



Measuring Socioeconomic Stratification and Mobility Pattern: A Case Study of Intra-Generational and Intra-Temporal Household Mobility of Southern Punjab, Pakistan

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ARTICLE DETAILS	ABSTRACT
<p>History <i>Revised format: November 2018</i> <i>Available Online: December 2018</i></p> <hr/> <p>Keywords <i>Household Stratification, Household Transformation, Intra- Generational Change, Intra- Temporal Household Mobility</i></p> <hr/> <p>JEL Classification: D10, D64</p>	<p>The stratification process and mobility pattern describe the socio-economic changes in society over the time period rather than at one point in time. The main objective of this study is to analyze the socioeconomic stratification of society and mobility across the time on the basis of base and final year socioeconomic stratification indicators of Pakistan. For this purpose primary data has been collected from three districts of Southern Punjab on the basis of education as prevalence rate. The transformation results depict the sign of divergence of society with increasing size of ruler strata which is not due to reduction in the size of bottom strata. Furthermore, an increase in income has not much impact on consumption behavior of households rather it exerts emphasis on material achievements in Southern Punjab. The study concludes that the degree of socio-economic mobility has been positively related to the life chances of society and shows the symptoms of pro-poor growth.</p> <p style="text-align: right;">© 2018 The authors, under a Creative Commons Attribution-NonCommercial 4.0</p>

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1. Introduction

Stratification is the study of how one group may own and enjoys more economic resources than another, or it may be held in higher esteem, or it may be in a position to command other groups around. With the expansion of the capitalist era, the concept of socio-economic (SE) stratification has become an important issue for economic practitioners and researchers. During the last few decades, attempts have been made to discover the SE structure of people living around the world, so that resources can be channelized to remove the gap among the various SE status belts around the society. In literature several criteria are available for measuring SE stratification but the most important criteria that have been recently used are socioeconomic status index (SESI) and social economic status (SES) scale. Socioeconomic status index (SESI) is a measure of economic and social position of an individual or family in relation to various SE indicators such as income, education, occupation, expenditure, physical assets, social position, and social participation, (Gaur, 2013). While SES scale uses more SE variables such as housing, material possession, education, occupation, monthly household income, land, social participation, and

understanding, (Tiwari, 2005). But majority of researchers are of opinion that appropriate method to measure the stratification should be objective criteria as compare to subjective approach including wealth, property, adjusted income, education and occupation.

The mobility measures the changes of society transition from traditional to developed one. The SE mobility is the movement of individuals, social groups or categories of people between the layers or strata in a stratification system between two different periods of time and this movement can be intergenerational (within a generation) or Intergenerational (between two or more generations). After the stratification and mobility of household, this study contributes to the extant literature by adding the consequences of SE mobility on the consumption pattern of transformed households. It is an important issue for rapidly evolving middle class population in emerging economies like Pakistan. The literature reveals that SE factors play an important role in determining class specific forms of consumption (DiMaggio, 1978). A variety of approaches have been employed to explain the consumption pattern of emerging class consumers. The researchers believe that the analysis offset mobility enables us to take dynamic view to gain an in depth understanding of the differentiated consumption behavior among the new middle class consumers, (for details see, Song, *et, al*, 2015).

Given this context, the present study is an attempt to conduct stratification analysis with internal and external reliability criteria applicable to both urban and rural community. The present socioeconomic status index (SESI) measures intra-generational or intra-temporal household mobility with the use of GDP deflator to deflate the current observation to base year observation. This study estimates the household transformation pattern through leakage or injection in terms of intra-generational, and in the context of intra-temporal household mobility which means that SE resources should be leakage from rich and transferred toward poor and struggling class of the society.

The study constructs the household SESI and stratification profile of three districts of Southern Punjab (Sahiwal, PakPattan and D.G. Khan) and their transformation over the time period of almost twenty years from 2000 to 2017 as well as changes in consumption pattern with the help of appropriate statistical and econometric techniques. The novelty of the study is that it analyzes the comprehensive structure of the above mentioned three districts of Southern Punjab with the stratification of society into five socioeconomic strata, the pattern of society with transformation analysis and change in consumption pattern. The rest of the study is organized as follows. Section II discusses the most relevant studies related to the stratification process, transformation pattern and consumption pattern. Section III explains the theoretical and statistical methodology to measure the stratification process and transformation pattern. Section IV deals with the analysis and interpretation of results and the last section conclude.

2. Literature Review

Several studies are available in the literature that have discussed the social stratification, socioeconomic status (SES) scale, stratification mobility and SESI for developing and developed countries [see for example Davis et al (1945), Duncun (1961), Kuppuswamy (1967), Sobel (1983), Eijck and Oosterhout (2005) and Pareekh and Trivedi (2012)]. Song and Li (2015) try to use three widely recognized stratifying dimensions (income, education, and occupation) and point out that educational attainment is the strongest indicator which explains the variance in culture consumption among the middle class households, while occupation plays a relatively weak role in explaining their consumption patterns.

Nadrag *et al.* (2014) analyze the main concepts of SE stratification such as class and status. The study examines the particularities of SE stratification in the US, including factors leading to the stratification of society (*e.g.* wealth, income, education, occupation) and the three types of social classes: upper class, middle class, and lower class. Ghani (2014) tries to analyze the savings, earnings and consumption pattern of emerging middle class in Pakistan. The study concludes that the significant difference in consumption patterns leads to further rise in expenditures on non-essential “positional” goods, such as durables, festivals, and education, often used to attain a higher standard of living.

Cavusgil & Kardes (2014) analyze the key drivers of middle class growth in emerging markets which include urbanization, young population, rising wages, market liberalization, industrialization, modernization, reforms, and productivity growth. The study points out those middle class households have been targeted by multinationals as an attractive consumer segment due to their spending power and growing size. Nayyab (2011) analyzes the size of middle class in Pakistan using the data of Pakistan Social and Living Measurement Survey (PSLM), conducted in 2007-08 and measures the magnitude of the middle class through income and expenditure approaches. The study suggests a measure that consists of composite of five weighted sub-indices of factors (education, occupation,

income, lifestyle, and housing) which are considered to be important for being part of the middle class.

3. Theoretical Framework and Methodology

The targeted respondents of this study are head of household who are born between the years of 1960-1970. Current socioeconomic status (SES) is based on respondent's current occupation, income, and other variables at the time of interview, when they are approximately more than 50 years old or near to retirement. Finally, the survey is directed to respondents who are between the age 45-65 actively working in the labor market. The year of 2000 is considered as a base year to measure the SES of household with deflate of the current values when majority of the respondents are engaged in occupation market and the year of 2017 is considered as a final year to measure the current socio economic status of households. The gap between "2000-2017" is almost 20 year and this economic cycle is enough to calculate the society transformation in terms of intra-generational and intra-temporal household mobility. The reason for inclusion of a particular age group is to make sure that the respondents and their children are being stable in the labor market on account of occupational income and educational achievements.

PCA is best considered as a summary empirical method for measuring the weights of SE indicators. (Milewska, *et. al*, 2014). The present study derives the SESI through assigning the weights of indicators by using Principal Component Analysis (PCA). This study uses the factor scores from the first principal component as weights and average of the each domain indicator weight should be equal to one. The signs of the weights indicate the contribution of the variable in household SES. A negative sign of sub category reduces SES, while a positive sign positively contributes in the SES of the household.

The present study conducts stratification process through SESI of each household. If a household shows improvement for a given variable over the time period SESI increases which satisfy the monotonicity axiom as transforming the household into upper quartile. The SESI of a household can be measured in terms of n types of SE profile, each type of profile is composed of i types of sub indicators ($edu_i, occ_i, inc_i, expen_i, assets_i$). The study assign a weight w to each indicator and then sum up the weighted variables to arrive at the final estimate of j household in a particular domain, (for details see, Moser and Felton, 2007). These weights show the importance of one variable as compared to other enlisting in socioeconomic index and also show the geographical importance of each variable in terms of urban and rural perspective. The appropriate equations are given below.

$$SESI_{D0J} = f_{ei}w_e + f_{oi}w_o + f_{ini}w_i + f_{exi}w_{ex} + f_{ai}w_a$$

$$SESI_{D1J} = f_{ei}w_e + f_{oi}w_o + f_{ini}w_i + f_{exi}w_{ex} + f_{ai}w_a$$

$$SESI_{D2J} = f_{ei}w_e + f_{oi}w_o + f_{ini}w_i + f_{exi}w_{ex} + f_{ai}w_a$$

$$SESI_{DJ} = \sum_{i=1}^n f_{ij} * W_i$$

The last step in stratification process is to develop SES score range divided into five strata categories through inclusive method of class interval, (for details see, Tiwari & Kumar, 2005). The present study uses similar criteria to make the score card of each domain. All tables related to intra-generational and intra-temporal mobility criteria, SESI, weight and mobility scores are displayed in appendix. Pakistan, like others developing countries has been under the process of different stages of SE transformation. It has experienced development initiatives through different national, regional and international factors that have been taken into account to influence development programs in Pakistan. This study provides a micro level insight on SE transformation journey of Southern Punjab based on 20 year economic cycle. The study answers the following questions.

- How much society had been transformed during 20 year economic cycle in terms of household socioeconomic profile?
- What were the important factors which played role in transformation of household's income inequality?

In this study the targeted population is employed head of households of three districts of Southern Punjab. The reason for selecting only employed respondents is to analyze the labor market transformation and inequality. A stratified random sampling technique with population proportionate allocation has been used for data collection. Data quality in this study is ensured through a built-in system of checking of enumeration by the supervisors in the field with the support of Bureau of Statistics (BOS). The total sample is determined by using statistical formula, $n =$

$\frac{z^2 \partial^2}{e^2}$ Where $\partial^2 = P(I-P)$ where P shows the value of prevalence rate (overall literacy rate) which is calculated by average literacy rate of all districts of southern Punjab. Further this total sample is divided in three districts (Sahiwal, Pakpattan and D.G.Khan) which have highest, middle and lowest values of literacy rate respectively. Total sample (n) is allocated to each district on the basis of population proportionate allocation. $\left(\frac{n}{N}\right) * \text{Sample size of each zone}$ where n is district population and N is total population of three districts of Southern Punjab zone. According to the census of 2017 the distribution of sample (n) in each district urban and rural cluster is 37% and 63% respectively. The details are presented in Table 1.

Table 1: Southern Punjab District Wise Sample Criteria

Southern Punjab, P = 50% , $Z_{\alpha} = 95\%$ (1.96), southern Punjab region sample, n = 384		
District sample	Urban share	Rural share
Sahiwal, n = 138	n,51	n,87
Pakpattan, n = 104	n,38	n, 66
D.G. khan, n = 142	n,53	n,89

4. Analysis and Interpretation OF Results

The reliability of the scale has been determined by the test-retest method. The estimated SESI has been analyzed for a sample of 35 and 20 families (5% of sample population) from each zone of Southern Punjab and compiled their respective SES scores. After one month, it is again re-administered on the same sample and SES scores are calculated again. The two series of scores are arranged pair-wise, a pair being the scores of the candidate in two repetitions of the test. Karl- Pearson's coefficient of correlation between the two series is taken which is widely used measurement of reliability in social science survey. Furthermore, for measuring the internal consistency of data Cronbach's alpha coefficient has been used. The content validity has been tested of estimated SES scale by the opinion of a well-known resource person. Estimated SES by Visualized Analogue Scale(VAS) score of the each family is matched with SES by estimated SES scale of the head of a respective family. The two series of scores are arranged pair-wise. Karl- Pearson's coefficient of correlation between the two series is taken as the measurement of validity. The results are given in Table 2

Table 2: Reliability and Validity Criteria

Tests	Reliability	Correlation with VAS (validity)	Cronbach alpha
Southern Punjab Rural	0.92	0.96	0.71
Southern Punjab Urban	0.95	0.94	0.73

Note: Source: Author's own calculations

The final SESI was re-administered on 50 families through systematic sampling with a random start from Sahiwal district. In this scenario, the applicability and reliability have also observed in terms of test-retest and Cronbach alpha. The final estimated SESI has five variables to assess the SES namely education, occupation, income per capita, expenditure, housing and living condition. Education, occupation, expenditure are in ordinal categorical form while income-per-capita and assets are interval categorical form displayed in SESI to measure the stratification and mobility process. Income is linked with adjusted as well as deflated current income by GDP deflator to make it compatible in measuring the SESI for different domains of the household. The GDP deflator index of 2000-2001 and 2016-17 as a revised index is 108.02 and 256.25 respectively, have been used to deflate the current income. Each profile alternative scoring is conducted on seven categories from 0 to 7, where '0' is the lowest category whereas '7' is the highest category. The results are presented in Table 3.

Table 3 measures the extent of intra-generational and intra-temporal household mobility of each strata in urban and rural Southern Punjab. Left hand side of column measures the intra-generational and intra-temporal household mobility of urban Southern Punjab. Parenthesis values show the number of household which are transformed in upper strata. Unfortunately in D_1 domain not a single household is transformed which means heavy underprivileged occupied strata as poor receive no SE benefits from the rich. The few number of household show leakage from lower strata (creeper, struggling and survivors) which is an indication of inequality and inefficiency structure. While in D_2 domain, the scenario is almost same because the size of strata is equal due to few leakage toward upper strata and few injection from lower strata (leakage = injection). Creeping one step transformation has been observed among lowest three strata and hyper transformation has been witnessed between upper two strata

(privileged toward ruler). The size of privileged strata dramatically is reduced due to more leakage toward ruler strata in case of both transformation domains. The right-hand side of Table 3 represents the scenario of rural Punjab where privileged strata is almost converted into ruler SE strata. In ruler area, the creeper socioeconomic strata and struggling socioeconomic strata become the victim in terms of the unskilled and unidentified agriculture labor having economic earning in terms of the non-monetary unit. The details of transformation of society are presented in Table 4.

Table 3: Intra-generational and Intra-temporal Mobility Analysis

	Intra-generational /intra-temporal household mobility of Southern Urban Punjab					Intra-generational/Intra-temporal household mobility of Southern Rural Punjab					Remarks
	No of HH D_0	No of HH D_1	No of HH D_2	$D_0 \rightarrow D_1$	$D_0 \rightarrow D_2$	No of HH D_0	No of HH D_1	No of HH D_2	$D_0 \rightarrow D_1$	$D_0 \rightarrow D_2$	
Ruler SE strata	15	15	15	15 - 26	15- 29	23	23	23	23 - 39	23 - 48	Inject transformation, heavy commanding occupied strata
Privileged SE strata	20	9 (11)	6 (14)	20 - 12	20 - 11	36	20(16)	11(25)	36 - 25	36- 18	Leak > inject, size of strata dramatically reduce due to more leakage toward ruler strata
Survivors/ active occupation strata	22	19 (3)	17 (5)	22 - 21	22 - 20	45	40(5)	38(7)	45 - 43	45 - 43	Leak = inject, size of strata is almost same
Struggling/ inactive occupation	41	39 (2)	38 (3)	41 - 39	41- 40	75	72 (3)	70(5)	75-72	75-70	Leak = inject, size of strata is almost same
Creeper SE strata	42	42 (0)	40 (2)	42 - 42	42 - 40	61	61(0)	61(0)	61 - 61	61 - 61	Leakage transformation, heavy underprivileged occupied strata

Note: Author's own calculations, these values are calculated by the percentage change of parenthesis values of above table, these are the transformed number of households.

Table 4: Transformation of society during $D_0 \rightarrow D_1$ and $D_0 \rightarrow D_2$ during 2000 - 2017

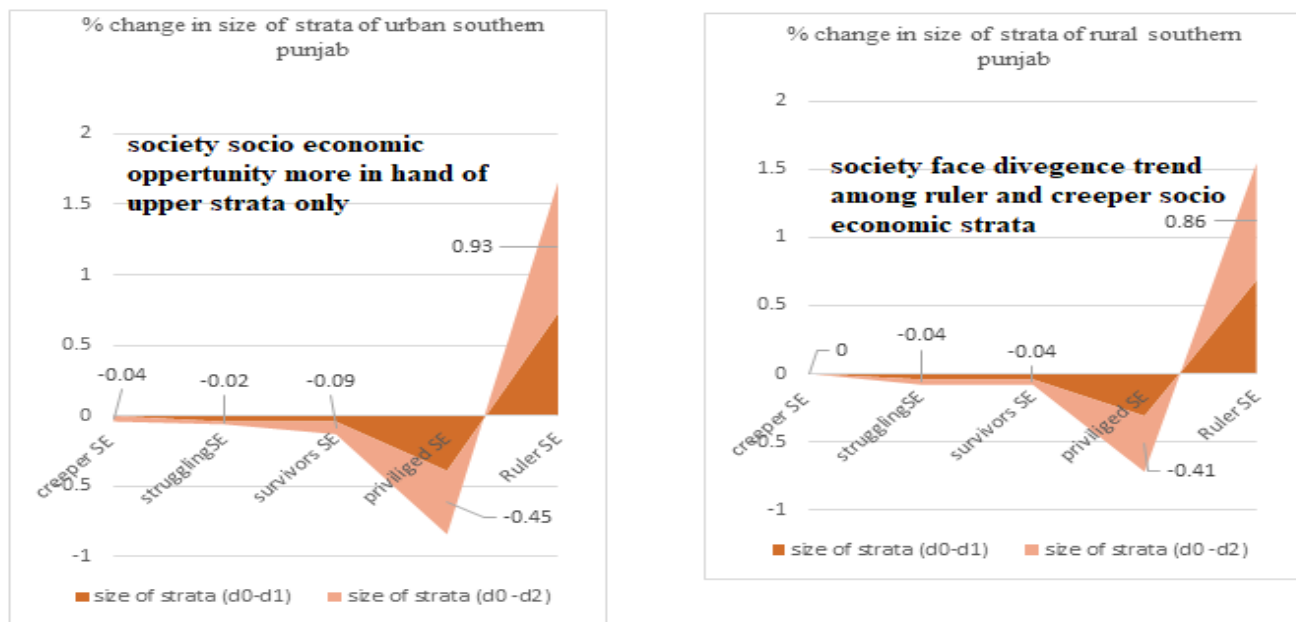
Socio Economic Stratification	$D_0 \rightarrow D_1$		$D_0 \rightarrow D_2$	
	How much society transformed during 20 year economic cycle		How much society transformed during 20 year economic cycle, all household SE profile	
Urban/Rural Analysis	Southern urban	Southern rural	Southern urban	Southern rural
Ruler strata	No leakage only injection transformation		No leakage only injection transformation	
Privileged SE strata	-0.521	-0.44	-0.74	-0.69
Survivors/active occupation strata	-0.13	-0.11	-0.23	-0.15
Struggling/inactive occupation	-0.04	-0.04	-0.07	-0.06
Creeper SE strata	No transform	No transform	-0.05	No transform

Source: Author's own calculations

Table 4 shows how many households have been transformed from each strata toward higher ladder with negative sign which is an indication of transformation of household during 20 year economic cycle. The results reveal that there is a divergence of society with increasing size of ruler strata not due to reduction in the size of bottom strata. While no change in the size of creeper SE strata. In case of intra-generational and intra-temporal household transformation only 4 percent decline is observed in the size of struggling and survivor SE strata. There is an erratic number of household who are transformed from lower strata which means society has failed to provide equal socioeconomic benefits to all groups. The most stimulated group as intra-generational or intra-temporal household mobility is privileged SE strata. It can be concluded that running transformation has been witnessed of privileged SE group and ruler strata become heavy commanding occupied strata. After transformation it has been observed that the lower group is not in the list of change of strata size. The size of ruler strata has increased dramatically due

to more injection of the household from privileged strata. Furthermore, the structure of Southern Punjab explains that there is stickiness among creeper, struggling and survivor socio economic strata while variability of transformation or mobility exists between upper two strata. The strata size of urban and rural Southern Punjab after mobility is depicted below:

Figure 1: The strata size of Urban and Rural Southern Punjab after Mobility



Source: Author's work.

The negative sign shows declining trend in household size in final year relative to base year domain and positive sign shows the upturn in household size growth among particular strata. As for as the consequences of mobility due to consumption change is concerned it presents the static picture of the possible consumption variation among transformed household. The study conceptualizes and proposes corresponding effects of mobility on their consumption patterns. However, some households achieve an advantaged social standing by simultaneously being intellectually developed (high education level), economically powerful (high income), and having an admirable professional or managerial jobs (high occupational prestige). Under some circumstances, these households successfully evolve in to qualified members and developed greater interest and easier affordability of material and culture consumption together.

5. Conclusion

The whole stigma of this study is based on the concept of current changes that lies in the structure and transformation of society due to socioeconomic development process which further entails the changes in the SE positions of societies from one generation to the other or within generation. In Pakistan, especially in the boundary of Punjab, no remarkable attempt has been made to analyze the SE stratification of society and mobility across the time on the basis of base and final year SE indicators. The stratification and mobility pattern have been analyzed using SE factors index with reliability and validity criteria in terms of intra-generational and intra-temporal household transformation. The structural changes of Southern Punjab has been studied from different domain patterns in terms of their endowments of social, human and physical capital and other SE characteristics. The assessment of incidence and nature of the extent of transformation would enable us to identify the process of convergence through which how much different SE groups attempt to improve their positions.

The results of the study show that mobility does little to alter the long-term positions of individuals in the SE distribution as most of the household remained non-transformed. The process of intra-temporal household income mobility is based on occupation and wage structural reforms of society. The provincial government must ensure that the regulation and legislation laws must affect income inequality directly by reducing the extreme ranges of the income distribution. An increase in minimum wages increases the earnings of low-wage workers who are often near the bottom of the income distribution. The institutions must take initiatives to reduce excessive wages that would help in reducing the growth of executive class and reduce or limit increase in income inequality by affecting the

upper SE strata of income distribution. Furthermore, higher degree of SE transformation appears to be positively related to the outcomes of life chances in society. The higher degree of a SE opportunity of life chances indicates greater portion of survivors and struggling SE strata and lower the portion of leaching out group (creeper SE strata).

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Appendix

Table A1: Mobility Pattern/Socio Economic Status Index/Score Card and Weight Analysis

	Analysis criteria	
	D_0 = origin point of household (base year observation = 2000)	D_1 = current year observation, at the time of interview)
Intra-generational mobility, The score of this domain is categorize into five socio economic strata	1. Education (head of household education score) 2. Occupation (head of household occupation score) 3. Income deflator (deflate current income as base year of 2000 value because of age and economic cycle constraint assumption, use GDP deflator index of 2016-17 =256.25 to deflate back year GDP deflator index of 2000-2001 = 108.02 ² (reference year) 4. Expenditure pattern 5. Asset + living status (it is based on subjective criteria, self-administered).	1. Education (head of household education score, either improved or not from base year) 2. Occupation (head of household occupation score, either improved or not from base year) 3. Current occupation Income (adjusted as per capita income) 4. Expenditure pattern 5. Asset + living status (either it will be inherited or own hard work and how much total amount of physical and financial assets increased or decreased by the base year).
Intra-temporal household mobility, The score of this domain is categorize into five socio economic strata	D_0	D_2
	1. Education (head of household education score) 2. Occupation (head of household occupation score) 3. Income deflator (deflate current income as base year of 2000 value because of age and economic cycle constraint assumption, use GDP deflator index of 2016-17 =256.25 to deflate back year GDP deflator index of 2000-2001 = 108.02 4. Expenditure % of income (expenditure deflate to base year) 5. Asset + living status (it is based on subjective criteria, self-administered)	1. Education (Average score of education member of all household) 2. Occupation (Average score of all earners of household) 3. Income (per capita earning = Head of household + Spouse + other member who share all subsistence of basic life) 4. Expenditure % of income. 5. Assets + living status (it will be inherited or own hard work, if both so how much it will be inherited of total assets).

Table A2

Socioeconomic Stratification of Southern Punjab	SES Score of each Domain		
	D_0	D_1	D_2
Ruler Socioeconomic Strata	≥ 20	≥ 25	≥ 27
Privileged Socioeconomic Strata	16 – 19	20 – 24	22 -26
Survivors/active Middle Socioeconomic Strata	12 – 15	15 – 19	17 – 21
Struggling Socioeconomic Strata	8 -11	10 – 14	12 – 16
Creep SE Strata	4 – 7	5 – 9	7 - 11

Table A3

Weight of Indicator	Southern Punjab Urban			Southern Punjab Rural		
	D_0	D_1	D_2	D_0	D_1	D_2
PCA Method						
Occupation	1.03	1.01	1.20	1.04	1.02	1.11
Income per Capita	1.05	1.17	1.15	0.65	0.70	1.06
Expenditure	0.77	0.79	0.80	0.76	0.82	0.60
Assets	1.12	1.03	0.91	1.61	1.53	1.10
Education	1.08	1.06	0.99	1.07	1.01	1.13

2Current value deflate to back year = current value of income/ (GDP deflator of current year/GDP deflator to back year)

3 Base year domain is same for intra-generational and intra-temporal household transformation (D_0)

Table A4

Education profile	Occupation profile	Economic Profile				Living status profile		Score
Education (Rural + Urban)	Occupation (Rural + Urban)	Deflated Income of D_0	Adjusted Income of D_1	Adjusted Income of D_2	Expenditure Pattern	Asset Urban Region	Asset Rural Region	
Illiterate	Unemployed	<1000	<5000	<7000		<3	<4	0
Can read and write	Unskilled worker	1000-4999	6000-14999	7000-15999	Income is less than basic expenditure $Y < C$	3-5	5-7	1
Primary	Semi-skilled workers	5000-9999	15000-23999	16000-24999	income fulfill basic necessity of life expenditure $Y = C$	6-8	8-10	2
High school	Skilled workers	10000-14999	24000-32999	25000-33999	income fulfill basic/education and health expenditure $Y = C$	9-11	11-13	3
Intermediate + specialized training	Clerical/owner of small business	15000-19999	33000-41999	34000-43999	Income is more than expenditure, Savers $Y > C$	12-14	14-16	4
Graduate	Semi professional	20000-24999	42000-50999	44000-53999	income fulfill culture and positional expenditure $Y > C$	15-17	17-19	5
Master	Lesser professional /medium size business	25000-29999	51000-59999	54000-62999	Expenditure on increase the value of assets/material consumption $Y > C$	18-20	20-22	6
Professionals	Professional / executive class	≥ 30000	≥ 60000	≥ 63000	Expenditure on all above	>20	>22	7