Philippine Household Income Mobility Measurement and its Decomposition using a Pseudo-Longitudinal Panel Data

Melcah Pascua Monsura[*]

Department of Economics, Polytechnic University of the Philippines, Manila, Philippines

Abstract: When economic growth does not translate into poverty reduction and it remains a challenge, it is crucial to examine income mobility since income is a measure of individual economic status or poverty status. To understand the role of economic growth on welfare when there is income mobility, this study measured the Philippine households' income mobility utilizing pseudo-longitudinal panel data from the Family Income and Expenditures Survey (FIES) of 2003 to 2012. Using various income mobility indices such as chi-square, average jump index and Shorrocks mobility index, the results revealed that the households' income movement was more mobile than expected. This means that the households' income status improved through time, low-income rank moved to higher-income rank in a given income distribution. In addition, short-run income inequality was reduced by 87.30 percent (87.30%) when there was income mobility. The presence of income mobility in the country was mainly due to the transfer effect which indicates that households did not take the economic opportunities of economic growth to increase their economic status.

Keywords: Economic status, income distribution, income inequality, income mobility, welfare.

1. INTRODUCTION

The Philippines is one of the most dynamic economies in the East Asia Pacific region because of its increasing urbanization, growing middle class, and large and young population. The country's economic dynamism is embedded in strong consumer demand supported by a thriving labor market and robust remittances (World Bank 2019). In addition, the Philippines ranked fifth in 2017 and 2018 among Southeast Asian countries in terms of economic performance with a GDP growth rate of 6.7 percent (6.7%) and 6.2percent (6.2%), respectively. Although there is a 0.5 percent (0.5%) decrease in GDP growth rate, the country is still considered as one of the fastest-growing economies in the region (Asian Development Bank 2019). However, when this economic growth does not translate into poverty reduction, inclusive growth in the country remains a challenge especially that of poverty. Particularly, even though economic growth of the country rose from 1.15 percent (1.15%) in 2009 to 6.68 percent (6.68%) in 2012, the reduction of poverty incidence of 20.5 percent (20.5%) in 2009 to 19.7 percent (19.7%) in 2009 is not statistically significant (Philippine Statistics Authority 2016).

This problem of poverty reduction was among those priorities addressed by the government through the 2011-2016 Philippine Development Plan (PDP) of the National Economic Development Authority ((NEDA). This program enabled the government to work systematically to give the Filipino people a better chance of finally finding their way out of poverty, inequality, and the poor state of human development.

These purposes were continued and expanded through PDP 2017-2022. This plan adopted a 25-year long term vision to end poverty in the country by 2040.

Even if poverty reduction has become the definitive goal of several institutions, there is also a need to address the issues on income mobility since income is a measure of individual economic status. Contrasted to static indicators of poverty and inequality, income mobility measurements provide more detailed information about the dynamic progression of a country's well-being (Martinez *et al*. 2013) since it shows the movement from one income level to another income level which usually refers to the upward movement and downward movement of income rank.

The analysis of income mobility is concerned with measuring the extent of changes in an individual's economic status from one time period to another (Fields and Ok 1999). Consequently, a time path of income distribution which is known as the longitudinal panel data for the same individual is needed to analyze this mobility. Longitudinal panel data are statistical databases that regularly follow and record income data of a specific individual or a group of individuals over some period of time. These data enable one to measure the extent to which individuals move up and down the income ladder.

Moreover, the longitudinal panel data from the Family Income and Expenditures Survey (FIES) of the country were usually used in several intergenerational studies that focused on the relationship between the income of the parents and of their offspring. For instance, intergenerational income mobility tackles the variation of individual income share from parent to child (Panganiban 2010; Takahashi 2013; Bevis and Barrett 2015). On the other hand, only a few research studies examined the aggregate variation of individual incomes

*Address correspondence to this author at the Block 2 Lot 1 Villa Zaragosa Turo, Bocaue, Bulacan, Philippines; Tel: +639399107411;
E-mail: melcahpascuamonsura@gmail.com

(Martinez *et al*. 2013; Martinez *et al*. 2015) but there is an emerging literature that addresses aggregate income movement (Shorrocks 1978; Fields 1996; Mitra and Ok 1998; Fields 2005; Satya 2009; Fields 2009; Cowell and Flachaire 2011).

Thus, this paper aims to contribute to the few researches that focused on the aggregate variation of household incomes. The following three questions are addressed in this study: (1) is income mobility present in the Philippines and how large will it be? (2) when does one group of households exhibit more income variation than another? (3) what are the sources of income mobility?

These questions were answered using mobility measures such as chi-square, average jump index, and Shorrocks mobility index because this paper focused on the positional movement of households' income. According to Fields (2010), the usage of mobility indices depends on the definition of income mobility in the study, whether it refers to "directional income movement" or "positional movement". In addition, the concepts of Fields-Ok indices on income mobility decomposition through growth effects and transfer effects were utilized.

2. METHODOLOGY

2.1. Data

A genuine longitudinal panel data is not available in most developing countries including the Philippines. That is why, a pseudo-longitudinal panel data was generated using a three-period survey of Family Income and Expenditures Survey (FIES), 2003-2006, 2006-2009, and 2009-2012.

A household data matching method was used to track the households that were interviewed from 2003 to 2012. The data were filtered using household head's gender, household head's age, and household head's marital status. A household was expected to be present in the three-period survey when the household head's age increased by three (3) years for every survey after 2003. When this assumption was not met, the household was dropped in the sample. It is important to note that income mobility of the households can only be measured if the same households were interviewed and considered from the start until the last year of the survey.

Although the Philippine Statistics Authority (PSA) has conducted FIES before and after the selected time frame, there were improvements and adjustments on the survey questionnaires used in each survey period that resulted in some differences in the output of the surveys. Since household matching was used to create a pseudo-longitudinal panel data, it was crucial to have the same data sets from the initial year to the final year. Thus, the selected periods, 2006 to 2012, utilized the same data output.

After the process of data matching, a total of 5,130 households were included in the study. Household income was deflated using the Consumer Price Index (CPI) with base year 2000 and was then divided by the number of household members to realize the real income change – real income was used as income in the entire discussion.

2.2. Income Mobility Measurement

The income mobility indices were computed using an income matrix that includes household's relative rank or position in the income distribution. This matrix was constructed by dividing the households' income into quintiles.

2.2.1. Income Transition Matrix

Quintile transition matrices (i.e. decile, quintile, etc.) are commonly used to represent the income classes of the households. It is composed of rows which represent the income classes of the households in the initial year and of columns which represent the income classes in the final year; each row sums up to 100 percent (100%). The smaller the income bracket like the quintile, the more likely that the household will move between the brackets and thus mobility is larger compared to larger income brackets like the decile.

Consider an income transition matrix $P^{n \times n}$ dimension where each cell $p_{ij}(x, y)$ is the percentage of households who move from income group i to income group j from time t to time $t + 1$ and $R_+^{m \times m}$ taken as the space of all income distributions, m income ranges from one criterion to another.

$$P(x, y) = \left[p_{ij}(x, y) \right] \in R_+^{m \times m}$$

The $x \text{ and } y$ above are the income distribution spaces in the initial year t, and final year $t + 1$, respectively, and n is the total level of income in the distribution.

2.2.2. Income Mobility Indices

1. Chi-Square Index

The calculated chi-square value shows how distant the actual transition matrix is from the observed frequencies. The quintile transition matrix with 5x5 inter-period income matrix would compute the chi-square index as:

$$X^2 = \sum_{ij} \frac{(OBS_{ij} - EXP_{ij})^2}{EXP_{ij}}$$

where OBS_{ij} is the observed frequencies and EXP_{ij} is the expected frequencies. Comparing the computed chi-square values in two different mobility scenarios, a larger X^2 value is more time - dependent that makes the income less mobile than the other.

2. Average Jump Index

This index shows the mobility degree when the household's rank (in quintiles) moves in income distribution. This is calculated as:

$$M_p = \frac{1}{n} \sum_{i=1}^{n} |P_i^y - P_i^x| \text{ [1]}$$

where n refers to the number of households while P_i^x and P_i^y refer to the household's ordinal position in the income distribution at the original time t and final time $t+1$, respectively.

3. Shorrocks Mobility Index

In this index, m is an indicator of the rigidity of the income distribution. It is defined in a two-period situation measuring the degree of inequality that is present when the time period lengthened. Thus, it is measured through:

$$m = \frac{I(x+y)}{\dfrac{[I(x) + U_y I(y)]}{U_x + U_y}}$$

where $I(.)$ is a particular scale-invariant inequality index.[2] A share movement of income is measured in this index. A high mobility index represents more inequality reduced in the span of two years. This also shows how income inequality will be partly offset when there is a presence of income mobility.

The lectures of Professor Philippe Van Kerm[3] on the tools for the analysis of income mobility using STATA were used in the computation. Income mobility in the three periods, 2003-2006, 2006-2009, and 2009-2012 were measured using the command 'matrxmob' in STATA.

After grouping the household incomes into quintiles, a quintile transition matrix for each period was generated. Several indices were also computed using the matrix, these are Shorrocks mobility index, Atkinson *et al*. mobility index, and average jump index.

The chi-square index used the matrix but was computed in excel using the formula. Among these indices, only three were chosen such as chi-square, average jump index and Shorrocks index. Atkinson *et al*. mobility index, quantifies the extent of mobility, however, it varies with quintiles and distance between the initial year and the base year – the longer the time period, the smaller is the mobility ratio (Asadullah 2012). Since this paper considered a short-run period, a high mobility index is a biased result. Thus, the omission of this index had no implication on the analysis of this study. The selected indices were summarized in Table **2** for further discussions.

2.2.3. Income Mobility Decomposition Measurement

Fields-Ok indices capture the movement when all incomes change by a constant amount of money. Consider a base income and final income by x_i and Y_i respectively, where $i = 1,2,\dots n$. Consider also R_t as the space of income distribution with n households at time t, $R_t = (x_1, x_2, \dots, x_n)$. Suppose R_t as the initial income distribution has become R_{t+1} as the final income distribution, that $R_t = (x_1, x_2, \dots, x_n)$ to $R_{t+1} = (y_1, y_2, \dots, y_n)$. Consequently, Fields-Ok mobility indices can be computed as:

1. Absolute Percentage Mobility Index

$$M_a(x,y) = \frac{\sum_{j=1}^{n} |x_i - y_i|}{\sum_{i=1}^{n} x_i}$$

This index is also called the percentage symmetric dollar income movement (percentage of the mean base year income).

2. Relative Mobility Index

$$M_r(x,y) = \frac{1}{n} \sum_{j=1}^{n} |\log x_i - \log y_i|$$

where base year income is taken into account. This index measures income movements that are sensitive to base year incomes. The logs of base year and final year were considered rather than the income alone.

The two indices above would indicate that the larger the value of the indices the larger income movement is from the initial time t to final time $t+1$. They are decomposable into two parts; (1) income change is due to economic growth; and (2) income change is due to the transfer effect which means that income can move upward or downward while holding the mean constant.

The total income mobility $(x,y) = \sum_{j=1}^{n} |x_i - y_i|$ decomposed into two parts given as:

$$(x,y) = \sum_{j=1}^{n} |x_i - y_i| = G_n(x,y) + T_n(x,y)$$

---

[1] This formula is the same as the formula used by Jin-qi, Qiang, and Guang-sheng (2009) in Measuring the Income Mobility of Rural China
[2] Discussions of Fields (2000) were considered in this index.
[3] https://www.stata.com/meeting/2dutch/vankerm.pdf?fbclid=IwAR3bQt8jr6ZnV saLrCyW8vEHNiM5MV-N79aVYRab5NZUWh7B0l7B7P36yv8

where $G_{n\,(x,y)} = \sum_{i=1}^{n} y_i - \sum_{i=1}^{n} x_i$ and $T_n(x,y) = 2\left[\sum_{i \in L_{n(x,y)}}^{n}(x_i - y_i)\right]$.[4] Thus, decomposition absolute mobility index due to growth effect is:

$$M_a(x,y) = \left(\frac{1}{\sum_{i=1}^{n} x_i}\right)\left(\sum_{i=1}^{n}(y_i - x_i)\right)$$
$$+ \left(\frac{1}{\sum_{i=1}^{n} x_i}\right)2\left[\sum_{i \in L_{n(x,y)}}^{n}(x_i - y_i)\right]$$

And the decomposition relative mobility index is:

$$M_r(x,y) = \frac{1}{n}\sum_{j=1}^{n}(\log y_i - \log x_i) + \frac{2}{n}\sum_{i \in L}^{n}(\log y_i - \log x_i)$$

where $L \equiv \{i: x_i > y_i\}$[5]

The Fields-Ok indices were generated using the command 'fokmob' in the STATA. This command has the ability to decompose the total income mobility into the growth and transfer effects. The summary list of results is indicated in Table **3**.

3. EMPIRICAL RESULTS

3.1. Descriptive Analysis of the Households' Income

Household incomes from 2003 to 2012 are summarized in Table **1**. On the average, real income of households is increasing over time with minimum income of 1,985 pesos and maximum income of 842,814.60 pesos in 2003. The households' minimum income was increased by 38.06 percent (38.06%) from 2003 to 2012. However, there is an almost 70 percent (70%) increase in the households' maximum income in the same periods.

From 2003 to 2006, the households' maximum income decreased by 61.47 percent (61.47%). There was a 61.22 percent (61.22%) decline in the difference of minimum income and maximum income from 2003 (840,829.46 pesos) to 2006 (514,735.15 pesos). This result was reflected by a less unequal income distribution in 2006. The estimated Gini coefficient of 0.4580 in 2006, which was lower than the 2003 ratio of 0.4605, indicates that a movement towards a more equal or less unequal income distribution is perceptible (Philippine Statistics Authority 2009). However, the maximum income continuously increased from 2006 to 2012, while minimum income increased by a small amount, which results in an increase in the difference of maximum income and minimum income of 70.16 percent (70.16%) from 2006 to 2009 and 60.28 percent

(60.28%) in 2009 to 2012. This decline in the gap between minimum income and maximum from 61.22 percent (61.22%) in 2003-2006 period to 60.28 percent (60.28%) in 2009-2012 period indicates an enhancement in income distribution towards short-run income equality.

3.2. Household Income Mobility Measurement

Table **2** shows the measurement of income mobility in the Philippines using three income mobility indices, the chi-square, average jump index, and Shorrocks mobility index. The value of chi-square was decreasing over time which means that households' income movement was more mobile. Further, the average jump index decreased from the first period (2003-2006) to the second period (2006-2009) but with a minimal decline of 0.003. This was increased in the third period (2009-2012) from 1.091 to 1.103 which indicates an improving income status. The low-income rank households moved to a higher income rank on the same income distribution. The size of the household movement between different income levels improved from the first period to the third period. More households will have moved upward from lower income rank to a higher income rank.

The Shorrocks mobility index represents the reduced amount of income inequality of the country for a particular period. This index ranges from 0 to 1, where 1 means zero income inequality when there is income mobility. In the first and third periods, the computed indices of 0.854 and 0.85, respectively, indicate that income inequality was reduced by 85 percent (85%). In the second period, income inequality was reduced by 86 percent (86%). After investigating the three periods, income inequality was reduced by 87.3 percent (87.3%) from 2003 to 2012 when income mobility was present.

Therefore, there is a presence of income mobility in the Philippines from 2003 to 2012. The income mobility indices concluded that there is an improving households' income status which can give more economic opportunities. Accordingly, the more mobile the household income is, the greater is the reduction in income inequality.

3.3. Income Mobility Decomposition

The computed Fields-Ok indices using STATA are summarized in Table **3**. This table was divided into two parts. The upper portion represents the absolute percentage mobility index while the lower portion represents the relative mobility index. Both indices used Fields-Ok to decompose income mobility and to identify the factors that can cause income mobility.

---

[4] The process of decomposition was discussed by Fields (2000).
[5] Computation of transfer effect and growth effect of Jin-qi, Qiang and Guang-sheng (2009) in Measuring Income Mobility of Rural China.

Table 1:   Household Income from 2003 to 2012

Year	Mean	Std. Dev.	Min.	Max
2003	25,204.26	31,646.82	1,985.14	842,814.60
2006	36,561.61	38,805.70	3,364.75	518,099.90
2009	37,522.36	40,000.35	3,681.53	737,304.80
2012	53,201.30	61,918.74	5,215.96	1,222,152.00

Source of raw data: FIES of Philippine Statistics Authority.

Table 2:   Household Income Mobility Measurement in the Philippines

Time periods	Chi-square X^2	Average Jump Index, M_p	Shorrocks Mobility Index, M
2003 – 2006	1.170	1.094	0.854
2006 – 2009	1.142	1.091	0.860
2009 – 2012	1.117	1.103	0.850
2003 – 2012	1.016	1.135	0.873

Note: The results were generated from STATA except chi-square. Chi-square values were computed using excel.

These factors can be determined if the income mobility was due to economic opportunities when there is economic growth (growth effect) or if income mobility was due to transfer of income from one to another but the total income remains the same (transfer effect).

The results showed that Fields-Ok total mobility is the same with the value of the transfer effect because there is a zero-growth effect. This means that the income mobility of the households in the Philippines was due to transfer of income from one individual to another individual, but the total income remains constant. There was no household that experienced income mobility when the economy got richer.

This result may reflect the challenge of translating economic growth into poverty reduction. Although the country experienced significant change in economic growth from 4.97 percent (4.97%) in 2003 to 6.684 percent (6.684%) in 2012, poverty incidence and severity of poverty decreased by a minimal and insignificant degree. There is a decline of 0.3 percent (0.3%) in poverty incidence in the country from 2003 to 2012, from 20.0 percent (20%) in 2003 to 19.7 percent (19.7%) in 2012. In addition, severity of poverty which captures inequality of income among the poor decreased by 0.4 percent (0.4%) from 2.2 percent (2.2%) in 2003 to 1.9 percent (1.9%) in 2012. Hence, the government's efforts in improving poverty amidst an increasing economic performance are still problematic resulting in the possibility of experiencing zero-growth effect.

The absolute percentage income mobility and relative income mobility indices due to the transfer effect are increasing over time. The mobility is absolute when the movement of the socioeconomic status of an individual can be derived by looking at his income taken in isolation while relative mobility refers to the change in one's income with respect to the change in the income of other individuals in his generation.

The absolute percentage income mobility of 36.45 percent (36.45%) in 2003 due to the transfer effect was

Table 3:   Decomposition of Income Mobility

Mobility Index	Time period	Transfer Effect	Growth Effect
Fields-Ok Absolute Percentage Mobility Index	2003-2006	36.45	Zero Value for growth effect
	2006-2009	36.56	
	2009-2012	36.75	
	2003-2012	37.40	
Fields-Ok Relative Mobility Index	2003-2006	0.442	
	2006-2009	0.442	
	2009-2012	0.445	
	2003-2012	0.461	

increased to 36.75 percent (36.75%) in 2012 while the relative income mobility index of 0.442 due to the transfer effect rose to 0.445 in 2012. Over the whole time period, from 2003 to 2012, there was an absolute percentage income mobility of 37.40 percent (37.40%) and a relative income mobility of 0.461, both of which were due to the transfer effect. This transfer effect may be due to the Filipino culture of relying on luck through lottery games to fulfill their dreams of having a better life and to get out of poverty, instead of paying more attention to their work and meaningful spending (Banasihan *et al*. 2011). This culture of gambling permeates all sectors of Philippine society. Nearly every segment of the population participates to some degree in gambling activities, whether legal or illegal (Matejowsky 2003).

Furthermore, the presence of intergenerational wealth transfers from parents to children in the country can also contribute to the transfer effect. This transfer may be in the form of land, schooling investments, and nonland assets including pensions and business capital and interests less debts. This intergenerational transfer of wealth, from parents to children, can directly affect the lifetime income of individuals (Estudillo *et al*. 2001); particularly, when the parents transfer their land ownership to their children, the land maybe used to increase the children's income but not to increase the total income of the family.

4. CONCLUSION

It can be noted that there is a presence of household income mobility in the Philippines. The income mobility indices showed that income mobility in the country is improving over time. There is also an increasing number of households that have an income movement from lower income rank to higher income rank. When there is income mobility, a large reduction in income inequality is experienced, indicated by the high value of the Sharrocks index.

The occurrence of income mobility was decomposed into the growth effect and transfer effect as stated by the process of Fields (2000) on income mobility decomposition. The results showed that the total income mobility of the household was mainly due to the transfer effect. There is no or zero income mobility due to the growth effect as the country is having difficulty in translating economic growth into poverty reduction. From 2003 to 2012, the transfer effect was the only factor that could cause income mobility of the household in the Philippines.

The rank movement of individual's income may have been due to inherited wealth, lottery prize, reward

from others, and borrowed money. The sources of change in their incomes were not from interests on savings and lending, dividends from investments, and earnings through salaries and wages when there was growth in the economy. Therefore, although income mobility is evident in the country there is no evidence that it will create an economic opportunity to address the problem of poverty and income inequality among the poor because the households' total income did not change overtime.

An income mobility that is mainly due to the transfer effect overtime indicates that the total income in the country did not really change through time. An effort to encourage individuals or household members to save, to invest, and to increase their labor productivity is very crucial for them to take the opportunities to enable them to move their income levels when there is growth in the economy. This effort could also lead to an increase in households' absolute income.

The government's program on financial literacy, considered as the most important component of the Philippines' financial inclusion policy, through the help of government-owned and controlled corporations (GOCCs), private financial institutions and the academe is important to educate the households on how to responsibly spend and earn from their income. This program can be included in the school curriculum as part of government's efforts on human capital development in education. Through this program, an individual will become open-minded, informed and trained on how to take the opportunities of having more income during economic growth. In the Philippines, where financial literacy remains low, effective financial education programs are much needed. In a survey of Filipino adults, only two percent (2%) correctly answered seven (7) financial literacy questions; 88 percent (88%) correctly answered only three (3) out of the seven (7); and 10 percent (10%) had zero correct answers. These questions covered basic numeracy, compounding interest computation, comparing prices, and simplified concepts of inflation and investment diversification (Bangko Sentral ng Pilipinas 2018).

A successful financial literacy program enhances the financial stability of the stakeholders because they make rational decisions and manage their funds and businesses well. They are also protected from fraudulent transactions and dubious deals. With the assistance of local governments, regulators can check on the activities of regulated entities. Thus, clients who are well informed of their rights can access the alternative dispute procedures offered by regulators to settle complaints (Department of Finance 2016).

Annex 1.1:   Quintile Transition Matrix of 2003 to 2006

Quintile in 2003	Quintile in 2006				
	Bottom quintile	*Second quintile*	*Third quintile*	*Fourth quintile*	*Top quintile*
Bottom quintile	36.84	27	18.91	12.77	4.48
Second quintile	28.27	25.73	23.29	15.59	7.12
Third quintile	18.23	22.9	22.51	21.44	14.91
Fourth quintile	11.79	15.59	22.12	25.24	25.24
Top quintile	4.87	8.77	13.16	24.95	48.25
N = 5,130					

Annex 1.2:   Quintile Transition Matrix of 2006 to 2009

Quintile in 2006	Quintile in 2009				
	Bottom quintile	*Second quintile*	*Third quintile*	*Fourth quintile*	*Top quintile*
Bottom quintile	37.04	29.24	17.54	11.89	4.29
Second quintile	28.27	25.44	22.12	15.59	8.58
Third quintile	18.71	21.93	21.83	22.51	15.01
Fourth quintile	11.6	15.5	22.61	24.85	25.44
Top quintile	4.39	7.89	15.89	25.15	46.69
N = 5,130					

Annex 1.3:   Quintile Transition Matrix of 2009 to 2012

Quintile in 2009	Quintile in 2012				
	Bottom quintile	*Second quintile*	*Third quintile*	*Fourth quintile*	*Top quintile*
Bottom quintile	37.23	27.29	18.13	12.09	5.26
Second quintile	24.95	26.41	23.59	17.06	7.99
Third quintile	20.18	22.03	24.85	18.71	14.23
Fourth quintile	11.89	16.37	21.05	24.76	25.93
Top quintile	5.75	7.89	12.38	27.39	46.59
N = 5,130					

Annex 1.4:   Quintile Transition Matrix of 2003 to 2012

Quintile in 2003	Quintile in 2012				
	Bottom quintile	*Second quintile*	*Third quintile*	*Fourth quintile*	*Top quintile*
Bottom quintile	33.24	26.8	19.2	14.13	6.63
Second quintile	29.82	24.46	23.39	13.94	8.38
Third quintile	20.08	23.78	21.93	19.98	14.23
Fourth quintile	11.01	16.76	22.03	25.34	24.85
Top quintile	5.85	8.19	13.45	26.61	45.91
N = 5,130					

REFERENCES

Asadullah, M Niaz. (2012). "Intergenerational Economic Mobility in Rural Bangladesh." The Journal of Development Studies 48(9): 1193-1208. https://doi.org/10.1080/00220388.2011.646988

Asian Development Bank. (2019). Retrieved March 27, 2020. https://doi.org/10.22617/BRF190580-2

Bangko Sentral ng Pilipinas. (2018). Bangko Sental ng Pilipinas to Conduct First Financial Education Stakeholders Expo. Retrieved March 27, 2020 http://www.bsp.gov.ph/ publications/media.asp?id=4868&yr=2018

Banasihan, Karla R., Clarisse C. Dela Cruz, and Joy Alda R. Ong. (2011). "The Level of Satisfaction in Life of the Regular Lotto Players in Baybayin, Los Baños, Laguna." Ani: Letran Calamba Research Report 1(1). Retrieved January 25, 2020 https://ejournals.ph/issue.php?id=5

Bevis, Leah and Christopher B. Barret. (2015). "Decomposing Intergenerational Income Elasticity: The Gender-differentiated Contribution of Capital Transmission in Rural Philippines." World Development 74(C): 233-252. https://doi.org/10.1016/j.worlddev.2015.04.010

Cowell, Frank A. and Emmanuel Flachaire. (2018). "Measuring Mobility." Quantitative Economics 9(2):865-901. https://doi.org/10.3982/QE512

Department of Finance. (2016). "The Philippines' Financial Literacy Program" Presentation made by Undersecretary Gil Beltran at the 10th Financial Literacy Summit on 20 April 2016. Retrieved March 27, 2020 https://www.dof.gov.ph/the-philippines-financial-literacy-program/

Estudillo, Jonna P., Agnes R. Quisumbing, and Keijiro Otsuka. (2001). "Gender Differences in Wealth Transfer and Expenditure Allocation: Evidence from Rural Philippines." Philippine Studies 51(1):147-163.

Fields, Gary. (2000). "Income Mobility: Concepts and Measures: Patterns and Underlying Causes." Cornell University ILR School. Retrieved October 10, 2019. https://doi.org/10.1057/9780230625594_6

Fields, Gary. (2006). "The Many Facets of Economic Mobility." Cornell University ILR School. Retrieved October 10, 2019 https://digitalcommons.ilr.cornell.edu/articles/230/

Fields, Gary. (2009). "Does Income Mobility Equalize Longer-term Incomes? New Measures of an Old Concept." Cornell University ILR School. Retrieved October 10, 2019 https://digitalcommons.ilr.cornell.edu/articles/446/

Fields, Gary. (2010). "But That's Not What Economic Mobility is!" Cornell University ILR School. Retrieved October 10, 2019 https://digitalcommons.ilr.cornell.edu/workingpapers/155/

Fields, Gary and Efe A. Ok. (1996). "The Meaning and Measurement of Income Mobility." Journal of Economic Theory 71(2):349-377. https://doi.org/10.1006/jeth.1996.0125

Fields, Gary & Efe A. Ok. (1999). "The Measurement of Income Mobility: An Introduction to the Literature." Handbook on Income Inequality Measurement 557-596. https://doi.org/10.1007/978-94-011-4413-1_20

Jin-qi, Jiang, Liu Qiang, and Zhang Guang-sheng. (2009). "The Income Mobility in Rural China: Measurement and Decomposition." Retrieved January 20, 2020. https://doi.org/10.2139/ssrn.1645842

Martinez, Arturo. Jr., Mark Western, Michele Haynes, and Wojtek Tomaszewski. (2013). "Measuring Income Mobility Using Pseudo-panel Data." The Philippine Statistician 62(2):71-91.

Martinez, Arturo. Jr., Mark Western, Michele Haynes, and Wojtek Tomaszewski. (2015). "How Income Segmentation Affects Income Mobility: Evidence from Panel Data in the Philippines." Asia & the Pacific Policy Studies 2(3):590-608. https://doi.org/10.1002/app5.96

Matejowsky, Ty. (2003). "Spider Wrestling and Gambling Culture in the Rural Philippines." Philippine Studies 51(1):147-163.

Mitra, Tapan, & Efe A. Ok. (1998). "The Measurement of Income Mobility: A Partial Ordering Approach" Economic Theory 12:77–102. https://doi.org/10.1007/s001990050211

Panganiban, Marian Angelica K. (2010). "Transient, Chronic, and Intergenerational Poverty: Evidence from the Cebu Longitudinal Health and Nutrition Survey." Unpublished Master's Thesis, University of the Philippines.

Philippine Statistics Authority. (2009). Retrieved March 27, 2020 https://psa.gov.ph/content/2006-family-income-and-expenditure-survey-final-results

Philippine Statistics Authority. (2016). Retrieved March 27, 2020 https://psa.gov.ph/content/highlights-2012-full-year-official-poverty-statistics-0

Satya, Paul. (2009). "A Measure of Income Mobility with an Empirical Application." School of Economics Working Paper 1. School of Economics, The University of the South Pacific, Suva.

Shorrocks, Anthony F. (1978). "The Measurement of Mobility." Econometrica 46(5):1013-1024. https://doi.org/10.2307/1911433

Takahashi, Kazushi. (2013). "Pro-poor Growth or Poverty Trap?: Estimating Intergenerational Income Mobility in Rural Philippines." Institute of Developing Economies IDE Discussion Paper No. 382.

World Bank. (2020). Retrieved March 27, 2020 https://www.worldbank.org/en/country/philippines/overview