Abstract

This paper uses a spatially correlated random area effects model in estimating the average saving rate of households in all provinces and highly urbanized cities (HUCs) in the Philippines. Specifically, an empirical best linear unbiased (EBLUP) estimates are combined with a spatial autoregressive (SAR) model-based estimates by relating the small area direct estimates to the area specific covariates and taking into account the information provided by neighboring areas. The SAR model suggests that the provincial or HUC level proportion of young dependents (aged 0 to 14 years), proportion of the elderly (aged 65 years and above), proportion of household heads having a college education, and the average family size determine the average household saving rate in a province or HUC. Moreover, neighboring provinces and HUCs within their 120 kilometer radius are captured to have spatial clustering and such is considered in having a statistically significant and optimal spatial autocorrelation. Based on the SEBLUP estimates, most of the provinces and HUCs (39 out of 112) have average household saving rate between 10% and 15% while less than half (46%) of the provinces and HUCs have average household saving rate below 10%. Specific financial programs could be identified to boost the household saving rates of these provinces and HUCs. Among all the provinces and HUCs, 103 (91.96%) of them have estimates which are said to be reliable.

Keywords: small area estimation, EBLUP, SAR, SEBLUP

¹ Part of the ongoing master's thesis of the author in the University of the Philippines Los Baños

² Instructor, Institute of Statistics, College of Arts and Sciences, University of the Philippines Los Baños

Estimating the Prevalence of Young Adult Obesity in Provinces and Highly Urbanized Cities in the Philippines Using Poisson Regression with Spatially Autocorrelated Random Effects¹

By

Marie Joy F. Lopez²

Abstract

This paper presents the results of a study on using the model-based approach in estimating the prevalence of young adult obesity in provinces and highly urbanized cities (HUCs) in the Philippines. Specifically, this demonstrates the use of a Poisson regression with spatially autocorrelated random effects as an estimation procedure for count data which is the nature of most health-related outcomes. The model also accounts for residual spatial dependence which may be present when the variable of interest is measured in areas that are geographically proximate. The resulting model identified provincial count of commercial establishments, provincial count of men who have at least college education and provincial count of barangay with health centers as determinants of young adult obesity accounting for about 70% of the total variation in the variable under study. Furthermore, residual spatial dependence was present within 100 kilometer radius. Using the model, 95 out of 112 (84.82%) of provinces and HUCs have reliable estimates and 17 provinces are unreliable but still with acceptable measures of reliability.

Keywords: small area estimation, model-based approach, count data

¹ Part of the ongoing master's thesis in the University of the Philippines Los Baños

² Instructor, Institute of Statistics, College of Arts and Sciences, University of the Philippines Los Baños

Municipal and City Level Estimation of the Proportion of 0-5 Year-Old Underweight Children in the Philippines¹

By

Reanne Len C. Arlan²

Abstract

This paper focuses in estimating the municipal and city level proportion of 0-5 year-old underweight children in the Philippines using three small area estimation procedures, namely; direct estimation, non-spatial Poisson regression, and spatial Poisson regression. The municipal and city level estimates obtained from the said estimation procedures were evaluated and compared based on their measures of precision and reliability. The sources of data include the 2008 National Nutrition Survey, 2007 Census of Population, 2008 Field Health Service Information System, and 2008 List of Establishments. Extracted geographic information from the Official Philippine Map which shows the city and municipal boundaries and centroids were also used for the mapping and spatial analysis. Among the three estimation techniques, spatial Poisson regression generated the most precise and reliable set of estimates. The resulting best predicted model used the spherical covariance structure to represent the spatial correlation of the total number of 0-5 year old underweight children and has three predictors: municipality/city count of persons who are children of the household head; women who have at least high school education; and active barangay health workers working in the LGU. It generated 1,368 valid estimates ranged from 0.0383 (Makati City) to 0.9990 (Municipality of Marabut, Province of Western Samar), with computed variances ranging from 1.38E-07 to 1.13E-09 and coefficients of variation all less than 10%.

Key words: small area estimation, spatial Poisson regression

¹ Mainly taken from the author's Master of Science (MS) thesis at the University of the Philippines Los Baños.

² Research Analyst II, Philippine Statistical Research and Training Institute

Roadmap for Agro-Industrial Development in the Philippines

By

Roehlano M. Briones, Ivory Myka Galang, and Lovely Ann Tolin

Abstract

The Philippines is at the cusp of a high and hopefully prolonged growth phase. However concerns have been raised regarding the ability of this growth to deliver sustained creation of jobs and reduction of poverty. This report emphasizes that agricultural development is key to inclusive growth, which requires structural transformation in agriculture itself. Points made in this paper are based on past studies, and the set of agricultural sector Road Maps and Industry Assessments being developed by the Department of Trade and Industry. The authors argue that structural transformation can only happen when Philippine agriculture upgrades and restructures supply chains to realize competitive advantage in high value agro-industrial products. Identified constraints to agricultural development include inadequate support for farmers, supply chain and coordination issues, investment in public goods, weak regulatory and certification system, and defective property rights regime. Addressing these problems involve the creation of a coordination mechanism among stakeholders, and the adoption of vertical and horizontal measures.

**The Dominant Supplier Approach to Liberalizing Trade in APEC
Environmental Goods**

By

George Manzano and Shanti Aubren Prado

Abstract

If member-economies of Asia Pacific Economic Cooperation (APEC) want to implement the APEC Environmental Goods (EGs) initiative, how might they go about it? We propose an alternative modality to liberalizing a number of environmental goods in the APEC list. This involves accounting for two economic issues: the free-rider problem that usually afflicts liberalization on a Most-Favored-Nation (MFN) basis and the significance of trade in environmental goods for APEC and its individual members. Using the framework developed by Wonnacott (1994), we assess the predominance of APEC in the world supply of each good and the comparative advantage of the region in clusters of environmental goods. We find that, on average, the world sources about 56 per cent of EGs from APEC. But overall, the comparative advantage of the APEC is greatest in goods which the region supplies about 60 per cent of world supply. For this subset of EGs, free-riding by non-APEC nations is relatively a small problem. In terms of functional areas, the most promising category for the APEC is renewable energy and clean technology production. However, the optimal benchmarks and potential areas could vary across member-economies.

On to the Bigger Arena: Philippine SME Participation in AEC and Other FTAs

By

Rafaelita M. Aldaba

Abstract

Small and medium enterprises (SMEs) are expected to benefit from the opportunities arising from increasing globalization and economic integration, particularly the establishment of the ASEAN Economic Community (AEC) in 2015 and the emergence of free-trade agreements (FTAs). This study aims to take a more in-depth look at the extent and nature of SME participation in regional economic integration and examine the determinants of FTA utilization applying a regression analysis. Based on a nationwide survey of 939 establishments, only 16% of small and medium enterprises utilize FTAs while 39% of large enterprises are FTA users. Among SMEs, only 39% are aware of the AEC in contrast to 59% among large enterprises. The primary reason for not using FTAs is lack of knowledge and difficulties in fulfilling the rules of origin (ROO) requirements and obtaining certificate of origin. The most frequently used FTA is the ASEAN Trade in Goods Agreement followed by the ASEAN-China and ASEAN-Japan.

The regression results showed that firm size, age, participation in exporting activities, foreign ownership, engagement in innovation, membership in industry association, and awareness of the AEC have positive and significant effect on the probability of FTA utilization. The study reaffirms the need for more intensive efforts to increase AEC and FTA awareness as well as FTA utilization through properly targeted awareness programs on using FTAs, creation of a central database on doing business in other ASEAN countries, use of information and communication technology, and simplification of ROO compliance administration. Equally important are programs to improve SME competitiveness, finance access, R&D support and incubation facilities, strengthening network linkages, and integrating SMEs in the supply chain of large enterprises.

Indigenous Knowledge Systems and Practices (IKSPS) in the Teaching of Science

By

Xylene Grail D. Kinomis

Abstract

Indigenous Knowledge Systems and Practices (IKSPs) are local knowledge developed over centuries of experimentation and are passed orally from generations to generation. It was found to be an important catalyst to sustainable development due to their direct connection to resource management and conservation. However, these knowledge, systems and practices are at escalating rate of deterioration due to consistent assimilation that resulted from the continuing loss of interest of these practices from young people. Thus, empirical evidence to showcase importance to environmental protection and cultural preservation are encouraged. Likewise, studies connecting these indigenous knowledge and practices to academic curriculum are highly regarded to be influential in their preservation. Moreover, this paper seeks to find out the relevance of indigenous knowledge systems and practices in the teaching of science among secondary public science teachers in Baguio City.

This study aimed to investigate the Indigenous Knowledge Systems and Practices (IKSPs) used in the teaching of science among secondary public science teachers in Baguio City and to determine their extent of effectiveness in achieving the objectives of the subjects and the problems that they encounter from using it.

Enhancing the Performance of Grade VI-C Pupils of Buyagan Elementary School Through the Use of Arts in Math (Aim)

By

Lorna V. Wallit

Abstract

The action research aims to enhance the performance of Grade VI-C Pupils in Mathematics in Buyagan Elementary School through the use of Arts In Math (AIM). Specifically, the action research sought to: 1) use Arts in Math (AIM) to enhance the mastery level of Grade VI-C in Mathematics, 2) improve comprehension skills of Grade 6 on Mathematics concepts through the use of “Arts in Math (AIM)”, 3) use “Arts In Math (AIM)” to stimulate, motivate and sustain pupils’ interest in Mathematics and 4) improve the teaching strategy in Mathematics through AIM.

The study was conducted for two quarters from June-October 2015(1st and 2nd Grading) with 46 pupils as the target subjects. The study made use of the one -shot experimental design to look into the effectiveness of “Arts In Math (AIM)” in improving pupils’ performance in Mathematics.

The findings showed that the use of Arts In Math (AIM) enhanced the performance of Grade VI-C Pupils in Mathematics. For the first quarter, there was an increase of 34.13 in the MPS and 29.79 for the second quarter. Using the t-test of the difference between means of correlated data, the t- test computed value of 23.71 for the first quarter and 32.37 for the second quarter is more than the critical value of 1.676 at 0.05 level of significance with 45 degrees of freedom.

In conclusion, Arts In Math (AIM) enhanced mastery learning and comprehension of Grade 6-C pupils based from the pretest and posttest. There was a significant difference between the means of pretest and posttest using t-test as the statistical treatment. In addition, Arts in Math (AIM) stimulated, motivated and sustained pupils’ interest. Furthermore, Arts In Math (AIM) improved the teaching strategy in Mathematics.

As to the recommendations, teachers should be encouraged and motivated to use Arts In Math so as to enhance pupils’ performance in Math. Moreover, integration of arts should not only be used in teaching Mathematics but also with other subjects. The school head should encourage and support the generation and use of the Arts In Math (AIM).

Preparing Pre-service Teachers to Teach Probability using Heuristics

By

Sweet Rose P. Leonares

Abstract

Probability, together with statistics, comprise a strand of Mathematics in the DepEd K to 12 Curriculum. Studies have shown, however, that even in-service teachers do not have adequate understanding concerning probability that teaching it generally posed a challenge. This study aimed to prepare pre-service teachers to teach probability with emphasis on the use of heuristics. The research design was descriptive qualitative using the phenomenographic approach. The participants were fifteen third year BSEd Mathematics majors in an HEI in Bacolod City who enrolled in Probability Theory for the first semester, AY 2015-2016. A 7-item pretest and posttest consisting of typical probability problems were administered and the Newman Error Analysis was used both times to determine the category of error the student committed for each item. Instruction focused on the use of appropriate heuristics. Pretest results showed very minimal understanding of probability, with most students committing low-level Comprehension error. Only one student got 4 correct answers, the rest had at most 1. Heuristics used were mostly symbolic representation and restating the problem. Posttest results showed 7 students getting 3 or more correct answers, including 4 students who got 5. Heuristics used were more appropriate for a given problem. Higher-level errors were noted.

Keywords: probability problem, heuristics, phenomenographic approach, Newman Error Analysis, pre-service teacher

Engendering Statistics in the Philippines

By

Dalisay S. Maligalig and Maria Helen F. Dayo

Abstract

To understand prevailing gender issues and to formulate and monitor better policies towards equality, data-intensive analyses are crucial. And hence, the production of adequate gender statistics to support this evidence-based approach is essential. This paper will examine the available data sources that can be used for producing gender statistics; identify the data gaps and data quality issues; and recommend possible approaches for improving data quality. Data sources that will be examined will be those that come from administrative reporting systems of government agencies (e.g. Department of Social Welfare and Development, Department of Health, Department of Education); surveys of national coverage that are conducted by the Philippine Statistics Authority and the Census of Population and Housing. Recommendations to improve existing data gaps through enhancement of data collection practices, business procedures and training will be discussed. This contribution explores possible improvement of measures, concepts and classifications in gender statistics in the Philippines.

KEYWORDS

Gender statistics, data collection practices, government agencies

Relationship between Gender and Employment Contexts among the Graduates of a University

By

Eddie S. See and Mary Ann M. See

Abstract

The study sought to identify if there is a relationship between the Bicol University graduates' gender and their scholastic circumstances and employment/ employment-relevant setting.

Using secondary analysis and employing statistical associative tools, this study found out that gender among the graduates of Bicol University seems to have a bearing on the course they took in college, their present employment and their present occupation. Males still crowd the engineering, technology, agriculture and criminology-associated courses but the females dominate almost all the rest of the courses. Males take up the executive positions in government and special interest organizations and the machine operations tasks jobs while females predominate in almost all other jobs, especially the professional careers. These findings suggest the reasonability of pursuing further studies that could test the hypothesis that a significant association exists between gender and the variables mentioned. On the other hand, sex appears not to have an influence on the honors they received in college, the reason for taking the college course, their present professional skills, their place of work, the relation of the college course to their first job, the length of time in finding job and the job level.

Scholastic performance in college seems not be influenced by sex. The latter also does not have any bearing on the reasons why these graduates took the courses they had in college. Said findings do not suggest the conduct of studies that would test the hypothesis that a significant association exists between gender and the afore cited variables.

A Strategy to Foster a Gender Responsive Tax Administration System by the Bureau of Internal Revenue

By

Aurora T. Alberto

Abstract

Gender equality and taxation are equally important topics that have seldom been explored, thus, the failure to recognize gender bias in tax systems. This study has undertaken to examine the NIRC of 1997 for provisions that discriminate women, specifically, Section 79(F) as it has been cited to have clear gender bias.

The objectives of this study are to 1) assess its implications to gender and national development; and 2) provide strategies to address GAD issues and aid the achievement of BIR tax collection goals.

Results obtained have led this study to recommend the integration of the ongoing BIR GAD strategy with the formulated strategies. The impact of which is two-fold: (1) a gender-responsive tax administration aiding the achievement of BIR tax collection goals, and (2) gender-responsive tax laws for the benefit of Filipino taxpayers, especially women taxpayers.

The two-pronged GAD strategy is enabled by: (1) strengthening the BIR GFPS; (2) strengthening the GAD capability building programs; (3) institutionalization of the policy to implement SDD; and, (4) establishing partnership with external stakeholders to address various gender concerns. These are prerequisite of the long term objective of amending gender-biased tax laws, particularly Section 79(F) of the NIRC.

**Forecasting Extreme Storm Conditions using Multivariate
Extreme Value Theory**

By

Peter Julian Cayton and Kin-Yip Ho

Abstract

We propose methodology for estimating disaster risk is devised based on bootstrapped multivariate extreme value theory methods. Disaster risk measures in the form of return levels of hurricanes are devised. These disaster risk measures are applied to weather extremes data generated by typhoons and tropical storms that enter the Philippine Area of Responsibility.

**Income and Consumption Inequality in the Philippines:
A Stochastic Dominance Analysis of Household Unit Records**

By

Ma. Rebecca Valenzuela

Abstract

In this paper, we employ stochastic dominance analysis on household unit records to measure relative welfare levels and investigate sources of inequality in the Philippines from 2000 to 2012. Using SD techniques developed in Chow, et al. (2016), we test for richness and poorness in the population across time and across various social, economic and demographic dimensions. Our SD composition approach and application of tests showed higher welfare levels exist for urban, non-agricultural and entrepreneurial households compared to their rural, non-agricultural households and those earning wages and salaries, respectively. In terms of age of household head, we found high concentrations of poor income units amongst the youngest cohort (30 and under), at the same time that there are high concentrations of richer income units in the older over-60 cohort. These results help explain persistently high levels of income inequality observed in the Philippine economy and bear important policy implications.

The Quality of Housing in the Philippines

By

Minerva Eloisa P. Esquivias

Abstract

This paper is the first attempt to present the statistics gathered solely from the Censuses of Population and Housing through several decades to assess the quality of housing accommodation of household population in the country. Indicators on housing derived from the data such as population growth, household size, density per unit area, density of household per housing unit, urbanization, and other related information were presented to have a perspective of the kind of housing do households enjoy. Housing is an important component of human settlements together with amenities including waste disposal, sanitation, drinking water, energy supply, and urbanization. All these data and information may be able to provide trends over a period of time as bases for policy formulation and decision making.

Key Words: Housing, human settlements, households, urbanization, amenities

A Glimpse of Social Aspect of Housing: A Situationer¹

By

Mary Ann C. Magtulis² and Ianne R. Go³

Abstract

Many technical papers were prepared on housing needs estimation following the housing needs framework based on principles prescribed by the United Nations (UN). These papers dwell on the physical dimension of housing needs, that is, on the accumulated housing need for the construction of housing units for identified household beneficiaries and those future needs. In this paper, an attempt is made to describe the social dimension of housing needs based on the housing needs framework on social aspect of housing and to propose data support plan and the estimation methodology. Among components of the social dimension, only the house repair can be provided with estimates since this has data support from 2010 Census of Population and Housing and 2015 Census of Population.

Key words and phrases: social dimension, housing support and services, upgrading rate

¹ Presented during the 13th National Convention on Statistics, October 3-4, 2016 EDSA Shangri-la Hotel, Mandaluyong City

² Main author is a Statistician V and Chief, Research and Information Technology Division, Philippine Statistical Research and Training Institute, 104 Kalayaan Avenue, Diliman, Quezon City, Metro Manila, Philippines; e-mail: maryann.magtulis@psrti.gov.ph

³ Co-author is a Research Analyst I of Research and Information Technology Division, Philippine Statistical Research and Training Institute, 104 Kalayaan Avenue, Diliman, Quezon City, Metro Manila, Philippines; e-mail: iannego17@gmail.com

Determination of Housing Acquisition Capacity of Households Living In Unacceptable Housing Units

By

Eleanore V. Ramos and Faith Lea B. Cabrera

Abstract

Housing or shelter is considered as a basic need. The government continually pursues decent housing accessibility of its citizens. Using the 2010 Census of Population and Housing results, the Housing and Urban Development Council and Philippine Statistical Research and Training Institute developed a housing needs framework that identified four types of unacceptable housing units: homeless or not meant for human habitation; dilapidated; marginal; and, rent free lots without consent of owner.

Since the 2010 CPH did not generate household income and expenditure data, the study was not able to estimate the investment that the government may need to subsidize decent housing acquisition of households living in unacceptable housing units.

This research used the results of the 2012 Family Income and Expenditure Survey to estimate that investment. It evaluated the incomes and expenditure of households living in marginal housing units and units on rent free lots without consent of owner in order to determine their affordability levels in acquiring decent housing.

Keywords: housing needs; rent control; housing affordability

**The Role of Filipino Women's Context of First Birth on Their Fertility
and Socioeconomic Situation**

By

Angelique F. Ogena

Abstract

In the Philippines, the more favorable setup is that the children are born within the marriage rather than outside of it. However, the growing number of nonmarital births in the country signifies that this view has been changing over time which is alarming as nonmarital childbearing in other countries was found to be associated with several adverse outcomes on the mother and the child born out-of-wedlock, which could well be the case in the Philippines. In this light, this study examines the association between women's context of first birth that is, whether their first birth was within a formal marriage or not, and their subsequent fertility and socioeconomic situation controlling for age at first birth. Univariate, bivariate, and binary logistic regression analyses of the nationally-representative 2013 National Demographic and Health Survey (NDHS) dataset were employed to examine this association. Specifically, the study employed data from women 25 years old and over whose live first birth occurred at least five years prior to the survey. Results reveal that one in four women have had a nonmarital first birth and has given birth significantly earlier than their marital counterparts. Half of the out-of-wedlock mothers eventually entered formal marriage and the proportion is higher for women who had their first birth during teenage years.

Contrary to most findings, a nonmarital first birth does not necessarily decrease the likelihood of a woman to have work and to be non-poor.

Assessment of Death Registration in the Philippines and Indirect Estimation of the 2010 Infant Mortality Rates

By

Marizza Grande

Abstract

This study filled information gaps in the country's death statistics from an assessment of the sources of death registration data and a review of the processes in the generation of death statistics. More importantly, Infant mortality rates (IMR) for the Philippines and its constituent regions, provinces, and highly urbanized cities (HUCs) were interpolated from Model Life Tables following indirect estimation techniques on vital registration data. In order to achieve this, death registration was adjusted by the application of a correction factor derived from the "best" estimate of level of completeness of death registration using three (3) indirect approaches (Brass Growth Balance, Preston and Coale, and Courbage and Fargues methods). For comparison estimates obtained using direct techniques are also supplied. Results show that 7 out of 10 deaths were registered in the Philippines while the estimated IMR for the country is 33 deaths per thousand live births in 2010.

Sub-national analyses revealed that more developed areas have higher levels of death registration and lower levels of IMRs while the inverse is true for less developed areas. Given the overall quality of data from the vital registration, the indirect approach of estimating mortality indicators in the country is still recommended. The findings also suggest the need for the government to have intensive civil registration programs and information education campaigns with focus on Muslim and indigenous people populated areas.

**Regression Analyses of Adolescent Filipino Women's Preferred
Number of Children**

By

**Simon Stephen S. San Pedro II, Julio T. Fajardo III, Frumencio F. Co,
Robert Neil F. Leong, and Daniel Stanley Y. Tan**

Abstract

The Philippines is considered to have the highest fertility rate among all Southeast Asian nations. Having high fertility rates could induce issues such as overpopulation, which has been rampant particularly in the urban areas over the last few decades. An indicator of fertility behavior is a woman's preferred number of children, which in turn could be affected by various socioeconomic and demographic factors. In this paper, the preferred number of children of adolescent Filipino women is analyzed through Poisson regression and quantile regression for count data using a sample from the 2013 National Demographic and Health Survey. Quantile regression for count data provides a better perspective on how covariates affect the conditional distribution of the preferred number of children of adolescent Filipino women, particularly at the extreme quantiles. The estimation results suggest that adolescent Filipino women who are living in urban communities and/or belonging to certain ethnic groups are more likely to prefer lower number of children.

PSA Three Years After RA 10625

By

Lisa Grace S. Bersales

Abstract

The Philippine Statistics Authority(PSA) was created by virtue of Republic act No. 10625 (Philippine Statistical Act of 2013) on 12 September 2013.

Three years later, the PSA reports the following main achievements:

A. Legal Frameworks and enabling environment

1. A strategic plan which provides its roadmap for its vision of being solid, responsive, world-class;
2. An organizational structure and staffing pattern with less plantilla items but with more salary grades 22 and higher (358 items salary grade 22 and above compared with 224 from four former major statistical agencies);
3. A bigger budget for maintenance and other operating expenses(MOOE) and capital outlay (regular MOOE 1.9 times higher on average compared with that of the four former agencies and CO 41.5 times higher);
4. Updated membership of the governing board (PSA Board) with four more members (Commission on Higher Education, Technical Education and Skills Development Authority), GOCCs representative, Philippine Statistical Association Inc.) compared with the National Statistical Coordination Board;
5. Updated PSDP given RA 10625 and Sustainable Development Goals;
6. Revision of Implementing Rules and Regulations for RA 9255(An Act Allowing Illegitimate Children to Use the Surname of the Father)
7. Transfer of all PSA offices in Quezon City
8. Completion of the Architectural and Engineering Design of the 23-storey PSA Building which will start construction latter part of 2016 or early 2017
9. Transfer of field offices to new buildings

B. Being Solid and Responsive

1. Implemented the Early Release of Quarterly National Accounts (QNA) - QNA is now released 10 days ahead starting the first quarter 2016 from 60 days to 50 days, except for the 4th quarter which is much earlier at 30 days.
2. Released the 2006 Benchmark Input-Output Accounts in 2013 and now integrated and consistent, for the first time, with the national accounts - As differentiated with the previous I-O Accounts, the 2006 I-O Accounts, for the first time, is integrated and consistent with the 2006 National Accounts

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following the same aggregated levels of the Gross Value Added (GVA) by industry as well as the GDP.

3. Harmonized the National Accounts with other related frameworks including adoption of new/updated standards and classification systems - National Accounts compilation is now harmonized with the Balance of Payments Framework starting 2013, following the implementation of the BangkoSentral Ng Pilipinas (BSP) with the New Manual of BOP 6th Edition is aligned with the international best practice of standards prescribed by the International Monetary Fund (IMF).

4. Conduct of Gross Regional Domestic Product (GRDP) News Conference in all Regions - Starting 2015, the GRDP news conferences are simultaneously conducted in all 17 Regions in order to advocate/communicate the GRDP results to the local press including other users of GRDP in the regions to be more responsive, relevant, and accessible to the stakeholders in the region.

5. Adoption of the New (2013) Master Sample for household surveys starting with the April 2015 LFS

6. Adoption of technology in data collection and validation of surveys

- operationalization of the use of tablet in the collection and recording of monthly prices data beginning in 2015.
- web-based accomplishment by respondents of survey returns to establishments-based surveys
- web-based processing of survey results of establishments-based surveys

7. Civil Registry Service Information Technology Project 2 under Public Private Partnership to expand and enhance civil registration and vital statistics

8. Conduct of Workshops on SDGs, Big Data and Core Regional Indicator Systems

9. Start of a pilot project to enhance provincial indicators systems

C. International Engagements

1. PSA co-chairs the UN Interagency and Expert Group for Sustainable Development Goals Indicators

2. PSA is vice-chair of the Regional Steering Group for the Asian and Pacific Civil Registration and Vital Statistics Decade 2015-2024.

3. PSA is a member of the governing council of the UN Statistical Institute for Asia and the Pacific

Moving forward, PSA still has to address a number of concerns such as: filling up of 867 vacant items nationwide, modernization of business processes and ICT infrastructure, subnational level statistics.

Keywords: PSA, solid, responsive, world-class, MOOE, CO

¹ Paper for the 13th National Convention on Statistics on October 2016 at the EDSA Shangri-La, Mandaluyong City, Philippines

² National Statistician, Philippine Statistics Authority

The Philippine Statistical System After Almost 3 Years of Transition: The Data Users' Perspective¹

By

Romulo A. Virola²

Abstract

The Philippine Statistical System (PSS) was reorganized by virtue of RA 10625, signed into law by President Benigno Simeon Aquino III on 12 September 2013 and its implementing rules and regulations approved by Arsenio M. Balisacan, Philippine Statistics Authority (PSA) Board Chairperson on 11 December 2013. The reorganization merged the former major statistical agencies (MSAs), namely, the National Statistical Coordination Board, the National Statistics Office, the Bureau of Agricultural Statistics, and the Bureau of Labor and Employment Statistics into the PSA. It also created the Philippine Statistical Research and Training Institute out of the former Statistical Research and Training Center.

The reorganization aimed to strengthen the PSS “in order to rationalize and promote efficiency and effectiveness in the delivery of statistical services, maintain an integrated statistical system characterized by independence, objectivity and integrity so as to enhance responsiveness to the requirements of equitable national development, promote the orderly development of a statistical system capable of providing timely, accurate and useful data for the government and the public, and support decentralization through the establishment of the statistical infrastructure necessary to service the statistical needs of local development planning”.

After close to 3 years of transition period, a survey via email was conducted among data users as key respondents to assess their views on what has happened to the PSS in different areas of their statistical concerns as data users: relevance/responsiveness; timeliness, dissemination/communication of statistics, accessibility of data, to determine if the objectives of the reorganization are being achieved from the users' perspectives.

In addition, the financial and manpower resources of the PSA vs the 4 former MSAs were examined.

The paper presents the results of the users' survey and assesses the gains/losses in terms of the financial and manpower resources of the former MSAs after the reorganization.

Keywords: reorganization, objectives, transition period, data users, statistical concerns, financial and manpower resources

¹ Paper proposed to be presented during the 16th National Convention on Statistics

² Former Secretary General, Assistant Secretary General, of the National Statistical Coordination Board, which is now part of the Philippine Statistics Authority

Evaluation of PCIC's Agricultural Insurance Programs

By

**Celia M. Reyes, Christian D. Mina, Reneli Ann B. Gloria,
and Adrian Boyett D. Agbon**

Abstract

With climate change as a growing environmental risk facing the world today, agriculture will be a key driver on the former's impact on poverty. Since the majority of the highly vulnerable poor households are in the agriculture sector, agricultural insurance can be an effective safety net that could help these households withstand these shocks. In the country, the Philippine Crop Insurance Corporation is the government organization offering agricultural insurance (rice, corn, high value crops, livestock, non-crop agricultural asset, fishery, credit and life insurance) to agricultural producers of the country. To assess program delivery, a process evaluation on the design and implementation of the program was done, using the results of the focus group discussions with various PCIC clients and partners in selected regions of the country, together with key informant interviews, desktop reviews and secondary data analysis. To evaluate the impact of agricultural insurance to farmers, a combination of matched Difference-in-Difference (DID) and Instrumental Variable (IV) Regression is used to estimate the impact on farmers' well-being (i.e. net income), investment in productive farm activities and access to agricultural credit, using data from a survey of 2,500 rice, corn and banana farmers in five regions of the country.

Modeling Iloilo River Water Quality

By

Michelle B. Besana and Philip Ian P. Padilla

Abstract

The analysis of covariance model (ANCOVA) with fixed site and seasonal effects as primary factors of interest, and water temperature, pH, dissolved oxygen, and salinity as covariates, was used to model the differences in (log) fecal streptococci concentration in Iloilo River over a one and a half year- period (October 2008 through February 2010). It was shown that the ANCOVA model with heterogeneous variance first-order autoregressive error covariance structure (ARH1) appropriately fits the data. The restricted maximum likelihood estimation (REML) procedure was used to derive the parameter estimates and the Kenward-Roger adjustment in the degrees of freedom was used to better approximate the distributions of the test statistics. The MIXED procedure of SAS was used to generate the estimates. The effect of season was highly significant ($p=0.0019$). The site effect was marginally significant ($p=0.0539$). The effects of water surface temperature and pH were significant at the 0.0655 and 0.0828 level, respectively. The effects of dissolved oxygen and salinity were not significant. Although the coefficient of determination was modest, the result of the study is useful in characterizing the dynamics of Iloilo River bacteriological system which contributes to an improved understanding of the Iloilo River water quality.

Assessment of Solid Waste Management (SWM) Schemes in Selected High End Subdivisions in Region XI for Environmental Protection and Conservation

By

Grace P. Moralde and Salvacion T. Orobia

Abstract

A study that dealt on environmental protection and conservation was implemented among 3 high end subdivisions in Region XI: namely Woodridge Heights Subdivision and Ladislawa Garden Village both in Davao City and in Villa Paraiso, Visayan Village Tagum City. The general objectives of the study is to assess the impacts and effectiveness of solid waste management schemes of the high end subdivisions in selected cities as strategy in reducing solid waste for environmental protection and conservation. Specifically, the study sought to determine the average volume of wastes generated per household; determine if they have extent of compliance to Environmental Solid Waste Management (ESWM) Act. The study also surveyed the average number of waste (biodegradable and non- biodegradable items) generated in selected high end subdivisions Davao City and Tagum City respectively. Lastly, the study drew policy briefs for an effective implementation of the solid Waste Management program. The research design used was descriptive in nature. The solid waste management schemes of high end subdivisions including its evolution and reasons for such practice by the residents were tackled. There were a total of 257 respondents in this study. The Statistical Treatment employed was frequency counts, percentages, ranking, graphs and mean scores were used in the study while inferential statistics on Spearman's Rho was used to get the relationships between certain variables.

Improved Rehabilitation Strategies, Schemes and Technologies for Highly Vulnerable and Severely Eroded Watersheds in Region XI

By

Lyrae A. Casidsid and Alma S. Uddin

Abstract

A study was conducted to determine effective rehabilitation strategies to minimize the level of environmental damage in a steep area located in Tuboran, Mawab, ComVal from February 2012 to June 2014.

The study focused on the use of coco coir technology, fascine technology and vegetative technology combined with falcata (*Paraserianthes fa/cataria*), mahogany (*Swietenia macrophylla*), Narra (*Pterocarpus indicus*), African tulip (*Spathodea campanulata*) and interplanted with forage peanut.

Analysis of variance in RCBD was used to analyze the data such as the height, diameter and percent survival of the experimental trees while correlation analysis for rainfall and soil loss; percent cover and soil loss of experimental plots.

After two years and three months, falcata in vegetative technology showed a significantly higher height increment of 6.75 m while tulip in coco coir technology showed significantly higher diameter increment of 7.07 cm and narra in vegetative technology showed a significantly higher percentage survival of 100%.

In the correlation analysis of rainfall and soil loss, coco coir technology showed no significant relationship; for percent cover and soil loss, all technologies showed high negative relationship.

However in terms of the cost of establishment, coco coir technology incurred the highest cost of P123.65 per square meter.

The Impact of Conditional Cash Transfer at the Household Level Economy: The Case of Selected Provinces in the Bicol Region

By

Prudenciano U. Gordoncillo

Abstract

The impact of the Pantawid Program to the household level economy was designed to address empirical questions through the analysis of both a cross section. The cross sectional analysis of data collected from the provinces of Albay, Camarines Norte, and Masbate, looked at differences in the composition of expenditures between Pantawid beneficiaries and non-Pantawid respondents and differences in economic activities and economic decisions using the Regression Discontinuity Design (RDD).

The analysis revealed that the Pantawid beneficiaries are consuming more cereals, in general, and more rice, in particular than non-beneficiaries. In general, the patterns of spending for non-food item such as clothing, health, education, utilities, communications and recreational goods, are shown to be higher among Pantawid beneficiaries compared to non-beneficiaries. However, there is also common pattern that the impacts of the Pantawid Program is more pronounced among those beneficiaries at the bottom end of the poverty grouping compared to those beneficiaries at the boundary of the poverty threshold. The overall pattern in terms of savings and other forms of investments shows that Pantawid beneficiaries are saving and investing more than the non-Pantawid counterparts. In terms of key economic decision made by households like marketing and household budgeting, the results showed that women in Pantawid households are more active in the decision regarding household marketing and budgeting. Finally, the Program also influences aspirations, which in turn determines future-regarding behavior of the beneficiaries. The study showed that Pantawid beneficiaries are more optimistic in terms of their children achieving more in life than their parents. Further, Pantawid beneficiaries have higher social aspirations compared to non-beneficiaries.

The overall result showing the positive changes in the economic decisions and economic activities at the household level adds to the merit of further continuation and even expansion of the program. However, Program implementers must take cognizance of the pattern that in some of the positive impact of the program, the changes are more pronounced for those who are at the bottom end of the poverty grouping. This would imply that targeting beneficiaries below and above the poverty threshold is a less effective approach. The notable result revealing that women in 4Ps households spent lesser time in child care compared to women in non-beneficiary households' merits further scrutiny. Hence, the 4Ps program should devise a more efficient system for the "Cash Transfer". Further, to ensure inclusion into the 4Ps

beneficiaries list, households have to provide necessary documentation. This process is not normally completed in one visit to the DSWD office. Further, women primarily handle these preliminary activities. To mitigate this, it is recommended that the 4Ps Program also provide a complete and clearly defined checklist of the “Conditionals” or requirements for eligibility to the program to avoid unnecessary travel and time, which draws women away from child care.

How Vulnerable are the Vulnerables in the Cordillera Administrative Region?

By

Virginia L. Anceno

Abstract

The Cordillera Administrative Region (CAR) grew steadily from 2010-2014. The impact, however, was hardly felt with 22.8 percent (PSA: 2012) of the population still experiencing poverty, one of the conditions that caused vulnerability and put the population at risk. Risks are said to be pervasive but information on risks and shocks is mostly scarce in a developing country (Aidaba: 2008). This also holds true in CAR. Using the analytical tool ETCS, the study aimed to identify the risks and vulnerabilities on vulnerable sector or disadvantaged groups (children, youth, senior citizens, PWDs, women, and poor families) and compare these across the region (Baguio City, Abra, Apayao, Baguio City, Benguet, Ifugao, Kalinga, and Mountain Province). Twenty socio-economic indicators categorized under health, education, social welfare, and economic sectors with a 2-year period data were drawn from primary source (stakeholders' consultations) and secondary information from regional line agencies and local government units. Results revealed in all the indicators that the vulnerable sector becomes more vulnerable when trend was decreasing for positively-connotated indicators (e.g., access to safe water and sanitary toilet) and increasing for negatively-connotated indicators (e.g., dependency ratio, dropout rate). The children, mother and youth were mostly vulnerable when risk factors take place. Across region, Apayao is at most-risk with an average mean of 3.45; exposed to least risk is Baguio City with 4.65. This indicates that the higher the provincial mean goes, the least risky it becomes. The results further implies that Apayao should be the first priority to be financed of its programs and projects related to risk mitigation, risk coping and risk reduction.

The Effect of Grade 11 & 12 at Technical and Vocational High Schools on Labor Market Performance in the Philippines

By

Izumi Yamasaki

Abstract

The Philippines is currently implementing a large-scale educational reform. The biggest feature of the reform is the extension of the period of basic education (primary and secondary education), which has been only 10 years, to 12 years to follow typical international standards. Ahead of the nationwide extension in the 2016 academic year of the secondary education period from four to six years, the Philippines' Department of Education introduced a system of designated model schools (Senior High School [SHS] Modelling Program) in the 2012 academic year.

This study utilizes data from a survey on approximately 2,200 graduates of technical vocational high schools and their households from a total of 29 schools (11 model technical vocational high schools, including the four pilot schools JICA is supporting, and 18 non-model technical vocational high schools), conducted by JICA between March and August 2015.

The main objective of this study is to examine whether two additional years of schooling (grade 11 and 12) at technical vocational high schools increased employment rate and earnings (return to schooling) of graduates compared to those who did not proceed to these grades. The study also verify what kind of impact the school's resources and the quality of education in the case of grades 11-12 students at model technical vocational high schools has on students and graduates. The research will analyze in particular the impact of school inputs such as strength of ties between schools and industry, characteristics of teachers and principals.

Current preliminary results show a positive impact on the employment of boys who completed grades 11 and 12 at a model technical vocational high school. This is probably because boys acquire skills required for manufacturing jobs such as welding, automotive and machine operation. Girls, on the other hand, often go on to take courses in cooking and food & beverage service, but these courses may not help them find jobs. It will be necessary to look not just at differences between boys and girls, but to also carefully analyze differences between courses. In addition, it is possible that the more capable the student is, the more likely they will go on to university or get a job rather than move on to their 11th or 12th year. The planed presentation will cover more detailed analyses.

Returns to Human Capital - Education, Ability and Non-Cognitive Skills: Evidence from Filipino Adolescents

By

Futoshi Yamauchi*, Nazmul Chaudhury, Akira Murata, and Izumi Yamasaki

Abstract

This paper examines returns to schooling using recent survey data on earnings adolescents expect upon completion of their education/training by estimating components attributable to cognitive abilities (measured by math scores) and non-cognitive grit skills (i.e., perseverance and passion for long-term goals). In particular, the analysis uses information on the best occupation they want to engage in and the minimum level of earnings they accept in that occupation. The empirical results show that returns to college education and both math and grit scores are significant. Interestingly, though the future reservation wage is generally positively correlated with grit scores, there is a significant negative correlation among technical and vocational training track students. In the technical and vocational education track, those who have non-cognitive trait based on passions for a long-term goal tend to set a lower reservation wage at the initial stage and therefore are likely to accept a wider range of conditions. This is not observed among college students. In addition, the analysis also points to importance of risk preference and early childhood experience.

Need for B.S. Data Science Degree Program

By

Rudy H. Tan and Lourdes A. Tan

Abstract

Graduates of the B.S. Statistics program easily find employment because their training in statistical thinking is useful in any field of application. However, they are seldom hired for the position of statistician. During the last few years, there has been a massive explosion of big data outpacing the statistical tools to analyse it. Big Data is no longer just a collection of numbers and categorical variables. It now includes emails, tweets, GPS locations, images, etc. in big data, statistical inference may no longer apply since the concept of population and sample is lost. The requisite expertise needed to handle big data goes beyond having a B.S. Statistics degree. Knowledge of computer science, mathematics, statistics, machine learning, data mining, and data visualization is needed. Thus, there is a need to introduced a B.S. Data Science degree program in schools offering statistics and IT courses. It is estimated that the U.S.A. alone will need 200,000 data scientists by 2018. This paper will propose a curriculum for B.S Data Science.

Are We Producing Enough College Graduates? A Wage Premium Analysis

By

Aniceto C. Orbeta Jr., Kathrina G. Gonzales, and Sol Francesca S. Cortes

Abstract

Higher education is a key driver of the economic growth of countries. It is then the hope of any country that her universities, including state colleges and universities (SUCs) and private higher education institutions (PHEIs), produce the manpower needed to propel the country into high, sustained and equitable development. This can be achieved if her universities respond well to changes in the labor market. But assessing this responsiveness is inherently difficult because of at least four reasons, namely, (a) the lack of one-to-one mapping between course offerings and jobs, (b) indicators are not specific enough, (c) rapid changes in technology affecting both skill production and skill requirements, and (d) skill production lag.

This study assesses the responsiveness of the higher education sector to labor market signals through wage premium analysis using data from the Labor Force Survey¹. Wage premium analysis does not require mapping between course offerings and jobs to show indications of shortage / surplus. The results of the analyses show that the sectors that have a growing share in value added also use college graduates more intensively. The wage premium analyses show that college graduates, in general, are still in short supply. In addition, only agriculture and general education are showing indication of oversupply while most of the other disciplines particularly medical, engineering and architecture; social science, business and law; sciences; and services disciplines are showing indications of being in short supply.

Keywords: Higher Education, Labor Market, Wage differentials

JEL Codes: I21, I25, J21, J23, J31

¹ Orbeta, Gonzales, Cortes (2016) "Are Higher Education Institutions Responsive to Changes in the Labor Market," PIDS DP 2016-08 provides, in addition, a review and assessment of how HEIs change their program offerings and/or their program curriculum in response to labor market signals.

The Role of Entrance Exams in Academic Performance of Students with Low Socioeconomic Background: Evidence from the SGP-PA

By

Denise Valerie Silfverberg and Aniceto C. Orbeta Jr.¹

Abstract

Making higher education more accessible for the poor serves the equity objective. Until very recently the main policy tool to achieve this objective is funding public higher institutions. This has been shown to have no significant correlation on the enrollment of the poor by earlier studies. A new program - the Students Grants-in-Aid Program for Poverty Alleviation (SGP-PA) – was implemented starting 2012 to provide another way of giving access to tertiary education for poor. It has two important unique features, namely: (a) it is well-targeted to identified Pantawid Familya households; and (b) it provides a grant amount that is sufficient to cover all normal education expenses including living allowance. A hotly debated feature of the program is whether passing the entrance examinations should be waived for the beneficiaries. This paper provides an empirical evidence of the correlation of entrance examinations on academic performance using data from SGP-PA program. The estimates show that there is a consistent positive correlation between subsequent academic performance in math, science and english and entrance examination scores. This highlights the importance of entrance examinations in the academic performance of tertiary students including those with low socioeconomic backgrounds.

Keywords: Higher education, Grants-in-Aid, Affirmative Action, Entrance Examinations, Philippines

JEL: I22, I23

¹ Consultant and Senior Research Fellow, Philippine Institute for Development Studies (PIDS). We acknowledge the very able assistance provided by Emma Cinco, Ann Jillian Adona, Sol Cortes and Katrina Gonzales of PIDS at various stages of the conduct of the study. This study would not have been possible without the assistance of Commissioner Cynthia Bautista of CHED. We also acknowledge the inputs of different research teams of the cooperating SUCs which made this study possible. Separate SUC-based reports are produced. All opinions are of the authors and not of the institutions they are affiliated with.

GIS-Based Karst Depression Detection using IFSAR-derived DEM: A Tool for Karst Subsidence Hazard Assessment

By

Kevin L. Garas

Abstract

Karst geomorphological studies traditionally employ the use of topographic map and aerial photographs to identify limestone terrain, detect karst features and geologic structures that are critical to karst development. Through the availability of high-resolution satellite images and geospatial data, more detailed interpretation can be done to effectively help geoscientists during the actual field mapping activity.

This paper aims to determine the efficiency of IFSAR-derived Digital Elevation Model (IFSAR-DEM) to identify and quantify sinkholes using ArcGIS 10.0 Hydrologic Algorithm. Interferometric synthetic aperture radar (IFSAR) employs pairs of high resolution SAR images to generate high quality terrain elevation maps using phase interferometry methods on a dense grid of sample points which accuracies of ones of meters. The method has water flow simulation approach and incorporates a) watershed delineation; b) sink fill to extract depression features; c) sink-depth measurements and classification; and d) detailed field validation of detected karst depressions.

This semi-automated sinkhole detection technique is proven effective in the conduct of sinkhole inventory, which is an important component of karst subsidence hazard assessment. The method has been pre-tested in the assessment conducted in Panglao Island, Bohol. Initial closed-depression analysis using 1991 NAMRIA 1:50,000 scale topographic map counted 15 sinkholes in Panglao. Using 5-m resolution IFSAR-DEM, there are 820 sinkholes detected, 424 of them are manually delineated during field assessment. Detailed ground truthing was conducted to validate the presence of delineated karst depressions. Basic morphometric analysis (i.e. common sinkhole size, shape and depth) was done to eliminate false positives. Threshold values in sink depth >1.0 and aperture size >10 m were designated to distinguish true sinkholes with maximum accuracy.

This GIS-based tool is deemed helpful to generate high-resolution karst subsidence susceptibility map that will guide local planners and engineers in land use and development planning.

Detection of Thermal Anomaly of Land Surface Temperature Dataset of EDC's Geothermal Prospect in Peru Using Statistical Methods

By

Winston Philip C. Pioquinto¹

Abstract

A geothermal prospect of the Energy Development Corporation (EDC) in Peru is examined for thermal anomalies using a Land Surface Temperature (LST) map. These temperature anomalies are discretized if they could be related to geothermal features because of the difficulties that may arise due to temperature highs that are attributed to highly reflective surfaces (e.g. houses, bare rocks, desert sand) and that their temperature values may even be higher compared to regions with geothermal anomalies. In the evaluation, easting and northing coordinates, temperature data and elevation are derived from the LST map and digital elevation model (DEM-Pro). Initially, unsupervised clustering technique is made using the R software to deduce possible outliers. Since it is a huge dataset (>300,000), subsetting is undertaken per elevation range and density plots generated to examine subtle temperature highs which would indicate possible thermal anomalies related to geothermal features. Data points representing possible thermal anomalies are extracted and plotted to show their general locations in the prospect area.

¹ Energy Development Corporation, 38/F One Corporate Center Bldg. corner Julia Vargas and MERALCO Avenue Ortigas Center, Pasig City 1650 Philippines

Join Count Spatial Autocorrelation of Municipality Websites: A Cases Study in Bohol¹

By

Francisco de los Reyes and Juztine Lasquites

Abstract

Bohol implemented their web page on 2011 and has been a major venue to promote governance most especially for tourism. The site provides photo galleries, activities, developments and news of the province. Some of the municipalities and cities are now developing their own web pages. The study aimed to determine if the arrangement of self-government websites in Bohol is spatially autocorrelated. Data was obtained from www.philgis.org and Google. Information was added as an attribute to the shapefile of Bohol. A database was created in a PostGIS structure with spatial and non-spatial attribute of the province. This was used for querying and storage of information. Join count statistics were used to investigate second-order effects in an area-type spatial binary data. Statistical test of spatial autocorrelation was done per methodology outlined in Kobucnik and Bacik (2013).

Keywords: spatial autocorrelation, binary area data, join count statistics, shapefile

¹ Paper presented at the National Convention on Statistics, 3-4 October 2016 at EDSA Shangri-La Hotel Mandaluyong City Philippines

A Disaster-related Statistics Framework (DRSF) and Monitoring of internationally-Agreed Disaster Risk Reduction and Sustainable Development Indicators

By

Daniel Clarke and Rajalaksmi Kanagavel

Abstract

This paper analyzes experience gained through pilot compilations of statistics under the Disaster-related Statistics Framework (DRSF) of the Asia-Pacific Expert Group on Disaster-related Statistics. The pilot compilations of detailed statistics were organized in four of the most disaster-prone countries in the world: Bangladesh, Fiji, Indonesia, and Philippines. The paper discusses the findings and available statistics pilot studies from the perspective of the emerging demand for monitoring the agreed international targets for Disaster Risk Reduction (Sendai Framework) and for Sustainable Development (SDGs) as adopted by the United Nations General Assembly. The aim for the DRSF is to support national statistical systems to build capacities to produce and analyze internationally comparable statistics based on their existing databases. The DRSF is also a tool to help to bridge the domains of disasters and risk management information on the one hand with the existing standards for socio-economic statistics on the other. The bridge between these two domains of statistical information is essential for producing indicators.

The Development of Disaster Statistics for Disaster Risk Reduction and Management

By

Romeo S. Recide, Vivian R. Ilarina, Edward Eugenio P. Lopez-Dee, Ma. Libertie V. Masculino, and Virginia M. Bathan¹

Abstract

During the past years, the Philippines experienced a rash of disasters, both natural and man-made. Natural disaster registered the most number of occurrences, owing perhaps to the country being located in the Pacific ring of fire and typhoon belt. As a result of these phenomena, thousands of lives have been lost and billions of pesos of property and infrastructure have been destroyed particularly during typhoons Ondoy, Yolanda, Sendong, etc.

In the light of these occurrences, it is important for the government, business, households and other decision makers to be informed about the hazards and vulnerabilities, impact of disaster, as well as the social actions and economic measures taken to avoid or mitigate these impacts. For our decision makers to deal effectively with these, the development of timely disaster statistics must be of top priority and of highest quality possible.

Disaster statistics is still a relatively new statistical domain. Disaster statistics cut across several disciplines draw data from a wide range of sources and numerous methods are applied in their compilation. To effectively generate disaster statistics, statistical and environmental expertise as well as institutional development capabilities, and adequate resources are imperative. Within this relatively new statistical domain, methodological resources, tools and good practices are being developed and systematized progressively.

This paper will articulate on the coordinative mechanism established by the Philippine Statistics Authority in the development of disaster statistics. It will also deal with the role and experience of the Philippine in both regional and international, with regards to the implementation of local level indicators as recommended by the United Nations Sustainable Development Goals, commitment on work to finalize terminologies and indicators based on the Goals on Sendai Disaster Framework, and the ESCAP Pilot Project on the Development of Disaster Statistics.

Keywords: disaster statistics, technical working groups, decision makers, regional and international commitments

¹ Philippine Statistic Authority's Deputy National Statistician of the Sectoral Statistics Office, Assistant National Statistician of the Macroeconomic Accounts Service (MAS), Chief Statistical Specialist of the Environment and Natural Resource Accounts Division, MAS; Supervising Statistical Specialist of the Integrated Accounts Division, MAS and Senior Statistical Specialist of the Environment and Natural Resource Accounts Division, MAS

Towards The Development of Industry-Specific Composite Leading Economic Indicators: The Example of Construction

By

John Lourenze S. Poquiz¹

Abstract

One cannot stress enough how important the Gross Domestic Product is to businessmen and policy makers, being the prime indicator of economic performance. The future direction of the economy is just as important, if not more important. People would want to know what is ahead in order to make optimal decisions on what to do now. That is why there is a strong interest in indicators that would more or less forecast the future direction of the economy. Forward-looking indicator systems like the composite leading economic indicators were developed specifically for this purpose: to get signals on the future direction of the economy.

While the CLEI gives us information on how the economy is likely to behave in the coming quarter, there is no indicator that gives information on how specific production sectors or industries would behave. This paper attempts to develop leading economic indicators for two industries: namely construction. The study would utilize and compare two methodologies, particularly 1) the standard methodology being employed by the Philippine Statistics Authority in the generation of their CLEI, and 2) the Dynamic Factor Model, a method popularized by Stock and Watson² (2010). The intention of this paper is to recommend the most appropriate methodology of estimating industry-specific composite leading economic indicators.

Keyword: Leading economic indicators, nowcasting, dynamic factor model

¹ Satellite Accounts Division, Macroeconomic Accounts Service, Philippine Statistics Authority

² Stock, J. H., & Watson, M. W. (2011). Dynamic factor models. *Oxford Handbook of Economic Forecasting*, 1, 35-59.

Enhancement of the Composite Leading Economic Indicator System of the Philippines

By

Claire Dennis S. Mapa¹, Divina Gracia L. Del Prado², Plenee Grace S. Castillo³, Ibarra Aaron R. Poliquit⁴, and Al-Ahmadgaid B. Asaad

Abstract

The Leading Economic Indicator System (LEIS) of the Philippines was developed to provide short-term forecast of the direction of the country's economic performance. However, due to possible changes in the structure of the country's economy since the LEIS methodology was last updated more than a decade ago, the predictive performance of the system has declined. Hence, the interest of this paper is the enhancement of the current methodology of the LEIS.

The proposed methodology uses as reference series the gross domestic product and the following six indicator series, two of which are among the 11 indicator series of the current methodology: Peso/US Dollar Exchange Rate, Stock Price Index, Business Expectation, Gross International Reserves, National Government Revenues, and Universal and Commercial Bank Loan Outstanding. Weights for the computation of the composite leading economic indicator are the standardized partial correlations.

¹ Dean, University of the Philippines School of Statistics

² Director III, Statistical Methodology Unit, Philippine Statistics Authority

³ Chief Statistical Specialist, Demographic and Health Statistics Division

⁴ Statistical Specialist II, Statistical Methodology Unit, Philippine Statistics Authority

Composite Leading Economic Indicators Using Autoregressive Distributed Lag (ARDL) Model

By

**Claire Dennis S. Mapa¹, Divina Gracia L. Del Prado², Ibarra Aaron R. Poliquit³,
and Al-Ahmadgaid B. Asaad⁴**

Abstract

As part of the enhancement of the current leading economic indicator system (LEIS) of the Philippines, this paper proposes a model-based approach for characterizing the movement of the Gross Domestic Product (GDP) of the Philippines. The work in this paper serves as an extension to the non-model based approach by Mapa et al. (2016). The Autoregressive Distributed Lag (ARDL) is a popular model for cointegration analysis where it is used to determine whether there is a long run or equilibrium relationship between the response and the predictors. The predictors of the model consists of the autoregressive term, the p th lag value of the response; and the “distributed lag” term, consisting of the q th lag values of the explanatory variables. ARDL is especially useful for set of time series that are a mixed of $I(0)$ and $I(1)$, or $I(1)$ for all. In this paper, the LEIs used in modelling the GDP are the current 11 indicators and the 6 proposed LEIs from Mapa et al. (2016). The paper also considers the exploration on the long-run relationship of the LEIs with the movement of the GDP. The study uses EViews for computation, and finally the discussion on the results are given.

Keywords: cointegration analysis, EViews, Gross Domestic Product

¹ Dean, School of Statistics, University of the Philippines, Diliman, Quezon City.

² Director III, Office of the National Statistician – Statistical Methodology Unit, Philippine Statistics Authority (PSA), 3/F TAM Building, PSA Compound, East Avenue, Quezon City

³ Statistical Specialist II, Office of the National Statistician – Statistical Methodology Unit, PSA, 3/F TAM Building, PSA Compound, East Avenue, Quezon City.

Constructing Leading Economic Indicators for the Philippine Economy

By

Dennis S. Mapa, Manuel Leonard F. Albis, and Joselito C. Magadia

Abstract

This paper proposes three models, Dynamic Factor model, Hybrid Dynamic Factor-Vector AutoRegressive (DF-VAR) model and the Dynamic Factor-Mixed Frequency (DF-MF) model in nowcasting the movements and growth rates of the country's quarterly Gross Domestic Product (GDP) using monthly indicator variables. The DF, DF-VAR and DF-MF are alternative models to the usual time series econometric models used in forecasting GDP growth rates utilizing temporal aggregation. The idea behind the DF model is the stylized fact that economic movements evolve in a cycle and are correlated with co-movements in a large number of economic series. The DF model is a commonly used data reduction procedure that assumes economic shocks driving economic activity arise from unobserved components or factors. The DF model aims to parsimoniously summarize information from a large number of economic series to a small number of unobserved factors. The DF model assumes that co-movements of economic series can be captured using these unobserved common factors. While the DF model captures the movements in the GDP growth, combining the DF with the Vector AutoRegressive (VAR) model (or with the Mixed Frequency model) will be useful is also nowcasting the GDP growth rates and not just the movements. The DF-VAR and DF-MF models will serve as alternatives models to the current Leading Economic Indicators System (LEIS) developed by the National Economic Development Authority (NEDA) and the Philippine Statistics Authority (PSA) used in providing a one-quarter forecast of the movement of the GDP. The DF-VAR and DF-MF models used 32 monthly and 4 quarterly economic indicators in nowcasting the GDP.

Key Phrases: Dynamic Factor-Vector AutoRegressive Model, Mixed-Frequency (MF) Model, Principal Components

An Index of Financial Inclusion in the Philippines: Construction and Analysis

By

Mynard Bryan R. Mojica and Claire Dennis S. Mapa

Abstract

Financial inclusion has become a policy priority in many developing countries, including the Philippines. However, the issue of its robust measurement is still outstanding. The challenge comes from the fact that financial inclusion is a multidimensional phenomenon. A comprehensive measure is therefore needed to adequately gauge the inclusiveness of a financial system. This paper constructed a Financial Inclusion Index (FII) to measure access to and usage of financial services in the Philippines using provincial data. Results show that while there are marked disparities based on the FII, there is geographical clustering wherein nearby provinces tend to exhibit similar levels of financial inclusion. The paper also showed the relationship between the FII and some variables that are often linked to financial inclusion such as income, poverty, literacy and employment as well the province's level of human development and competitiveness. On the methodological side, possible improvements and technical innovations in constructing the FII are laid out to maximize its potential as an analytical tool for surveillance and policy-making.

Key words: inclusive financial system, composite indicator, financial inclusion index

Awards and Financial Literacy: Effects of the Metrobank Foundation Award for Outstanding Teachers on Financial Literacy

By

**Dennis S. Mapa, Majah-Leah V. Ravago, Angelie Grace B. Aycardo,
Justine Maria Regina D. Galandines, and Pamela Y. Macasaet**

Abstract

Financial inclusion, the state wherein there is a universal access to financial services, has gained significant interest amongst researchers, practitioners and policy makers in the areas of finance, development economics and statistics. Financial inclusion will be possible only when the people of the country are financial literate or financially knowledgeable. The impact of being financial inclusive on welfare is more defined when the individuals are financial literate. Moreover, higher level of financial literacy among individuals means lowering the susceptibility of people to financial scams (e.g. investment scam, double-your-money scam) and at the same time providing individuals with knowledge on how to properly invest their money, through the understanding of other forms of investments outside the traditional savings accounts offered by banks.

This paper looks at the financial literacy of teachers who were finalists and winners of the prestigious Metrobank's Search for Outstanding Teachers Awards from 1988 to 2010. Utilizing the instrument to measure financial literacy from the Consumer Finance Survey (CFS) of the Banko Sentral ng Pilipinas (BSP) and incorporated into the survey instrument of the study, this study is interested in constructing an index of financial literacy, capturing both financial behavior and attitude. Moreover, the study examines the effects of getting the award on the financial literacy of teachers. Comparison of the financial literacy of the finalists and winners of the outstanding teacher award versus the general sample of households is also analyzed.

Key Phrases: Financial Literacy, Metrobank Outstanding Teachers Awards

**Factors Affecting Employment Outcomes of Filipino Jobseekers:
A Duration Analysis of Unemployment in the Philippines**

By

Jeremy L. De Jesus and Dennis S. Mapa

Abstract

Unemployment remains a significant development challenge in the Philippines. Although we know who the unemployed are, we really don't know much about who makes the transition from unemployment to work. This paper investigates the dynamics of transition from unemployment to employment in the Philippine labor market. Using an individual-level panel data constructed from the July 2009 and January 2010 rounds of Labor Force Survey (LFS), this paper examines the effects of personal characteristics, household composition, local labor market condition, unemployment income and unemployment spell on the employment outcomes of Filipino jobseekers. Results from the estimated duration and ordered logistic regression models indicate that the youth, college graduates, persons without work experience, and job-seekers in areas with high unemployment rate are less likely to leave unemployment compared to their respective counterparts. Married women, in particular, are found to be disadvantaged with respect to exit rate to employment. Meanwhile, results also reveal that job-seekers registered in public employment agencies spend less time out-of-work and time spent unemployed lowers the hazard to employment. These findings have broad labor and social protection policy implications and highlight the need for labor force statistics that accurately capture the movements in and out of employment.

Keywords: duration analysis, grouped data, unemployment, Philippines

Macroeconomics and Modelling for Labor Market Analysis: Philippine Employment Projections Model (PEPM) and Key Indicators of the Labor

By

**Carl Rookie O. Daquio, Ivan Cassidy F. Villena,
and Paulina Kim C. Pacete**

Abstract

This paper presents an analysis of the current situation of the Philippine Labor Market using the data from the Key Indicators of the Labour Market (KILM), part of the broader International Labour Organization (ILO) statistical database-the ILOSTAT, and an evaluation of the updated Philippine Employment Projection Model (PEPM) 2015.

Employment projection models (EPMs) are important analytical tools in strategic planning and policymaking, as they provide a comprehensive outlook of the labor market in its broader economic context. They serve as consistent analytical frameworks for assessing effects of policy scenarios, including employment targeting, which are closely watched and monitored by businesses, policy analysts as well as job-seekers.

EPMs, just like any economic model, requires the thorough understanding of how the whole economy, including the labor market, is going to evolve over the forecast horizon. In order to test how adequate our understanding of the economy and labor market is, EPMs should be iterated over the past and see how well it can reproduce past statistical trends. It is possible to analyze the effects of the model by changing some of the PEPM assumptions and rerunning the model using historical data as input with the changed assumptions. By studying the errors in the PEPM forecast, the builder of the model may hope to improve his or her understanding of the economy and recommend changes in the method, assumptions and inputs to improve the model.

Keywords: Philippines Employment Projections Model, employment projections model, Philippines

Examining Non-response of Labor Force Survey and Family Income and Expenditure Survey in the Philippines

By

Maribel L. Bernardo

Abstract

In this study, 'nonresponse' is defined as failure to get all of the desired information on the sample households in a sample survey. The magnitude of nonresponse in the Labor Force Survey (LFS) in the Philippines from July 2003 to January 2010 is presented in this report, for future reference of designing sample survey, improving the field operations, and other researches. There are many reasons for nonresponse such as refusal or, household temporarily away, critical area or flooded, and other reasons, for which the sample household cannot be reached.

The present study uses descriptive statistics to characterize the nonrespondents who refused to be interviewed in 2009 Family Income and Expenditure Survey (FIES). The study uses the scrap data of 2009 FIES, which is done in two separate visits using the same questionnaire and set of samples. The characteristics of nonrespondents were taken from the completed interview of either visit. The study reveals that relatively high proportions of nonrespondents were found among the households with heads of age 65 years and over, with family size of one member, with annual family income of 500,000 PhP and over, academic degree holder, with heads engaged in the industry of health and social work, and their major occupation are professional workers.

Based on the frequency of 'reasons of nonresponse' observed in LFS during 2003 to 2010, the study concludes that the eligible respondents in sample survey are decreasing. The observed proportions of nonrespondents by different characteristics implies that the heads of the households are mostly working individuals. The findings of the present study, it is expected, would help designing appropriate field operation strategy to be able to elicit the required responses from the selected households an interview-based sample survey.

Low-skilled Labor Migration: Measuring Migration Costs using CAPI – Philippines¹

By

Carl Rookie O. Daquio

Abstract

In an effort to reduce distortions to freer mobility of low-skilled labor, the World Bank's Global Knowledge Partnership on Migration and Development (KNOMAD) program has implemented this research project to collect migration cost data comparable across select migrant corridors and to determine how much migrant workers pay to obtain foreign jobs and how migration costs vary across corridors. The results of the KNOMAD survey of the costs incurred by migrants passing through the Philippine-Qatar migration corridor are the subject of this report. In summary, the results shed light on the amount and composition of worker-paid migration costs and identify cost items that can be reduced with appropriate policies and through cooperation among countries. This report may serve as guide to the global migration community in settling a common target to reduce migration costs.

¹ Prepared for KNOMAD Thematic Working Group on Low-skilled Labor Migration. The work was carried out under the direct supervision of Manolo Abella (COMPAS-University of Oxford), Philip Martin (University of California, Davis), Soonhwa Yi (World Bank-Washington), and the Institute for Labor Studies, Department of Labor and Employment of the Republic of the Philippines. The same report titled "Survey of Filipino Migrant Worker Returnee from Qatar" is prepared for ILS.

The Philippine Ranking in the ASEAN Community Prior to the ASEAN Integration¹

By

Romulo A. Virola, Jessamyn O. Encarnacion and Joseph Albert Niño M. Bulan²

Abstract

Twelve years ago in 2004, the principal author assessed the ranking of the Philippines among the ASEAN Member States (AMS) on several economic and social indicators in a Statistically Speaking article entitled: “The ASEAN – Where Do We Stand or Wobble?” The results showed a deteriorating position for the Philippines among the AMS. This was followed by two articles in 2010 and 2012 that also tackled the ASEAN and the comparative standing of the Philippines. At the start of the ASEAN integration in 2015, the ranking of the Philippines on these indicators is assessed anew in this paper to determine if the Philippines has gained grounds relative to the other AMS, thereby pointing to possible challenges and opportunities for the Philippines in the early stages of the integration.

In addition, a new statistical framework is being designed to address the information needs of the ASEAN Community Vision 2025 including the Post-2015 Sustainable Development Goals; likewise, the Broad Framework for the Sustainable Development of ASEAN Statistics is being updated, both of which can be used to compare the performance of the AMS using available official statistics. The compilation of data under the new frameworks will provide benchmark information against which the performance of the Philippines can be assessed years after the ASEAN integration, which will show whether we had prepared well for the ASEAN integration or whether the ASEAN integration is serving the Philippine interest well. The paper will present some insights into these frameworks focusing on the challenges they will pose to the Philippine Statistical System.

Lastly, the paper will present the comparative performance of the Philippines vis-à-vis the other AMS using the latest available data from other frameworks like the World Bank Statistical Capacity Building scores, the MDGs, and the World Economic Forum Global Competitiveness ranking.

Keywords: ranking, ASEAN Member States, ASEAN Community, integration, statistical framework, statistical indicators, official statistics, benchmark information, performance, challenges and opportunities, Philippine Statistical System, statistical capacity building, MDGs, SDGs, competitiveness

¹ Paper presented during the 13th National Convention on Statistics

² Former Secretary General of the National Statistical Coordination Board and currently International Consultant, Policy Specialist of UN Women, and Statistical Specialist II of the Philippine Statistics Authority, respectively

An Assessment of the Capital Account Liberalization in the Philippines for the ASEAN Financial Integration

By

Mark Emmanuel P. Reyes and Lea Isabella T. Riñon

Abstract

The recent collaboration of the Philippines with the other Southeast Asian nations and the hope to improve the current policies regarding the financial market of the country motivated the researchers to conduct the study. This research focused on the Capital Asset Liberalization in the Philippines in line for the ASEAN Financial Integration. It assessed the financial market's components and its contribution to growth of the national economy for 2005 to 2014, through a Vector Error Correction (VEC) model. Capital Account (CA), Financial Account (FA), and Total Approved Foreign Investments (TAFI) served as financial market components while the ratio of Money Supply (M3) to Gross Domestic Product (GDP) served as a proxy measuring Financial Deepening. Appropriate policy shocks were also included in the model: six waves of Central Bank of the Philippines' CAL initiatives and a law allowing infusion of foreign equity to rural banks. It also utilized Impulse Response Functions and Forecast Error Variance Decomposition to reflect the response of and the variance contributed by each variable to each of the other variables. The findings on this study showed that only the sixth wave significantly contributed to Financial Deepening, the fourth and sixth wave significantly contributed to the CA, and the seventh wave significantly contributed to the FA. Therefore, the researchers recommend that the increase in investments be channelled to long term productive uses like for infrastructure, agricultural technology, education and other priority sectors stipulated in the roadmaps for Vision 2020.

Evaluation of the Implementation of Early Warning System for Food and Nutrition Security in Selected Municipalities in Camarines Sur, Philippines

By

Arlene R. Reario

Abstract

Hunger and malnutrition are threats to national security as it seriously affects the group that the state is supposed to protect. With good local governance, the system could be an effective tool to effectively reduce malnutrition and hunger in a community. This study evaluated the implementation of the project “Early Warning System for Food and Nutrition Security (EWS-FNS) “ in 6 municipalities of Camarines Sur, specifically in terms of its usefulness as a tool for predicting food and nutrition security.

This qualitative study employed the conduct of perception surveys among various stakeholders from the barangay, municipal and provincial levels supplemented with LGU document analysis and key informant interviews (KII) from experts on community assessment or surveillance. Results of the study showed that in at least 3 of the municipalities, EWS-FNS was functional as indicated by the regular collection, processing and analyses of data considered predictive of food insecurity. Information generated by the EWS- FNS was also reported to the Mayor and members of the municipal development council and used as basis for adopting intervention programs to address problems and issues related to hunger, malnutrition and food insecurity. Interventions such as distribution of seeds and seedlings to improve food availability among food insecure households, conduct of supplemental feeding to malnourished preschool children and provision of livelihood programs for poor households were implemented by local government units. Although resources were provided by the LGUs to sustain the monitoring activity and implement the intervention programs, it has been recommended that the budgetary requirement to sustain the operations of the EWS-FNS be integrated in the regular Annual Investment Plan of the municipality to ensure a regular budget to run the system. A legal document such as Executive Order to legitimize the role of the members of the team was also suggested by staff involved in the activity. It is also essential that members of the EWS FNS team should be highly motivated and have a good working relationship to enable them to discuss and analyze results of regular data monitoring for subsequent reporting to the Chief Executive and the local council. It is also recommended that Interventions to address issues on food insecurity should not be limited to provision of safe and adequate food (e.g. feeding program) but means to permanently acquire this such as employment, skills development and market-matching of skills with job creation should be seriously considered. Families who are most vulnerable such as those whose income are below food threshold and whose children suffer from malnutrition should be the priority for

such interventions. Access to sufficient and effective health and nutrition services should be made available in the barangay so as to reduce the effects of malnutrition and sickness. The study recommended that regular meetings at the regional level such as the Project Management Committee should be sustained. Barangay Captains should be given feedback on the results of the EWS FNS so appropriate actions may be done by them. Review of existing software, enhancement of the databases or indicators currently collected on EWS-FNS was suggested to be done including adoption of updated software developed by FAO. At the provincial level, Camarines Sur should be involved in the monitoring of EWS-FNS in its municipalities. They may also expand the coverage of EWS-FNS to more municipalities within the province.

Estimating the Regional Hunger Indices for Mindanao

By

Ellen B. Puertollano and Ed D. Cruz

Abstract

This paper was conducted to estimate the Regional Hunger Index (RHI) among regions in Mindanao using the old and new methodologies and determine the factors affecting RHI using Ordinary Least Square (OLS).

The results showed that ARMM posted the highest level of Hunger and the lowest in Region XI in both old and new methodologies. Poverty positively affected the RHI of Regions IX, X and XII. Underemployment significantly affected Regions XI and ARMM. Income and population were found to affect RHI positively in all regions in Mindanao except Region XII.

Locating the Chronically Food Insecure through the Integrated Food Security Phase Classification System

By

**Maria-Bernardita T. Flores¹, Hygeia Ceres Catalina B. Gawe², Ellen Ruth F. Abella³,
Frederich Christian S. Tan⁴, and Karen Kaye M. Kwon⁵**

Abstract

To locate, and determine the severity, magnitude and causes of food insecurity in the government's priority provinces, an analysis was conducted by an interagency group of trained food security analysts from national government agencies, non-government organizations and UN agencies in February 2016. Using the Integrated Food Security Phase Classification (IPC) protocol version 2.0, 33 provinces of Luzon and Mindanao were successfully classified.

The Integrated Food Security Phase Classification (IPC) is a set of standardized tools endorsed by several UN agencies and international NGOs to provide a “common currency” and globally comparable classification of the severity and magnitude of food insecurity in areas. IPC uses food and nutrition security data – direct, indirect evidences of food quality and quantity consumption, livelihood status and nutritional status and food security-related mortality, which are then analyzed for trends vis-à-vis international cut-offs, data triangulation and inference. The classification is done assisted by the online information support system housing all the evidences and final classification arrived at through technical consensus.

The analysis indicated two (2) provinces were classified under Level 4: Severe Chronic Food Insecurity; 25 provinces under Level 3: Moderate Chronic Food Insecurity; and 6 provinces under Level 2: Mild Chronic Food Insecurity. Three (3) provinces were dropped in the analysis due to insufficient number of reliable evidence.

The results of the IPC analysis are important inputs in setting medium and long term strategic objectives for the health, nutrition, social protection, livelihood and finance, and disaster risk reduction sectoral programs. Further, in aid of planning of national, regional and provincial governments, the IPC analysis of the remaining 44 provinces is scheduled in the first quarter of 2017.

Keywords: Integrated Food Security Phase Classification, IPC, chronic food insecurity, food security, food access, food availability, food utilization, CFI, common currency, chronic analysis.

¹ Maria-Bernardita T. Flores is an Assistant Secretary of Health and the Executive Director IV of the National Nutrition Council with email address info@nnc.gov.ph and website address <http://www.nnc.gov.ph/>.

² Ms. Gawe is the Chief of the Nutrition Surveillance Division, National Nutrition Council.

³ Ms. Abella is the Nutrition Officer IV, of the Nutrition Surveillance Division, National Nutrition Council.

⁴ Mr. Tan is a former Nutrition Officer II of the same division and the staff-in-charge of the IPC.

⁵ Ms. Kwon is the former IPC Data Analyst who assisted NNC in the preparation of data from various sectors.

The Development of “Presyo sa Palengke” Mobile Application: An Enhanced Dissemination System for Agri-Food Price of Commodities

By

Jing B. Jalisan

Abstract

Price statistics is a continuing concern due to the demand of clients and stakeholders for a more timely release of data. The mode of delivery of the data is equally important. Clients and stakeholders may not always demand, but wish for a user-friendly, dynamic and interactive system. Taking advantage of the state of the art technology currently available, a mobile application has been developed by the PSA to enhance the efficiency of delivery of statistical price data of agri-food commodities.

This paper describes the developmental framework, technologies including the activities, constraints, outputs and milestones documented by the Philippine Statistics Authority, led by the Knowledge Management and Communications Division (KMCD) in the development of the “Presyo sa Palengke” (PsP) mobile application. For better appreciation, the paper presentation will incorporate a demonstration of the PsP mobile application at work.

Applying Computer Aided Personal Interviewing (CAPI) to the Labor Force Survey

By

Sharon Faye Alariao Piza

Abstract

Computer aided personal interviewing has long been used in the conduct of surveys. The application of this technology significantly decreases the processing time of data gathered in the field. It also allows real time validation of responses that warrants data quality. The Philippine Statistics Authority has begun adopting CAPI starting with the Labor Force Survey. Early 2016, a nationwide pilot was conducted and a qualitative assessment was done to identify all possible issues and challenges that may arise. This paper documents these different scenarios during the course of the survey and the likely solutions. Likewise, the necessary adjustments in the LFS protocol are identified to take full advantage of the CAPI.

CHED-Students Financial Assistance Programs (StuFAPs) Online Application, Verification and Information System (CSO-AVIS): Improving Transparency, Efficiency, and Access of Poor and Deserving Filipino Students to Higher Education

By

Rody Garcia

Abstract

The underutilization of the Commission on Higher Education (CHED) budget allocation for the Student Financial Assistance Programs (StuFAPs) in 2014 affects budget allocation of the Commission in granting financial assistance to poor but deserving students for the succeeding years. The unsatisfactory submission of academic and financial documents by the grantees and Higher Education Institutions for the disbursement of StuFAPs budget affects the performance of CHED in giving access and equity to poor but deserving Filipino students in higher education. The snail moving submission of academic credentials of StuFAPs grantees can be traced from the manual system being employed by the Commission.

Inspired by the success of the NSO online system, the researcher conducted a study on the On-line transmission of data by developing the CHED-StuFAPs Online Application, Verification and Information System (CSO-AVIS). This research aims to promote transparency, efficiency and access of the poor and deserving students to higher education.

The research is software development for an online application, submission, verification and information of StuFAPs using the most sophisticated web-based programming tools and data base. The program runs in any browser and can be accessed from any computer desktops, laptops, tablets and smartphones. The CSO-AVIS has four major systems and eighteen modules to facilitate real time online transaction. It produces a real time statistics of StuFAPs implementation in the country with a very significant data for public information and government's policy implication. The CSO-AVIS can now be accessed @ www.ched9ph.asia/stufaps.

The CSO-AVIS has undergone several tests and updates to conform with the quality standard of an engineered software. The developed software was beta tested and evaluated by IT experts before the implementation for pilot testing in ten (10) higher education institutions in Zamboanga Peninsula. The end users evaluated the functionality of the software using the characteristics of a quality software based

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on ISO 9126. The result showed that 97% of respondents rated CSO-AVIS highly acceptable while three percent (3%) rated it acceptable.

To determine the systems' capability in speeding up online transaction, a three-day time and motion test was conducted with simultaneous transmission of data from the pilot testing higher education institutions. Comparative results showed that in manual transaction of StuFAPs documents from school/HEIs to Regional Office, it took about two months before the scholars/HEIs received the Financial Assistance. With CSO-AVIS took only 20 minutes from the submission of scholars' credentials from HEIs to the releasing of checks to their respective ATM accounts. The on-line system eradicated queues of StuFAP grantees as well as follow-up of payment. Furthermore, the use of the CSO-AVIS improved the utilization of budget allocation of StuFAPs from 50 to 100% disbursement making CHED a performing government agency. With the improved performance of the Commission, higher budget allocation for the StuFAPs can be achieved, thus giving opportunities for poor and deserving students to avail of the scholarship program of government.

The CSO-AVIS promotes paperless transactions in the agency. This results in more efficient delivery of government services to its stakeholders.

The CSO-AVIS is an innovative project in the agency which will be fully implemented in the entire Zamboanga Peninsula starting January, 2016, per approved en banc resolution during the fourth CHED National Directorate Meeting.

To ensure sustainability of the project implementation, the researcher recommends continuous regular updates of the systems' characteristics to capture the quality and acceptable standard of an engineered software. The commission adopted CSO-AVIS as its implementing project for 2016 in Region 9. It has also made the research as a basis for the model project on the Unified Student Financial Assistance System for Tertiary Education (UniFAST) through RA 10687 which was signed on October 15 by President Benigno S. Aquino III. The Commission hails it as a Landmark Social Legislation of the Administration benefitting Filipino Youth.

Preservation of Tinguian Cultures in the Province of Abra

By

Lorna B. Llaneza

Abstract

This study is entitled, “ Preservation of Tinguian Cultures in the Province of Abra,” with the help of the four(4) institutions: school, family, church and the community. It also emphasized the beliefs, practices, festivities of the eleven (11) tribes in the province.

The Tinguian tribe numbers is about twenty thousand individuals, most of them are found in the sub-province of Abra, and in the mountains of Ilocos Sur and Ilocos Norte. Their materials, cultures and beliefs, ceremonials are exceedingly complex.

It is one of the intentions in this study to bring together the cultures of the people and to inculcate into their minds the importance of preserving cultures especially for this present generation. In this way they can have a clearer insights about different cultures in the province and may secure better ideas of the values they attach to certain of their activities that is afforded them by actual observation and by direct inquiry. Observation has led me to the belief that the religious organizations and ceremonies of the Tinguians have reached a higher development than is found among the neighboring tribes. And with the present generation, the commitment to the culture grow weaker as we go on. So, this study gives details on preservation efforts being undertaken and assured ways from the reliable sources to preserve the cultures in the Province of Abra

According to National Peer Evaluated Journal, Vol.6 of May 2011, The Abrenos have an elaborate network of beliefs and practices as manifested in their songs, dances, and ceremonies particularly during wedding, birth, mournings and festivals. However, these beliefs and practices are now slowly dying and if no actions being done to preserve them, it will be soon forgotten due to modern transformations, one of the reasons why I opted to pursue this study. Inevitably, Abra is not exempted from the fast pace of development and from other influences brought about by modernization. With these powerful changes, these beliefs, practices, are now slowly being set aside or not being appreciated by the present generation anymore, so, the concerned people should do something to revive and preserve them. The researcher believes it is not yet too late and agreed to what Dumagat had said that cultures are intact and can be still preserved.

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Due to the demands of the new technology, social changes in the ethnic communities occurred. The researcher knows that with the continuous studies on culture of Abra, it unfolds more development and changes.

This study is a combination of quantitative and qualitative forms of research, under the qualitative, the researcher used ethnography methods wherein the researcher interviewed representatives like the elders/lallakay/manakem from the different tinguian tribes as community representatives, church and family representatives personally, who have a big role in the preservation of the Tinguian cultures in the province of Abra, distributed questionnaires to administrators and teachers teaching Filipino, English, Aralin Panlipunan and MAPEH in the 20 secondary schools in the Division of Abra where these 11 tribes are found, it sought to seek the role of each institution. Furthermore, the researcher personally involved herself with the activities done by the different tribes, joined seminars on Indigenous Peoples Education. The researcher also asked permission from the office of National Commission on Indigenous People to conduct this study and conduct research in their office. This office helped the researcher to undergo the appropriate procedure to conduct this study. Furthermore, the researcher was able to get additional information, ideas for the realization of the study.

The Human Resource Management (Hrm) System Implementation in Selected State Colleges and Universitie In Region IV- A

By

John Garcia Nepomuceno

Abstract

This study aimed to determine the predictors of Human Resource Management (HRM) System implementation in the selected State Colleges and Universities in Region IV- A. The paper used the descriptive method of research in determining the predictive validity of variables. The respondents were the University Presidents, Vice Presidents, Campus Directors, Deans and HRM Officers. The study utilized the descriptive method of research. Management Style was a significant predictor of recruitment, selection, hiring, induction, training and development, promotion, and admission. Other variables such as age predicted the HRM implementation in terms of recruitment and separation; mandate on selection and admission; and sex on admission. The paper shall be an input towards understanding the greater need of the Higher Education Institutions and other Government Agencies to upgrading existing policies / practices as a basis for policy formulation, program development and procedural enhancement.

Keywords: Human Resource Management. Educational Management

Enrollment and Graduate Trends in the Higher Education in Region 2

By

Rosario G. Danga

Abstract

The Commission on Higher Education (CHED) Region 2 covering the five provinces, Batanes, Cagayan, Isabela, Nueva Vizcaya, and Quirino encompasses 72 Higher Education Institutions (HEIs). These are 23 Public HEIs, including their campuses, and 49 Private HEIs in have dynamic and changing enrollment status and thus affects the number of graduates in every school year.

The enrolment status of HEIs in region 2 has increased by 5.23% from AY 2013-2014 to AY 2014-2015 while it decreased by 2.38% from AY 2014 -2015 to AY 2015 - 2016. The increase is associated with the rise of enrolment in the Teacher Education and Business Education in both public and private institutions. However the decrease in enrollment in AY 2015 – 2016 is attributed to the decrease in enrollees in Engineering, Architecture and Technology Education and Agricultural Education. Moreover, there is an increase in the enrolment in public HEIs in AY 2014 – 2015 and AY 2015 - 2016.

The number of graduates had increased by 4.25% in the school year 2014 – 2015 and decreased by 0.44% in AY 2013 – 2014. The Teacher Education increasing its graduates through the years and Business Education has the highest increase in the graduates for the academic year 2014 – 2015. However, graduates decreased in the Information Technology Education; Agricultural Education and Health Professional Programs.

Disaster Reduction and Management in the Philippines' Major River Basins through Flood Exposure Assessment from LiDAR Datasets

By

Enrico C. Paringit, Joemarie Caballero, John Louie Fabila, Sylvia Sueno, Sarah Samalbuero, and Chino Uichanco

Abstract

The Department of Science and Technology (DOST) together with the University of the Philippines launched a program last 2012 which focuses on the production of flood hazard maps for the twenty-two (22) major river basins in the Philippines using LiDAR technology as a part of the capacity-building measures and disaster risk reduction and management plans of the government. The program also aims to produce LiDAR derived products such as Digital Elevation Models (DEMs) and Ortho Photographs which can be used for several applications in the fields of engineering, agriculture and forestry, urban and regional planning, and other geospatial uses. This study aims to present the extent of the areas prone to flooding and to determine the number and type of infrastructures affected by it. It will also determine the number of municipalities and barangays that will benefit from the project. This study will help save the communities from further damage and casualties during a flood event. This will help the local governments to implement adaptive measures for a resilient community and to better prepare for the other effects of climate change. Also, this will improve the disaster reduction and management plans of the country through local knowledge.

Human Resource in Science and Technology (HRST) in the Philippines

By

Randolf S. Sasota

Abstract

Investing in human capital, particularly in S&T is central to economic development. Making use of data on human resources in Science and Technology (HRST), therefore, can give policy-making bodies a better understanding of the demand for and the supply of personnel in science and technology. However, there is a dearth of information on the number of highly skilled workers considered as having S&T occupations. This study thus, intends to provide estimates of the workforce in S&T, which are necessary in crafting policies related to the development of the S&T human resources pool in the country.

Moreover, this is a benchmark study on establishing estimates of the stock of HRST in the country using secondary data from Census conducted by the National Statistics Office (NSO), which is now part of the Philippine Statistics Authority (PSA).

In 2010, the Philippine workforce consists mainly of laborers and unskilled workers that comprised a quarter (or around 8 million) of the 31 million workers. This was followed by farmers, forestry workers, and fishermen with about 7 million or 21 percent. Only around 1.8 million Filipinos were professionals, which comprised 5.6 percent of the total employment.

The available data comparing countries by the number of HRST was found in OECD iLibrary (OECD, 2011). However, HRST was defined more broadly compared to the operational definition used in this study. It covered all professionals, namely: physical, mathematical and engineering science professionals; life science and health professionals; teaching professionals; and other professionals. Among the selected countries, Philippines was fourth from the bottom with only 5.6 percent of the total workers were HRST or professionals.

In general, this study aims to establish estimates and provide a picture of the stock of Human Resources in Science and Technology (HRST) in the Philippines. Specifically, it attempts to: a) estimate the number of HRST in the country; b) describe the HRST in terms of age, sex, marital status, and overseas work status; c) determine the disaggregation and geographic spread of HRST by region; and d) describe the S&T occupations by sex, overseas work status, and region.

**The Intellectual Property Products in the Philippines:
It's Contribution to the Economy**

By

Mark C. Pascasio, Arline M. Del Barrio, and Lea T. Chavez

Abstract

Research and Development, based on the 2008 System of National Accounts (SNA), should be recorded as capital formation. Capital formation also includes acquisitions of: software and databases; mineral exploration; and entertainment, artistic and literary originals. Collectively, these are referred to as intellectual property products (IPP). One of the many contributions of IPP is to drive economic growth and competitiveness by enhancing business processes through patents, software and databases and copyrights. Despite the fact that IPP has considerable impact to our economy, its contribution to the economy is not given much attention. Recognizing the importance of IPP, this paper presents statistics on the contribution of these products to the Philippine economy. Further, it aims to provide the policy makers and planners the basis on how to take advantage of the rising contribution of IPP.

Key words: intellectual property products, contribution to economic growth

Measuring “Openness” in ICT-Enabled Societies: Towards an Open E-Governance Index (OeGI)

By

Philip Arnold Tuaño

Abstract

There is a growing discourse on “open government”/“open governance”, with “openness” emerging as a political value by which states—as well as non-state actors—extend notions of democracy, participation, and sustainable development. But how does one measure “openness” in ever evolving “network societies” enabled by the innovative use of ICTs? The Open e-Governance Index (OeGI) is an assessment tool being developed for assessing how countries are utilizing “openness” in network societies to enhance public service, citizen participation/engagement, and communication rights. The index measures five dimensions, which include Integrated eGovernment, eParticipation, Digital Inclusion, ICTs in Civil Society, and Enabling/Hindering Environments. The tool is being piloted in selected countries in Asia, Latin America and Africa.

Regulatory Perspectives in ICT Related Data: What Do We Need To Measure Now?

By

Alan De Guzman Alegre

Abstract

The ever-evolving “information society” is constantly challenging states and non-state actors to understand and describe its shifting shape and form, but also to decipher its impact, and its role in sustainable national development. The disruptive nature of the internet has forced traditional telecoms regulatory frameworks—and also national statistical agencies!—to rethink its terms of reference in terms of what is to be measured, how it will be measured, and for what. Universal access metrics have moved from counting phone lines to measuring network connectivities, even as traditional ICT statistics are becoming less than relevant to sound policymaking. New advances in technology—cloud computing, internet-of-things, big data—all demand of regulators a new perspective to statistics in aid of regulation. This presentation will outline some of these challenges, and seek to point to ways forward in how regulators (and national statistics offices) might evolve to be more relevant.

Measuring ICT Development in the Philippines

By

Candido J. Astrologo, Jr.¹, Joseph Albert Nino Bulan, and Sardis Catalan

Abstract

Based on the 2015 Measuring the Information Society Report of the International Telecommunication Union (ITU), the Philippines ranking in terms of the ICT Development Index (IDI), increased from 104 in 2010 to 74 in 2015. The Philippines was considered as one of the most dynamic countries as its ranking changed by 25 index points. The IDI is a composite index that combines 11 indicators into one benchmark measure which is used to monitor ICT development of a particular area. It is also of interest to know which among the geographical areas in the Philippines have high ICT index.

This paper attempts to measure the ICT development of the 17 regions of the Philippines in 2015 using a modified methodology based on the ITU IDI. Comparatively, the revised methodology took into account the availability of indicators used in the computation of the index.

The paper presents the ranking of the regions in terms of ICT development.

Keywords: ICT, Information Society, digital divide, index

¹ Assistant National Statistician, Philippine Statistics Authority

Challenges in Measuring Sub-National Tourism Outcomes. Lessons in Tourism Circuit Development from LGSP-LED

By

Ramon Benedicto A. Alampay, Miguela M. Mena, and Regyn B. Avena

Abstract

From 2011 to 2016, the Department of the Interior and Local Government's (DILG) Local Governance Support Program for Local Economic Development (LGSP-LED) assisted 89 cities and municipalities, from 13 provinces, in planning and implementing projects for the development of tourism circuits in 13 priority tourism development areas (TDAs) of the Philippine National Tourism Development Plan. Each project involved clusters of local government units (LGUs) and their local private sector partners undertaking joint activities towards: 1) an improved local policy environment for investment and sustainable tourism and 2) a more competitive tourism sector in the TDA. Intermediate outcomes of these activities were measured in terms of increased tourist arrivals into the tourism circuit, increased public and private sector investments in the tourism sector, and new tourism-related employment generated within the tourism circuit. The paper discusses the experience of LGSP-LED in operationalizing these sub-national tourism indicators through existing national and local government databases and systems, as well as the Program's challenges in collecting data from LGU offices of varying technical experience, resources, and capabilities. The efforts of the Naga City Arts Culture and Tourism Office in institutionalizing LGU systems for the collection and analysis of destination-level information will be presented as an illustrative case study for possible enhancement and replication. The paper then provides a brief synthesis of these observations within the framework of local destination competitiveness. Finally, some recommendations for reliable collection and reporting of destination-level tourism statistics, particularly for investments and employment, are proposed.

A Snap Shot of the Market Niche of the Panagbenga Festival Tourists

By

Lee Majors M. Fajilan, Christine P. Manipon, and Gladys M. Navarro

Abstract

The Panagbenga has become one of the country's most visited festivals. For 20 years now, this colorful event born in the Philippines' Summer Capital had drawn significant number of tourists from all over to enjoy its month-long festivities.

The research employed survey techniques to describe what is the market niche of tourism related establishments during the flower festival. There were 1,829 respondents, all of whom are non-Baguios residents who were visiting the city at the time to witness the festival. The survey was done during the week of the street dancing and float parade, and was conducted in areas frequented by tourists such as restaurants, lodging facilities, bus stations, parks, and along major roads around the city of Baguio. Cross section data was used and was tested based on its distribution and the tourists' willingness to spend for leisure was also established with respect to the salaries or the wages they receive. The paper uses Chi-square for test of independence of variables and distribution of respondents.

A distinct socio economic profile of the respondents visiting Baguio City Results show that 47.29 percent of the respondents choose an accommodation within the P2000 to P4000 budget, who fall under the P36,000 to P50,000 salary range representing 47.50 percent of the respondents. The findings support the regional data showing the increase in the number of budget hotels and transient houses in Baguio City and even the congestion of main thoroughfares in February. They normally have their own car and travel in groups, 21.23 percent or travel as a family (36.20 percent). It is also noteworthy that the tourists are educated with more than one half (54.7 percent) who finished their college education, 21.7 percent pursuing their masters and doctorate degrees.

Overall, the paper is important in terms of marketing segmentation for sustainable tourism strategy in the City of Baguio.

Keywords: Cross-section data, Market niche, Festival, Tourism, test of independence

A Psychographics Study on the Voting Behavior of the Cebuano Electorate

By

Nelia Ereno and Jessa Jane Langoyan

Abstract

Cebu has been the vote richest province in our country; hence, politicians who have sought to be elected have been strongly courting the people of Cebu. With their desire to win the electorate it is important to know the characteristics of a president and a vice president that the Cebuanos prefer. It is interesting to know if there is a significant difference as to the respondents' preferences on the characteristic traits of the presidential and vice presidential candidates across respondents' a) gender, b) educational attainment, and c) economic status. This study which also aims to construct an appropriate predictive model in determining the preferred traits of the voters in the province of Cebu will utilize multi-stage sampling in its survey. A multivariate correspondence analysis will be used to determine the preferred characteristic traits of the presidential and vice presidential candidates across gender, educational attainment and economic status. To determine the relationship of some variables of interest, canonical correlation analysis will be used. Moreover, a focus group discussion will be conducted not just to validate the survey results but also to have a more profound understanding on the voting behavior of the Cebuano electorates.

The 2016 Elections and the Good Governance Index: Performance, Promises, or Political Dynasties?

By

Romulo A. Virola, Mai Lin C. Villaruel, and Priscille C. Villanueva¹

Abstract

Governance has become a critical concern in many countries, developing as well as developed countries. In fact the Sustainable Development Goals (SDGs) adopted by the UN General Assembly on 25 September 2015 and the SDG statistical framework approved by the Statistical Commission last March 2016 cover governance with statistical indicators in practically all the 17 Goals.

In the Philippines, during the 2010 presidential elections the Pres. Aquino convincingly won on a platform of good governance. During the 2016 elections, corruption became a major issue with one presidential candidate losing many poll survey approval points on the basis of alleged involvement in many irregularities while in public office. And while the Philippines has gained grounds in a number of internationally generated ratings on governance it continues to be mired in the bottom quarter of the country rankings,

Towards enhancing the relevance of the Philippine Statistical System (PSS) to monitoring the country's development agenda, the former National Statistical Coordination Board (NSCB)² Technical Staff embarked on a series of initiatives in 2004³ aimed at stimulating and enriching the body of statistics on governance. The then NSCB formulated a Good Governance Index (GGI) and later a Voters' Index to assess whether voters rewarded candidates associated with better GGI. The results of these efforts were presented in local and international fora including the past four National Conventions on Statistics (NCS). Unfortunately with the abolition of the NSCB after the creation of the Philippine Statistics Authority (PSA), the NSCB initiatives to generate governance statistics were discontinued.

¹ Former Secretary General of the National Statistical Coordination Board, and Economics Officer and Associate Economics and Statistics Analyst of the Asian Development Bank, respectively, of the. The views expressed in this paper are those of the authors and do not necessarily reflect the views of their organizations.

² The NSCB is now part of the Philippine Statistics Authority.

³ The NSCB efforts were inspired by its involvement jointly with the Commission on Human Rights in the METAGORA project of the Partnership in Statistics for Development in the 21st Century (PARIS21), on the measurement of democracy, human rights, and governance.

Maternal Health Care Expenditures in the Philippines, 2012-2014

By

**Rachel H. Racelis, Fe Vida N. Dy-Liacco, Alejandro N. Herrin,
Laurita R. Mendoza, Racquel Dolores V. Sabeñano,
and Michael L. Taningco**

Abstract

The Philippine National Health Accounts or the PNHA provides data on country level health expenditures on an annual basis. It is part of the Philippine Statistical System and has been produced officially by the Philippine Statistics Authority or PSA (formerly by the National Statistical Coordination Board) since the late 1990s. The PNHA has been useful in the last two decades for guiding policy development at the Department of Health (DOH). In 2013 the DOH advocated expanding the PNHA to address the increasing information needs of health policy making – in particular, through the adoption of the of the System of Health Accounts (SHA) 2011 which is the international standard for health accounting currently recommended by the World Health Organization (WHO). In the period 2013-2015 the DOH with support from the WHO conducted studies to pilot-test the use of the SHA 2011 in Philippine health accounting to establish its applicability and relevance. The studies produced SHA-based Philippine health accounts estimates for the years 2012 to 2014, referred to as the PNHA-SHA estimates. In the PNHA-SHA health expenditures are reported with new breakdowns including, among others, by financing scheme, by health provider and by characteristics of the health care beneficiary such as type of disease or health condition. This paper reports findings from the PNHA-SHA as follows: reproductive health expenditures (including expenditures for maternal conditions) in the context of total health expenditures in the country; and reproductive health expenditures as a specific focus alongside other health accounts classifications available. In addition to the PNHA-SHA, data from a government hospital and from PhilHealth are used to show additional detail on expenditures related to maternal conditions such as by specific type of maternal condition, age and region of the beneficiary of health care and by type of facility that provided health care.

Understanding Maternal Mortality Using National Surveys and Vital Statistics

By

**Jeremie E De Guzman, Manuel M Dayrit, Anthony Zosa,
Jakov Ivan Dumbrique, and Camille Dee**

Abstract

How well do our vital statistics and national surveys measure maternal mortality ratios over time?

For the past 25 years, our Maternal Mortality ratios have remained unchanged. This observation is curious given that so many interventions to improve prenatal care, attendance at delivery by a skilled birth attendant, and post partum care have been put in place by both national and local governments. In fact facility-based delivery is now at 80% on average. The question is therefore raised on whether there is in fact no change in MMR or whether the current methods to measure MMR are in fact inadequate to detect any changes.

To answer the aforementioned question, the authors analyzed the public use files provided by the Philippine Statistics Authority for Vital Statistics 2010-2014 and the Family Health Survey 2011. The Report of the National Health and Demographic Survey 2013 was also reviewed.

The authors concluded that current data quality for Vital Statistics is far from ideal although steady improvements were noted. The limitations of the sisterhood method employed in national survey also play a large role in measuring and interpreting maternal mortality ratios. These combined weaknesses cast enough doubt on the measurement of MMR levels prompting the following recommendations to improve the quality of data entry, data collection, and validation. Other observations regarding access to maternal health services and causes of maternal deaths will also be presented.

A Prediction Model for Mosquito Density¹

By

Lisa Grace S. Bersales² and Lilian A. de las Llagas³

Abstract

With the rise of dengue cases especially among children, a study has pioneered in the development of a statistical model that predicts the threat of dengue outbreaks in public elementary and high schools in the Philippines. A fixed effects model with seasonal autoregressive errors is used to predict mosquito density using panel data from the schools. This model, referred to by the study as the School-based Mosquito Abundance Model (SMAM), uses climate (climate type, temperature, relative humidity), container index, and vector control practices (curtains and electric fans) to ovitrap index (OI), an effective mosquito surveillance tool used as the measure of mosquito density. Performance indicators used to evaluate the model are the adjusted coefficient of determination (adjusted R²) and Mean Absolute Percentage Error (MAPE). Results are promising with adjusted R² higher than 80% and MAPE below 10%.

A total of 21 schools representative of the four climate types of the Philippines were sampled and data collection was done weekly until the study completes a 12-month data. Schools were the chosen target sites for this study since cases of dengue fever are common among elementary and high school students as they are exposed to the day-biting mosquitoes *Aedes aegypti* and *Aedes albopictus*, the transmitters of the dengue virus.

This climate-driven model is foreseen to be fit to predict for mosquito density of schools located across the four climate types of the Philippines. At the end of this study, a website will be designed to present the forecasts of mosquito density in schools for prompt and effective actions to prevent dengue outbreaks.

Keywords: panel data, fixed effects, seasonal autoregressive errors, ovitrap index, vector control

¹ This paper for the 13th National Convention on Statistics on October 2016 at the EDSA Shangrila, Makati, Philippines is based on a study of the UP School of Statistics Research Foundation and the UP Manila College of Public Health funded by the DOST-PCHR

² Professor of Statistics, School of Statistics, University of the Philippines Diliman and National Statistician, Philippine Statistics Authority

³ Professor of Parasitology, Department of Parasitology, College of Public Health, University of the Philippines Manila

Designing the Right Intervention for Increasing Financial Aptitude in the Philippines among Households

By

Alvin P. Tang, Akira Murata, and Jeremaiah Opiniano

Abstract

The Philippines is one of the largest remittance recipient countries in the world. Its remittances from overseas workers is estimated to reach US\$26Bn this 2016. It has consistently remained about 10% of GDP in the last 10 years. International remittances have almost single-handedly floated the Philippine economy in the past decades and helped provide the foundations for its current economic growth. It is observed, however, that remittances are mostly benefitting the urban centers and not the places from where the migrants originate. In view of this, we have embarked on a research to find how the remittances can be channeled to benefit these mostly rural areas. Utilizing a quali-quantitative method of combining focus-group discussions (FGDs) and surveys, this study will consider a natural experiment that could compare the household of migrants and non-migrants. This is to validate that the same economic policy environment affects the savings and investment decisions of the two types of households. The process will involve randomized controlled trials (RCTs) in finding the right interventions to improve the saving and investment decisions of households. In earlier versions of the research, we have found that remittances have not significantly affected the savings and investment decisions of households. Both types of households suffer from weak financial knowledge. In the preliminary stage of the study, we will be able to compare the results of this new study via its baseline survey results to that of the previous ones. The study sites for this research will be two towns, Dingras in Northern Philippines and Bansalan in Southern Philippines. This will balance the results from the earlier studies which were conducted in four towns in Central Philippines. The expected outcome of the baseline surveys will be used to design the appropriate interventions that can be tested among the households. The interventions will hopefully be found that could help improve the aptitude of households and to help them go into the track of savings and investments.

A Review of the Statistical and Data Needs for Monitoring the Protection of the Rights of Migrant Workers in the ASEAN Region

By

Emily Christi A. Cabegin

Abstract

In 2013, 7 out of 10 or 6.5 million international migrants of the ASEAN region are intra-regional migrants. This figure is expected to mount up with the formal establishment of the ASEAN Community in 2015, that envisions a single market characterized by free movement of goods, services, investments, skilled labor and to some extent, capital. This paper focuses on the more liberalized cross-border mobility of people in the ASEAN region that impelled the member states to sign in 2007 the Declaration on the Protection and Promotion of the Rights of Migrant Workers. This Declaration sought to: (a) promote a "decent, humane, productive, dignified and remunerative employment for migrant workers"; (b) implement human resource and labor reintegration programs for migrant workers in countries of origin; (c) take measures to prevent and sanction human trafficking; and (d) build capacity by sharing of information, best practices and issues on migrant labor. In addition, the Philippines is also signatory to the United Nations International Convention on the Protection of the Rights of all Migrant Workers and Members of Their Families, which guarantees "equality of basic human rights standards, of wages and general working conditions for migrants and nationals". Likewise, the UN Convention stipulates for the provision of the protection of migrants workers for the entire period of the migration process which includes the "preparation for migration, departure, transit and the entire period of stay and remunerated activity in the State of employment as well as return to the State of origin or the State of habitual residence" (Article 1(2)). This paper aims to discuss the attendant need to develop and strengthen the Philippine statistical and data base system to support the ASEAN policies relating to regional cross-border mobility, and in particular, to identify the areas in which improvements in statistics on regional migration, on intra-regional migrant workers and their families, are salient.

Generating Local Migration Data: Learning from SUMMID CALABARZON

By

Luis G. Banua

Abstract

This presentation shares one of the knowledge products of the Strengthening, Upscaling and Mainstreaming International Migration and Development in CALABARZON Project (SUMMID CALABARZON), A Guide in Generating Local Migration Data. The need for generating local migration data has assumed importance in ongoing attempts to integrate migration in local development plans. The presentation will outline strategies in generating local migration data from various sources and will share good practices and innovations learned from the SUMMID team's experience in implementing the project.

Violence against Children: Using Data/Evidence for More Effective Prevention and Response

By

Faye Balanon and Sarah Norton-Staal

Abstract

The Philippines recently completed the first ever National Baseline Survey on Violence against Children in 2015. The national survey had nearly 4,000 respondents, and included children and young people aged 13-24. The survey provides important evidence on the prevalence of violence that will support further policy planning to ensure more effective prevention and response strategies.

The results provide information regarding the types of violence children experience, (physical, emotional, and sexual), as well as where they are more likely to experience violence (in the home, at school, in institutions and in the community).

The NBS VAC survey is complimented by a Systematic Literature Review on VAC conducted in parallel with the baseline survey, thus the paper will demonstrate how baseline survey data can be enhanced/enriched by a wide reaching review and analysis of existing survey data, academic literature and other reports and research.

Finally, the NBS VAC in the Philippines is part of a Global initiative with support from UNICEF where 20 countries to date have undertaken similar research, thus the paper will look at the Philippine research outcomes with consideration of other similar surveys, recognizing the unique context of the Philippines and opportunities for regional learning and sharing of experience on using data in development of policy and multi sectoral action plans.

**Types, Extent, and Effects of Bullying on the Well-Being of Students
in Western Cagayan**

By

Jehan U. Gerardo

Abstract

This research explored the types and extent of bullying and its effect on the well-being of high school students in Lasam, Cagayan, using the descriptive-correlative method of research, based mainly on the response to the questionnaire. The profile of participants are sex, year level, age, school of origin, birth order, educational attainment of parents, monthly income of parents and living status of parents. The study concluded that that almost all high school students experienced three types of bullying and lasted for less than a week. The different dimensions of well-being such as physical, emotional, intellectual, social, behavioral and creative were affected by the bullying experiences. The study proved that there is a significant relationship between the types and extent of bullying and the effects on the well-being of students. Therefore, the longer time they were bullied physically, socially and verbally, the more their physical, emotional, intellectual, behavioral, creative and social well-being were being affected

Keywords: Types, extent, effects, bullying, well-being, students

Nipping in the Bud: Preventing Poverty Through Age-Specific Measurement and Coordinated Action

By

Gaspar Fajth¹ and Daphne François²

Abstract

Poverty concepts, measurement and reporting practices tend to capture the manifestation rather than the genesis of human deprivation. This paper contributes to an ongoing discussion on monitoring progress along the first goal of the Sustainable Development Agenda. It explores how poverty gets ingrained in human assets and how statistics can help preventing this vicious cycle by shifting the focus towards poverty's origins in the individual. Looking at recent scientific evidence of brain research, the paper finds that the earlier interventions take place, the higher their positive impacts on individuals' lives and societies' prosperity. Early childhood lends itself best to strengthening cognitive human capital, leading to improved skills, enhanced labour productivity and increased active life expectancy. Remedial action focusing on population-wide poverty, while important, does not seem to have the same efficiency and capacity to spawn a virtuous cycle. The paper argues that SDGs open opportunities for the development of an integrated statistical framework to underpin policies “nipping poverty in the bud”. It makes concrete suggestions how such a framework could be developed in a coordinated fashion and support the provision of an integrated set of age-specific interventions that have the potential to ward off human deprivation and prevent poverty later in life.

¹ Regional Adviser, Social Policy and Economic Analysis. UNICEF East Asia and the Pacific Regional Office, Bangkok, Thailand. Phone: +66 2 356 9474, E-mail: gfajth@unicef.org

² Consultant. UNICEF East Asia and the Pacific Regional Office, Bangkok, Thailand. Phone: +66 2 356 9267, E-mail: dfrancois@unicef.org

Scholarship Program of the Re-engineering the Government Statistical Services Project Phase II: An Evaluation

By

Rechel G. Arcilla

Abstract

The Philippine Statistical Research and Training Institute (PSRTI) has been mandated to provide scholarships, financial and other forms of assistance for purposes of building statistical manpower and enhancing training and statistical research and development in the country. To ensure the success of programs that they will be implementing, an evaluation of the Re-engineering the Government Statistical Services Project Phase II (RGSSP II) implemented in 2001 was conducted. It aimed to (1) determine the effectiveness of RGSSP II in meeting its expected outcomes, (2) identify good practices of RGSSP II, (3) identify issues/problems encountered in the implementation of RGSSP II, and (4) recommend strategies and policies on how to implement similar programs in the future.

After consultation with different stakeholders, results showed that only four out of 16 scholars earned their graduate degrees in Statistics. Only two of the 12 noncompleters have partially refunded to RGSSP through the Statistical Research and Training Center the financial support released to them. Strategies identified to improve this completion rate include improving the screening process of the applicants, implementing strictly the contract between the scholars and SRTC, and monitoring closely the academic performance of scholars.

A Training Needs Assessment of the Statistics Personnel in the Government

By

Jesusa A. Pe Benito

Abstract

This paper attempts to assess the training needs of the statistics personnel working in the government. Two questionnaires were used; one is the agency questionnaire to determine the number of personnel working in statistical activities and the other is an individual questionnaire for those who were identified in the agency questionnaire. In the individual questionnaire, questions were designed to determine the personnel's statistical training needs in the next five years. Based on the data gathered, agency personnel profiling vis-à-vis training needs assessment by agency will be conducted. Likewise, the statistical training programs appropriate for an E-learning were identified. By identifying the training requirements of the government personnel based on their perceived training requirements of their tasks, the assessment will allow the agencies to focus on the appropriate statistical training needs within their organization. It will also help the Philippine Statistical Research and Training Institute design its training agenda for the Philippine Statistical System.

Keywords: training needs analysis, statistical trainings

Building Regional Partnership with Higher Educational Institutions in Statistical Research and Training: The PSRTI Approach

By

Virginia N. Gañac

Abstract

The Philippine Statistical Research and Training Institute (PSRTI) is mandated to develop a comprehensive and integrated research and training program to upgrade the quality of statistics personnel and expand the statistics human resource base in support of the needs of the Philippine Statistical System. While it has conducted quite a number of statistical trainings at the national level, it has missed out on the delivery of trainings at the sub-national level due to its limited technical staff and no regional presence to address the statistical capability building need of the sub-national offices. The PSRTI's forerunner, the Statistical Research and Training Center, undertook activities towards expansion of its trainings to reach the local government units, though for a limited time and coverage. Following this experience, the PSRTI has embarked on forging a partnership with regional training affiliates to expand the coverage of its trainings. The PSRTI's experience is documented in this paper citing the good practices learned and identifies areas of improvement.

Key words: statistical capability building at the sub-national level; regional partnership

Cost-Benefit Study of the Dual Training System (DTS) in the Philippines

By

Claire Dennis S. Mapa, Josefina V. Almeda, and Manuel Leonard F. Albis

Abstract

Reducing youth unemployment in the country is a major policy challenge that confronts our leaders today. The most recent labor unemployment data from the Philippines Statistics Authority (PSA) shows unemployment rate at 5.4 percent, which is actually lower than the July 2015 data. The data also revealed that almost half of the unemployed belongs to the 15 – 24 age group. This high youth unemployment is deplorable given the high expectations of the youth of better economic opportunities as they transition from school to the labor force. One often cited reason for this high youth unemployment is the job-skills mismatch. The competencies of the graduates do not meet the requirements of the industries. The concern on the job-skills mismatch can be addressed by the Dual Training System (DTS). The DTS is a training modality combining theoretical and practical training. The phrase “Dual Training” suggests that training occurs in two venues: the academic institution and the firm. The vital component of the DTS is the school-industry partnership. The school (training institution) and the firm (industry partner) work together in designing the training plan and finding ways to determine the best and most efficient way of training the trainee-student so he or she can learn the knowledge and practical skills during the training period. The study on the Cost and Benefit Analysis of the Dual Training System in the Philippines initiated by the Technical Education and Skill Development Authority (TESDA) and the Philippine Chamber of Commerce and Industry (PCCI) – Human Resources Development Foundation (HRDF), with the technical support of the Federal Institute for Vocational Education and Training (BIBB), aims determining the desirability of the program given the incurred costs and benefits realized by the firms. If the realized benefits by the firm from the DTS program outweigh the incurred costs of training the student-trainee, then there is a high probability that the firm will continue investing and participating in the DTS program. The costs and benefits study of the DTS program aims to collect information from the firms and TVIs that are practicing the DTS in the country. The data collection for this study covered only four (4) regions, namely: the National Capital Region (NCR), Region 3 (Central Luzon), Region 4A (CALARBAZON) and Region 10 (Northern Mindanao). The study reveals interesting results that are noteworthy in strengthening the DTS program in the country. For one, contrary to popular belief, the study revealed that the combined short-term and long-term benefits derived by the firms from the DTS program clearly outweigh the overall costs. The simulations made for firms in the Manufacturing and Hospitality sectors on the combined short and long term benefits of the DTS program showed such could be higher than overall costs by at least 30 percent. Likewise, the results are similar for large and medium size firms. Moreover, across geographical areas, calculations made showed that combined benefits can be higher than average costs (for firms in the NCR, Region 3 and Region 4A) and thus, it will be worthwhile for the firms to participate in the DTS program.

The Impact of On-the-job Training on Employment and Earnings Dual Training System in the Philippines

By

Futoshi Yamauchi¹, Taejong Kim², Kye Woo Lee³, and Marites Tiongco⁴

Abstract

This paper estimates the impact of Philippine Dual Training System (DTS) on labor market outcomes using a recent survey that tracked graduates from DTS and regular programs. Based on the finding that the probability of enrolling in DTS jumps from 0.35 to 0.55 around the normalized average highschool score being zero, Fuzzy Regression Discontinuity Design estimation shows significantly positive impacts on the latest monthly earnings and (marginally) current employment incidence. Quantitatively, the impact on monthly earnings that is attributable to DTS is substantial, i.e., a nearly 50% increase relative to the average regular program graduate earnings. The impact significantly increases with the length of on-the-job training (OJT), measured by the number of weeks in company during DTS, which implies that the OJT part of DTS is the most essential contributor to higher earnings of the DTS graduates. The comparison of (private) internal rate of return among DTS, regular programs and college graduates demonstrates that DTS has relatively high returns among these options. Policy implications are derived from the above findings.

¹ Development Research Group, World Bank.

² KDI School of Public Policy and Management

³ KDI School of Public Policy and Management

⁴ De La Salle University

Measuring Growth Residual: Empirical Evidence on Total Factor Productivity Test and Solow Growth Model

By

Princess Allyne Joy P. Aba, Dennis C. Maglanoc, and Eleanor Garoy

Abstract

This paper is an exposition of the theoretical Cobb-Douglas production function, showing how Philippine growth patterns and productivity are compared with other ASEAN countries. The derivation of the aggregates of growth and productivity highlights the development of Cobb-Douglas production function as espoused by Samuelson. Data consideration follows Cobb and Douglas theoretical limits. Extension of the derivation is the empirically tested Solow Growth model. Cobb-Douglas production used in this paper is extended with Human capital. The interest on this section is the estimates of absolute levels of TFP as residuals that are closely related to levels of output per person. GDP growth is highly affected by technical or technological growth, aside from growth drawn from physical capital, labor and human capital. Singapore has a very low relative growth drawn from its physical capital, labor and human capital, but it has coped up through the industrialization it has experienced. Philippines is a developing country but it shows a high potential in economic growth through its growth in Physical Capital (K). Philippines' physical capital growth was drawn from direct foreign and domestic capital formation; more labor was drawn from investment that may be made in the Philippines. Thailand, on the other hand, have a stabilizing economy, but it doesn't rely that much on physical capital or on labor, however, its labor have a negative amount but it can be explained by its human capital. Thailand has a small growth in labor input but it has quality drawn from their government expenditure for education. Economic growth comes from different variables, but a country's growth should be drawn from available resources it has the richest, or a combination of two or more.

Keywords: total factor productivity, cobb-douglas production function, solow growth residuals

Towards the Institutionalization of Seasonally-Adjusted Production Sectors of the Gross Domestic Product

By

Stephanie Rose R. Moscoso and John Lourenze S. Poquiz¹

Abstract

Seasonality is common in economic time series. In particular, industry output tends to be heavily influenced by recurring events within the year. In economic analysis which deals with the examination of what happened in a specific industry within the year, it is imperative that seasonal influences be filtered in order to arrive at meaningful readings of the time series. The Philippine Statistics Authority releases the seasonally-adjusted Gross Domestic Product and Gross National Income with its quarterly release of the Philippine economic performance. The PSA also releases the seasonally-adjusted series for Household Final Consumption Expenditure and the three major industries, namely Agriculture, Hunting Forestry and Fishing (AHFF), Industry, and Services. However, the agency does not release the seasonally-adjusted series for the specific production sectors or industries, like manufacturing, construction, real estate, to name a few.

This study attempts to identify the most appropriate methodology for the seasonal adjustment for the production sector of the Quarterly National Accounts. The study would compare five methods of seasonal adjustment, namely the X11 ARIMA, X12 ARIMA, X13 ARIMA SEATS, Demetra+, and TRAMO/SEATs. The paper aims to recommend a method, which the PSA could use for the regular release of the seasonally-adjusted series of the gross value added of each industry in the National Accounts.

Keyword: Seasonal Adjustment, GDP, National Accounts, Time Series

¹ Satellite Accounts Division, Macroeconomic Accounts Service, Philippine Statistics Authority

Implementation of the Citizen Satisfaction Index System (CSIS) of the Department of Interior and Local Government (DILG) in General Santos City

By

**Berlita Y. Disca, Emmylou M. Aujero, Ruth Jean Y. Maratas,
and Abdul K. Silongan**

Abstract

Citizen Satisfaction Index System (CSIS) is an assessment tool for the service delivery performance of local government based largely on the knowledge, experience, and perception of the people. It endeavors to assess the reach and quality of basic government services on health, basic education, social welfare, governance and response, public works and infrastructure, environmental management, agriculture and tourism from the point of view of the people as clients and as citizens. The survey employed a multistage sampling procedure which considered 16 barangays from the 26 barangays in General Santos City and included 150 samples. Findings showed that approximately four (4) out of ten (10) citizens of the City of General Santos have availed of the program/services provided by the City. The citizens of the city of General Santos who have availed of the programs are highly satisfied with the services of the four (4) delivery areas. Specifically, these programs/are on health, basic education, social welfare, and agricultural support. The citizens considered the programs/services on health, basic education, and environmental management as highly important to their needs. The citizens' level of availment is fair as well as their level of awareness on the program/services provided by the city. The city is trying to be responsive to the needs of its citizens. Likewise, the citizens are acknowledging the efforts of the city to improve their quality of life, thus, majority of the respondents decided to live in the City for the next five years.

Keywords: awareness, availment, assessment/satisfaction, citizen's index, multistage sampling, Kish grid

Towards Development of Provincial Product Accounts (PPA): The Palawan Experience

By

Vivian R. Ilarina and Florande S. Polistico¹

Abstract

The System of National Accounts (SNA), as a widely recognized tool for monitoring the performance of the economy, is a comprehensive, consistent and flexible set of macroeconomic accounts intended to meet the needs of government and private-sector analysts, policy makers and decision takers. In the Philippine setting, the PSNA is compiled quarterly at the national level and annually for the 17 administrative regions. However, interests by different stakeholders have grown substantially over the years to develop Provincial Product Accounts (PPA) as basis for a more appropriate measurement and assessment of economic performance.

Acknowledging the validity of these interests, it is the purpose of this paper to look into the feasibility of PPA compilation, in particular for the province of Palawan. Specifically, this paper will assess the available data and identify the gaps, summarize SNA principles applicable to subnational accounting, recognize the obstacles and limitations in developing the PPA, and develop action plan towards generating PPA for the province.

Key words and phrases: System of National Accounting, Provincial Product Account, Gross Domestic Product

¹Assistant National Statistician and Chief Statistical Specialist, respectively, of the Philippine Statistics Authority (PSA)

Building National Competitiveness through Strategic Promotion of Regional Competitiveness

By

Guillermo Luz

Abstract

The National Competitiveness Council tracks various global competitiveness indices and benchmarks the Philippines against other countries to measure where we are gaining or falling in terms of our national competitiveness. These indices serve as our diagnostic toolkit to see how we measure up along a broad range of activities and sectors.

We feel that local competitiveness is one of the basic building blocks for overall national competitiveness. It would be difficult to imagine a strong, competitive Philippines if it were to be built around only a few economic, urban centers. For the country to grow and remain stable, it would have to establish multiple economic hubs, each with their own particular strengths and attributes. At the same time, the presence of multiple economic hubs will provide options not only for investors to locate but also for Filipinos to opt where to live and work. The presence of various economic centers could provide alternatives for migration to Metro Manila and major cities in search of job opportunities. For investors, the presence of numerous economic centers would allow them to spread their risks and at the same time take advantage of the resources which remain untapped in the regions. The potential benefits of creating many competitive regions would be the diversification of investment and job opportunities, the creation of new wealth and a growing middle class in different parts of the country, and overall attractiveness of the country as an investment site.

However, aside from Regional GDP data, there is very little information available about Philippine regions which demonstrate its competitiveness or lack of competitiveness. There is even less information available at the city or municipality level. Entrepreneurs and businesses have virtually no basis for comparing city/municipality data for purposes of choosing business locations. Large businesses, of course, track such data but these are basically proprietary.

Do Filipinos Still Use Low-Denomination Coins?

By

Teresita B. Deveza, Gloria A. Cubinar, and Maria Fatima P. de Leon

Abstract

Minting of low-denomination coins (LDCs) in the Philippines such as the 25-sentimo, 10-sentimo, 5-sentimo and 1-sentimo entails negative seigniorage as the costs of production are higher than the face values of these coins which is aggravated over time by inflation. This underscores the need to assess and get feedback from the public on the utilization of LDCs. The Department of Economic Statistics (DES) upon request by the Currency Issue and Integrity Office, conducted two surveys among households and corporates on the degree and types of usage of LDCs. The results show that three for every four households and five for every ten firms use the 25-sentimo for payment of goods and services. In contrast, a small percentage of households and corporates use the 10-sentimo, 5-sentimo, and 1-sentimo for payments. Seventy percent of households opt to maintain the 25-sentimo in circulation and to withdraw the other three LDCs. However, how would the withdrawal of LDCs affect the market? Matching target behaviour techniques for buyers and sellers and statistical test on paired observations provided insights on the possible impact of LDC withdrawal on market prices and buying power of consumers.



**The “sigma” sign represents the embodiment
of statistics in the Philippines.**

The science. The system. And the statisticians.

**The growth and direction of statistics are dictated
by the demands of development in terms of planning and
policy formulation. This we aptly term as development
statistics symbolized by the arrow “DEVSTAT”.**