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Climbing the Ladder:

Socio-economic Mobility in Malaysia

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ABSTRACT

This study investigates the existence and extent of intergenerational mobility in Malaysia in terms of education attainment, occupational skill level, and income status. We compare the status of adults born between 1945 and 1960 to their eldest child born between 1975 and 1990 using the linear intergenerational earnings elasticity (IGE) model and non-linear transition matrix techniques. We find that Malaysia is a mobile society as on average, 19% of a child's income is associated with his/her parent's income. On average, the majority of children have a higher education attainment and occupational skill level compared to their parents. Children born to parents in the bottom two quintiles have generally experienced greater upward mobility compared to children born to parents in the third and fourth quintiles. On the other hand, very few children born to parents in the top quintile earn more than their parents and the majority of them have moved down the income quintiles. This shows that children born to parents in the bottom income quintile do not necessarily stay at the bottom as adults, while children born to parents in the top income quintile do not necessarily stay at the top as adults. Additionally, the study observes that a 'middle class squeeze' has occurred. A relatively smaller proportion of children born to parents in the middle income quintiles (the third and fourth quintiles) have moved up, as most of them have either stayed or have moved down by at least one quintile. Our logistic regression model finds that education, gender, location, and savings are significant factors in promoting upward relative income mobility for those in the B40 (the first and second quintiles). Moving forward changes in the education, labour market, and rural development policies are required in ensuring that equal opportunities are available to every child. More emphasis also needs to be placed on the middle income group, without neglecting those in lower income groups and pockets of poverty which still persist. Overall, socio-economic mobility is about the spread of opportunities and incentives. Upward mobility is necessary not only because it promotes economic growth and reduces inequality, but more importantly, it is crucial in ensuring stability and social cohesion for the next generation.

INTRODUCTION

Malaysia has progressed impressively since independence. In the span of nearly 60 years, the country has transformed from a largely commodity producing economy to a deindustrializing nation. The country's gross domestic product increased from RM5.1 billion in 1957 to RM1,157.1 billion in 2015 (CEIC n.d.). The poverty rate had been reduced to 0.6% in 2014 from 51.2% in 1957 (DOS 2015, Ikemoto 1985)[1]. Various social and economic indicators have also shown tremendous improvements during the same period.

Yet, little is known about how children from different social and economic backgrounds have performed. Comparing income distribution or the poverty rate across time may not be adequate to answer questions such as: Does economic growth benefit the poor? Do children of poor parents stay poor as adults? Do children from rich parents stay rich as adults? The measurements of inequality and poverty are snapshots that divulge little about income distribution changes. Mobility measures provide better insights as they reflect the equalization of opportunities, and examine the impact of economic benefits in broader perspective. Therefore, discussions of inequality and poverty must also be juxtaposed with mobility. Societies characterised by low mobility within and across generations imply unequal access to opportunities, and may suggest the existence of a glass ceiling for children from low income families and a glass floor for children from high income families. For instance, in the United States, almost half the children born to low income parents become low income adults; in the United Kingdom, the figure is four in ten; and in Canada, it is about one in three (Corak 2006). The converse also holds, where rich children tend to grow up to become rich adults.

As such, there is a need to have a look at socio-economic mobility in Malaysia. This is relevant as the country has experienced phenomenal economic growth and structural transformation, especially in the 1980s and 1990s. Since there are a limited number of studies in Malaysia on the subject, this study fills a major gap by undertaking primary research nationwide to investigate the existence and extent of intergenerational socio-economic mobility.

Other reasons why intergenerational social mobility should be examined include: First, mobility impacts inequality. Studies have shown that countries with higher inequality tend to have less social mobility (Corak 2012, OECD 2010). Second, social mobility is important for economic growth. The OECD (2010) has cautioned that a lack of social mobility could curb economic growth. Third, if inequality is due to a lack of social mobility, this has serious social implications, especially in Malaysia, given its diverse cultural, ethnic, and religious population. Socio-economic mobility is key to maintaining moderation, peace and unity in Malaysia (Shamsul Amri Baharuddin 2014).

The rest of this paper is structured as follows. Section 2 presents the research objectives and a literature review on mobility in Malaysia, while Section 3 explains the methodology and data collection method. Section 4 analyses key findings, while Section 5 discusses the determinants of social mobility. Section 6 provides the conclusion and policy implications.

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[1] Data for 1957 refers to Peninsular Malaysia only whereas data for 2015 refers to Malaysia.

## SECTION 2: RESEARCH OBJECTIVES AND LITERATURE REVIEW

This paper attempts to understand mobility dynamics across generations in Malaysia. In other words, do Malaysian families experience intergenerational upward mobility? Specifically, the paper aims to answer these four main questions:

1. Are Malaysian children better off than their parents in terms of education attainment, occupational skill level, and income status?
2. To what extent does one's current socio-economic status depends on the socio-economic status of his or her parent?
3. Is the degree of socio-economic mobility uniform across all groups regardless of gender and ethnicity?
4. What are the key factors that determine upward and downward relative income mobility?

Studies of intergenerational mobility are surprisingly scarce, at least when compared to studies of income inequality or poverty. Most studies use the intergenerational earnings elasticity (IGE) model (Atkinson 1980, Becker and Tomes 1986, Blanden and Machin 2007, Grawe 2003, Pew Charitable Trusts 2012, Solon 1992, Zimmerman 1992)[2] or the transition matrix approach (Jantti *et al.* 2006, Pew Charitable Trusts 2012, Mazumder 2011) to analyse intergenerational mobility.

Studies using the IGE show that mobility is low in France, Italy, the United Kingdom, and the United States; while it is higher in Austria, Canada, Denmark, Finland, and Norway (Figure 1). The IGE of the United States is estimated at 0.47, which means that 47% of the American parental earnings' advantage or disadvantage is passed on to their children[3]. In comparison, less than 20% of the incomes of children in several Nordic countries (Denmark, Finland, Norway) is associated with their parents' incomes.

Figure 1: Intergenerational earnings elasticity across OECD countries[4]
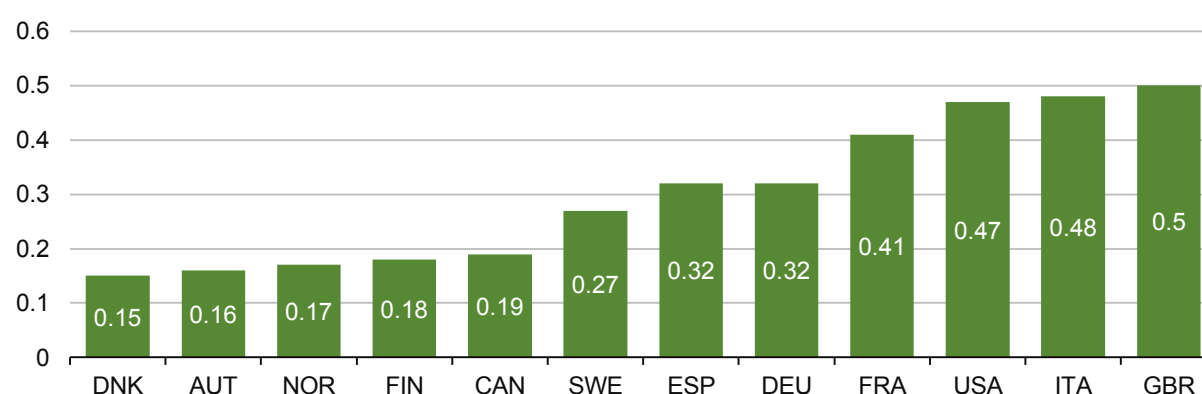
Source: D'Addio (2007) citing OECD (2010, p. 185)

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[1] Appendix 1 summarizes research on intergenerational mobility in different countries and the methods deployed to measure intergenerational mobility.
[3] The higher the value, the greater is the persistence of earnings across generations.
[4] The height of each bar measures the extent to which a son's earnings level reflect that of his father's. The estimates are the best point estimate of the IGE resulting from an expensive meta-analysis carried out by Corak (2006) and supplemented with additional countries from D'Addio (2007). The higher the value, the greater is the persistence of earnings across generations, thus the lower is the intergenerational earnings mobility.

There are not many studies on intergenerational mobility in the developing world except for South Africa, which appears to have a low level of social mobility at 0.61 (Hertz 2001 citing Ng, Shen, and Ho 2009), and Brazil, which has an IGE of 0.58 (Ferreira and Veloso 2006). Ng, Shen, and Ho (2009) found an IGE of 0.45 for intergenerational mobility in Singapore (comparing children aged 23 to 29 years in 2003 to their parents). This placed Singapore well behind more socially mobile countries such as the selected Nordic countries, and closer to the United States and the United Kingdom. While the level of mobility may be less in developing countries, the results are inconclusive due to the lack of comparable data among countries, particularly on the treatment of income (e.g., single year vs multiple years) and the age of the children and their parents.

While the IGE measure indicates the extent of mobility, it does not indicate the direction of mobility nor the progress achieved by income classes. In this regard, the transition matrix approach provides better insights. Pew Charitable Trusts (2012), in analysing mobility among whites and blacks in the United States using transitional matrices, found that American blacks have a harder time exceeding their parents' income. About one in two blacks raised at the bottom of the family income ladder remained stuck at the bottom as adults, compared to 1 in 3 for whites. The study also found that the ability to reach the top for the poor was the hardest—a child born into the poorest fifth of society only had a 9% chance of making it to the top fifth. The study also found that sons raised by top and bottom decile fathers were more likely to remain in the same decile as their fathers.

A more recent study of mobility suggests that the socio-economic advantage or disadvantage between parent and child could last over many centuries (Barone and Mocetti 2016). Their study of mobility in Florence using data collected from the 1427 census with the tax data of individuals with the same surnames in 2011 documents suggests that socio-economic status may persist across generations six centuries apart.

In Malaysia, the literature on socio-economic mobility is similarly limited. While a lot has been written on poverty and income distribution in Malaysia, almost no research has been done at the national level on socio-economic mobility. To our best knowledge, there is no long and large longitudinal panel data on families in Malaysia. Nonetheless, some case studies to analyse the extent of socio-economic mobility in Malaysia have been undertaken.

The early researchers include Syed Husin Ali (1964), who pioneered a mobility study in Kampong Bagan in the Batu Pahat district in 1960. He found upward socio-economic mobility difficult to achieve. The farming villagers generally had low incomes, lacked savings, had limited access to credit, lacked capital ownership, and achieved low formal education. The area only had one primary Malay school. Those who could afford to send their children to the English medium school, far from the village, were mostly the relatively well to do, mainly larger landowners. This was the only group to experience upward socio-economic mobility.

Another case study by Wan Hashim Wan Teh (1980) focused mainly on Malay fishermen in Pulau Pangkor. He undertook a cross-sectional study using multiple approaches, including participant observation, interviews, and questionnaires. The findings showed that mobility for Malay fishermen was rather limited. Most Malay fishermen on the island were either crew on large boats owned by Chinese, or fished using traditional boats, gears, and methods.

The only nationally-representative study of mobility in Malaysia was undertaken by Lillard and Kilburn (1995). They studied the income mobility of children using 30 years of retrospective data from the First Malaysia Family Life Survey 1976 – 1977 and the Second Malaysia Family Life Survey 1988 – 1989. Using the IGE approach, they presented evidence of income mobility across generations from the mid-1930s to 1988. In their sample of 440 father-mother pairs, 653 sons, and 635 daughters, they observed that fathers' earnings accounted for about 20% of variations in sons' earnings and 32% of daughters' earnings. Race and parent's education account for about a third of the variation in sons' earnings. However, unlike sons, variation in the daughters' earnings were primarily due to educational investment as opposed to endowments.

A later study of social mobility in Malaysia by the UNDP (2014) used the Household Income Survey (HIS) for 1989, 2002, 2009, and 2012. The study compared the mobility of several generations including the Merdeka Generation (born between 1930 and 1945), the NEP Generation (born between 1945 and 1960, i.e., under the New Economic Policy or NEP), and the X Generation (born between 1960 and 1975). Comparisons were done by looking at median households' income profiles. The results showed that the income growth of the NEP Generation was more rapid compared to the earlier Merdeka generation. However, income growth varies more, is flatter and more vulnerable in the post-NEP period (after 1990) due to greater competition and fewer opportunities. Possible factors include "globalization, higher education levels of the younger generations as well as structural ethnic and class differentiation" (UNDP 2014, p. 70).

This study sought to provide a representative study of intergenerational socio-economic mobility in Malaysia. It focused not only on income mobility between generations, but also on education and occupational skill mobility.

SECTION 3: KEY CONCEPTS, DATA, AND METHODOLOGY

Key Concepts

Socio-economic mobility measures the movement of individuals or groups in social or economic positions over time, and can be measured in either absolute or relative terms. Absolute income mobility looks at individuals or groups' absolute income growth in real terms, while relative income mobility looks at whether the individual moves up, down, or stays in the same place in income or wealth distributions.

Measurements of mobility also distinguish between intergenerational and intra-generational mobility. Intergenerational mobility, the focus of this study, involves comparison between the socio-economic status of parents, and that of their children as adults. Essentially, it studies changes between generations. Intra-generational mobility studies changes in the socio-economic status of an individual or group of individuals over a given period, that is, for the same generation[5].

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[5] See Appendix 2: Definitions of Key Variables to understand the variables used in this study, namely education attainment, occupational skill level, and income status.

Data

Structured and semi-structured interviews were the main techniques used to collect the data for this study. 4,999 respondents or over 90% were retained from the randomly selected sample of

heads of families[6]. Face-to-face interviews using a two-tiered questionnaire structure were used to collect socio-economic data of the head of family (henceforth, referred to as the 'parent') and his/her child. In this manner, the survey attempts to capture the intergenerational mobility profile of each family. Given that the interest is in intergenerational mobility, the sample is confined to parents born between 1945 and 1960. These parents were aged between 55 and 70 years in 2015. In short, the study compares parents when they were aged 35 years against their children aged between 25 and 40 years (average age of children in the sample is 32 years). This age group was chosen following Böhlmark and Lindquist (2006) and Bjorklund, Roine, and Waldenström (2008) who suggest that income measured around this age serves as a good proxy of permanent income. There have been several other intergenerational studies using the age of 35 years to compare incomes between two different age cohorts. These include Cardone, Jordà, and Sanna (2014), who compared the socio-economic status of Swedish parent-child pairs, as well as Blanden and Machin (2007) who investigated mobility between two generations in Britain.

Data collection was carried out from November 2014 to August 2015 with quality ensured by the enumerator's team leader, and further cross-checked by the principal author and the research team. The survey covered all states in Malaysia, and included both urban and rural areas[7]. Only families living in private living quarters were interviewed, while those living in residential institutions, such as hotels, hospitals, and welfare homes, were excluded. The sampling frame used was based on the Household Sampling Frame made up of enumeration blocks (EB) of the 2010 Population and Housing Census. The selection of the sample was entirely determined by the Department of Statistics Malaysia to ensure randomness and representativeness.

A two-stage stratified sampling design was adopted; primary (covering all states), and secondary (covering urban and rural strata). Post-stratification weighting ensured the sample is ethnically representative. The survey weights (adjusted and final weights) were computed with assistance from the Department of Statistics Malaysia to reduce ethnic bias in the sample.

There have been two main challenges or limitations of this approach. First, retrospective data is required, with the parent required to recall his/her income about thirty years before. Nevertheless, other studies of social mobility have also adopted the same method. In fact, the approach "has been the basis of a large and successful literature on intergenerational social mobility" (Song and Mare 2015). Solon (1992), for instance, used the widely used United States' Panel Study of Income Dynamics (PSID) to measure intergenerational mobility in the United States. Gershuny (2002) similarly employed retrospective data from the British Household Panel Study (BHPS). Khor and Pencavel (2008), in measuring income mobility, inequality, and social welfare of households in China, also used retrospective data collected from rural households. Large panels for longitudinal studies are uncommon in developing countries, thus requiring the use of retrospective data.

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[6] Average age of parents = 62 years old. Average age of children = 32 years old. Gender of children: Male = 53%; Female = 47%, Ethnic group: Bumiputera pairs = 84%, Chinese pairs = 11%, Indian pairs: 5%.

[7] See Appendix 3 for the distribution of the sample size by state and ethnicity.

Second, data on the child is gathered from information provided by the parent, the child him/herself or other members of the family present during the interview. As many children have moved out of their parent's houses for work or to start their own families, information pertaining to the children was largely proxy-reported by the parent. However, this approach is not uncommon as even major studies, such as the United States' Panel Study of Income Dynamics (PSID), which most recent studies of mobility in the United States rely on for data, deployed the same method. Malaysia's Household Income and Basic Amenities Survey, and Household Expenditure Survey also allow for proxy-reported information. Nonetheless, the children's salaried income data collected for this study appears consistent with reported earnings data from the Employees Provident Fund.

Methodologies

In this paper, intergenerational mobility in Malaysia is examined by adopting the two most commonly used methods: 1) the intergenerational earnings elasticity approach and 2) the transition matrices approach.

1. Intergenerational earnings elasticity approach

The most common approach for measuring intergenerational mobility is the intergenerational earnings elasticity (IGE) approach whereby the correlation of a child's income with his/her parent's income is estimated. The estimation of the IGE is derived by applying least squares to the regression of a logarithmic measure of the child's earnings on a logarithmic measure of the parent's earnings[8].

Following Atkinson (1980), Becker and Tomes (1986), Blanden and Machin (2007), Solon (1992), Zimmerman (1992), and Pew Charitable Trusts (2012), the extent of intergenerational mobility is measured by the following regression equation[9]:

$$lnY_{i,t} = \alpha + \beta ln\, Y_{i,t-1} + \varepsilon_{i,t}$$

where $Y_{i,t}$ is the children's permanent income when they are 35 years old (t indexing the generation and i the family) and $Y_{i,t-1}$ is the parents' permanent income (generation t-1), α is the average income of the children (generation t) when they are adults, $\varepsilon_{i,t}$ is the error term that captures unobserved components and β reflects the relation between the incomes of individuals and those of their parents (OECD 2010). In other words, the coefficient β reflects how strongly the children's income is associated with parental income. If β is zero, child and parental income are uncorrelated, it implies complete intergenerational mobility, and if β is one, it corresponds to complete immobility. Empirical studies have always found β to lie between zero and 1 (Corak 2006).

2. Transition matrices approach

However, there is one major drawback in using the IGE approach as it does not differentiate between upward and downward mobility, and mobility by income class. Thus, in analysing mobility in this study, the transition matrices technique was also used to compare the relative ranks of the

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[8] See for example Becker and Tomes (1986).
[9] See Corak (2006) on studies which use this method in estimating intergenerational mobility. In the United State, about 35 out of 41 studies on mobility used this method; in the United Kingdom, 3 in 6; in Canada, 5 in 6; and in Finland, 5 in 5.

children against the ranks of their parents in relative terms. This approach has been used by several researchers, such as Bhattacharya and Mazumder (2011), in analysing mobility in the United States; Jantti *et al.* (2006) in examining transition probabilities using data from the United States, Denmark, Finland, and Sweden; and Pew Charitable Trusts (2012) study of income mobility in the United States.

In this approach, the child and the parent's income are compared in relative terms. One is considered upwardly mobile if he or she is in a higher income quantile than his/her parents. This approach is replicated in measuring education and occupational skill mobility[10].

3. Logistic regression model

This study uses the logistic regression model to calculate the determinants of upward or downward relative income mobility, drawing from the same approach used by the Pew Charitable Trusts (2012). The influence of independent variables, such as education, ethnic group, location (urban/rural), family structure, educational opportunities (i.e. government financial assistance), and savings were investigated on a dichotomous dependent variable, Y, which is either downward or upward relative income mobility. In addition, the logistic regression model was also run to examine factors influencing whether or not a child from the B40 has tertiary education and whether a child from the B40 is highly-skilled.

SECTION 4: KEY FINDINGS

In the survey, questions were posed to the parents on their perceptions of mobility in Malaysia. The parents were asked whether they believed their children had fared better than themselves, and what were the key factors promoting upward mobility.

Figure 2 below shows that the majority of the parents from all ethnic groups, are optimistic about their children's socio-economic status. About 74% of Bumiputera and Chinese parents think that their children's standard of living is better than themselves although this share is slightly lower among Indians, at 64%.

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[10] See Appendix 4 for further details on the transition matrices for education, occupation, and income.

Figure 2: Parents' perception of their children's socio-economic status compared to theirs, overall and by ethnic group (percentage)
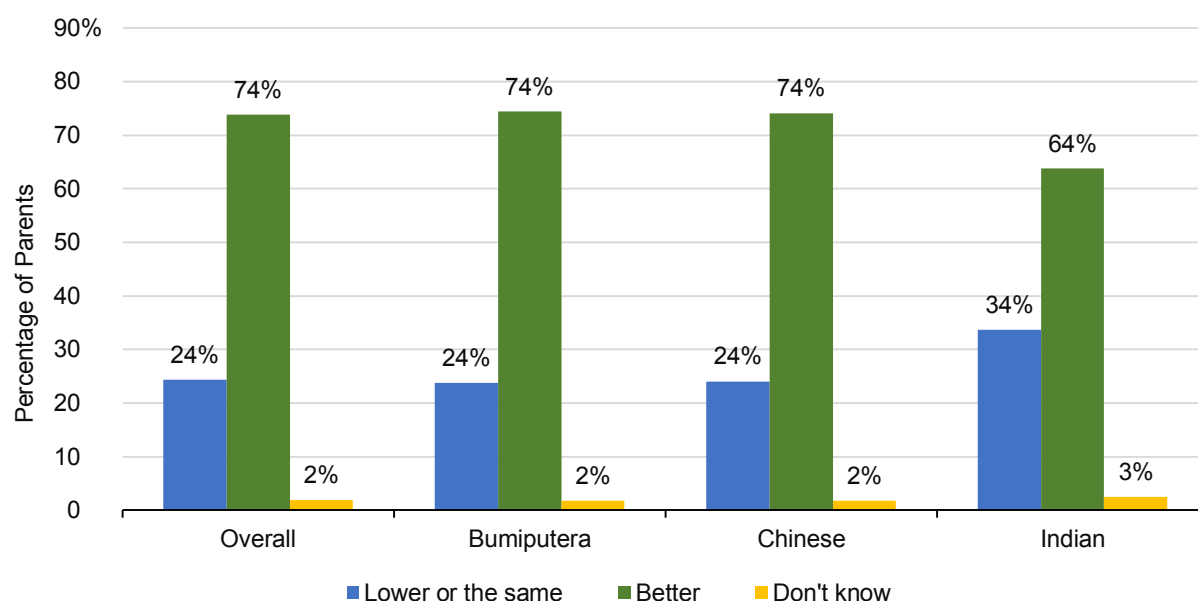
The parents were also asked about what they thought were the key contributory factors to upward mobility. The majority of the parents responded that obtaining a good education and hard work were the key factors of upward mobility. Additionally, case studies found that knowing the 'right people', growing up in a stable family, living in a good neighbourhood, parents' education, luck, and ethnicity were important factors promoting mobility. Interestingly, the majority of respondents believe that gender and family wealth were irrelevant or not important for improving one's mobility.

4.1. Intergenerational earnings elasticity

The first approach we use to measure intergenerational mobility is by deploying the linear IGE model. The IGE for Malaysia is estimated at 0.19. In other words, not more than one-fifth of parental earnings' advantage or disadvantage are associated to children. This reflects that a parent's income (hence the parent's economic status) matters less in Malaysia. It also means that a larger proportion of one's income is associated with other factors apart from parent's income. For comparison, as noted earlier, the United States and the United Kingdom, and to a lesser extent, France, are less mobile, with 40% to 50% of father's earnings' advantage or disadvantage being passed on to the son. Canada and Nordic countries such as Denmark, Finland, and Norway are comparatively very mobile, with only about 15% to 20% of earnings' advantage or disadvantage passed on to the next generations.

Figure 3 shows the IGE by the ethnic group and gender of the children. Intergenerational mobility is higher (more mobile) amongst sons compared to daughters across all ethnic groups. The gender gap is widest amongst the Indians, where 27% of the earnings' advantage or disadvantage is passed on to Indian daughters, compared to only 19% for Indian sons.

Figure 3: Intergenerational earnings elasticity, overall and by ethnic group and gender[11]
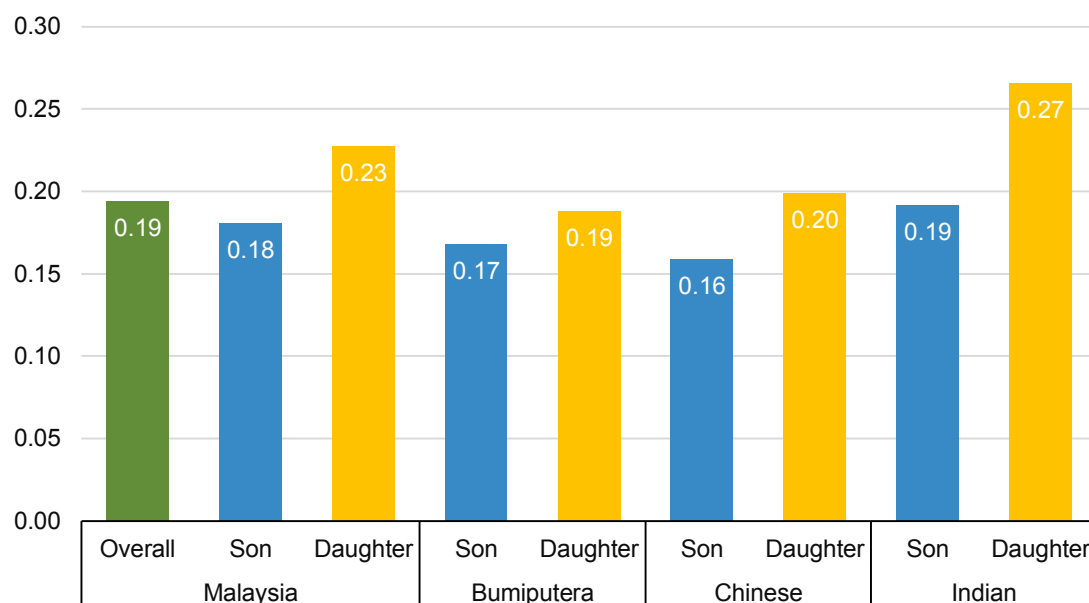
The second approach used to measure intergenerational mobility is by using transition matrices. In the next sub-section, we adopt this technique to examine education and occupational skill mobility, as well as income mobility.

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[11] Calculations include working parents and children only. The results by gender are representative at the sample level only.

4.2 Education mobility[12]

Figure 4 shows that 62% of children have attained a higher education level compared to their parents, 36% had the same education level, and 2% had a lower education level.

Figure 4: Education mobility, overall and by ethnic group (percentage)
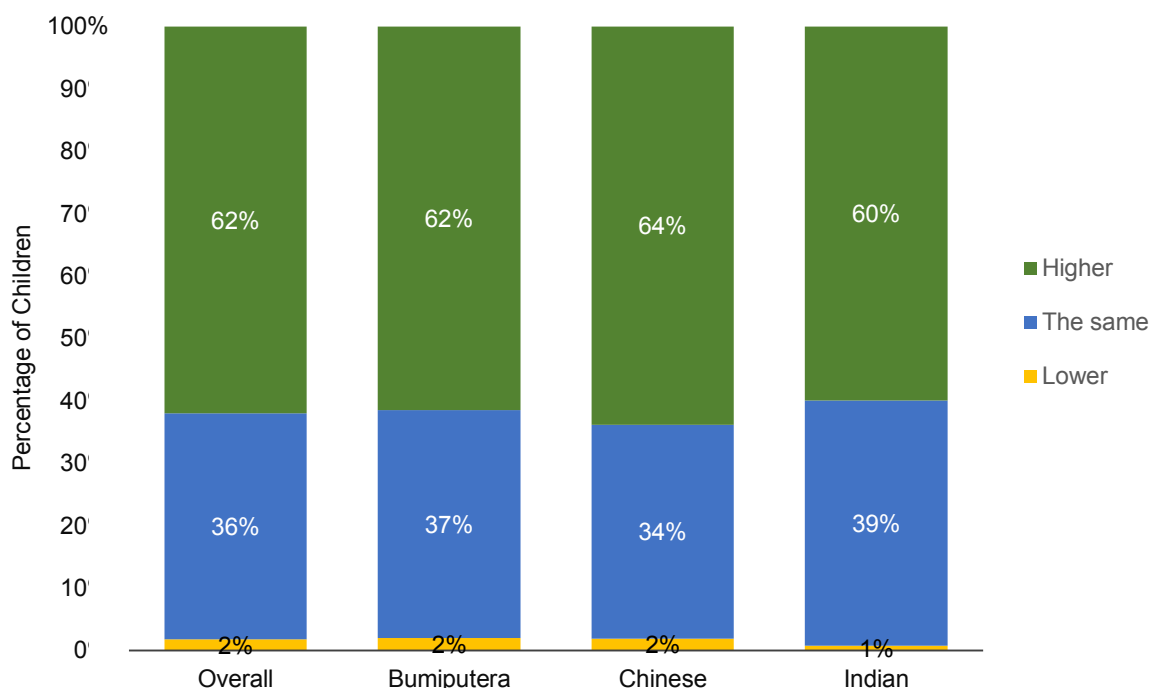
As shown in Figure 5, 33% of children raised by parents with no formal education attained tertiary education, while 59% attained only secondary education. At the opposite end, 92% of children with tertiary educated parents also attained tertiary education, and 8% attained only secondary education. None of the children with tertiary educated parents had a lower educational attainment than secondary education.

The proportion of children born to parents with no formal education who attained tertiary education is smallest among Indian children, compared to Bumiputera and Chinese children (Figure 6). While 33% of Bumiputera children and 44% of Chinese children raised by parents with no formal education had tertiary education, only 5% of similar Indian children had a tertiary education. The ethnic effect is significant; our logistic regression in measuring the factors affecting children's tertiary education opportunities shows that, all things being equal, an Indian child born to parents in the bottom 40 percent of income distribution (B40) is 0.4 times as likely to attain tertiary education compared to Bumiputera children. This is plausibly due to lack of financial

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[12] Education mobility is defined by at least one level change in the education level of children compared to their parents'. Education is classified by the highest formal education level obtained. No formal education is categorized as the lowest group, followed by primary, secondary, and tertiary.

assistance, as those who received financial assistance from the government (i.e. scholarships) are four times more likely to attain tertiary education compared to those who do not[13].

Figure 5: Percentage of children at each education level, by parent's education level
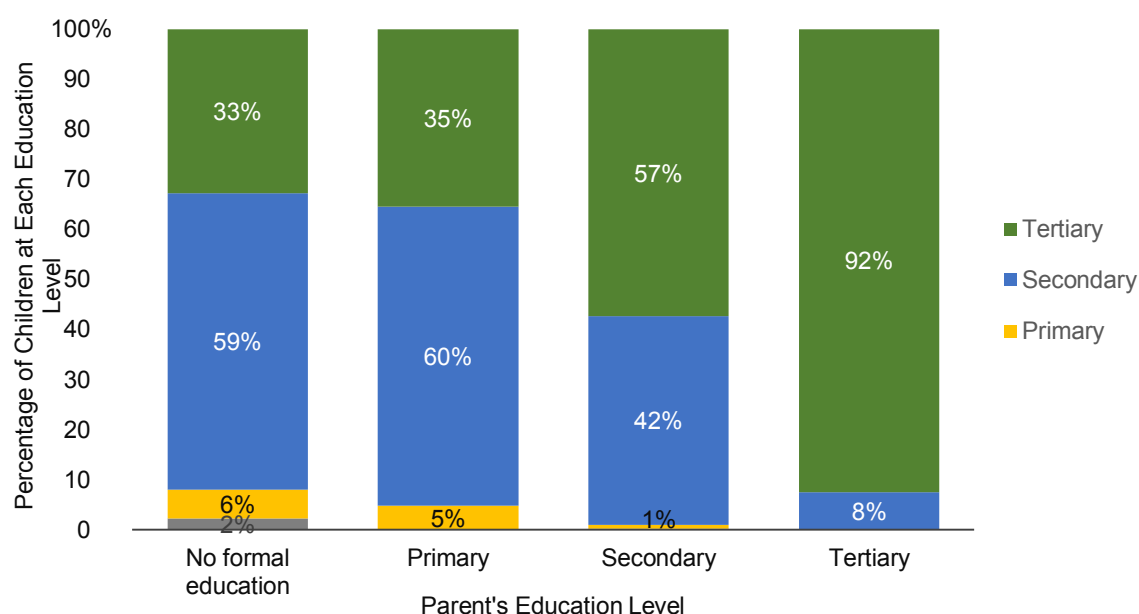
Figure 6: Percentage of children at each education level, by ethnic group and parent's education level

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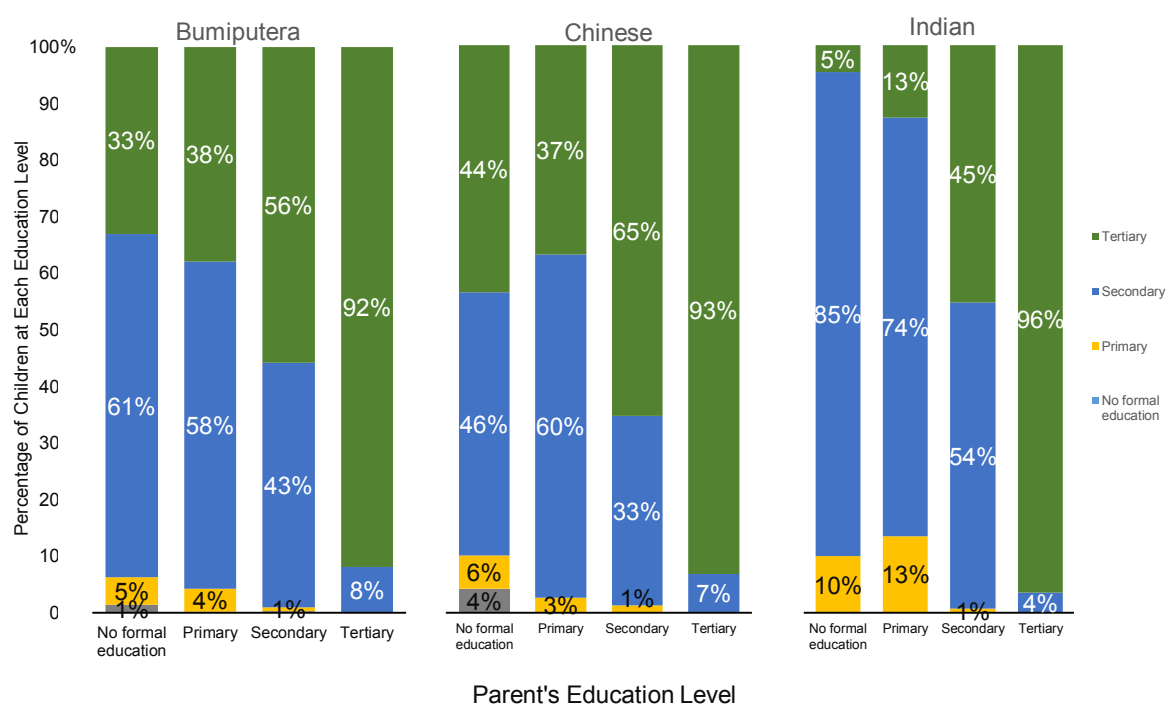
[13] See Section 5: Determinants of Mobility for more details.

4.3 Occupational skill mobility[14]

As shown in Figure 7 below, about 37% of children work in higher skilled jobs than their parents and 48% work in jobs of a skill level similar to their parents. On the other hand, 15% of the children have a lower occupational skill level than their parents. Analysis by ethnic group shows that the prevalence of children having better skills than their parents is highest among Indians at 43%, compared to Chinese (41%) and Bumiputera (35%). The proportion of Indian children that are less skilled than their parents is also lower compared to other ethnic groups (Figure 7).

Figure 7: Occupational skill mobility, overall and by ethnic group (percentage)
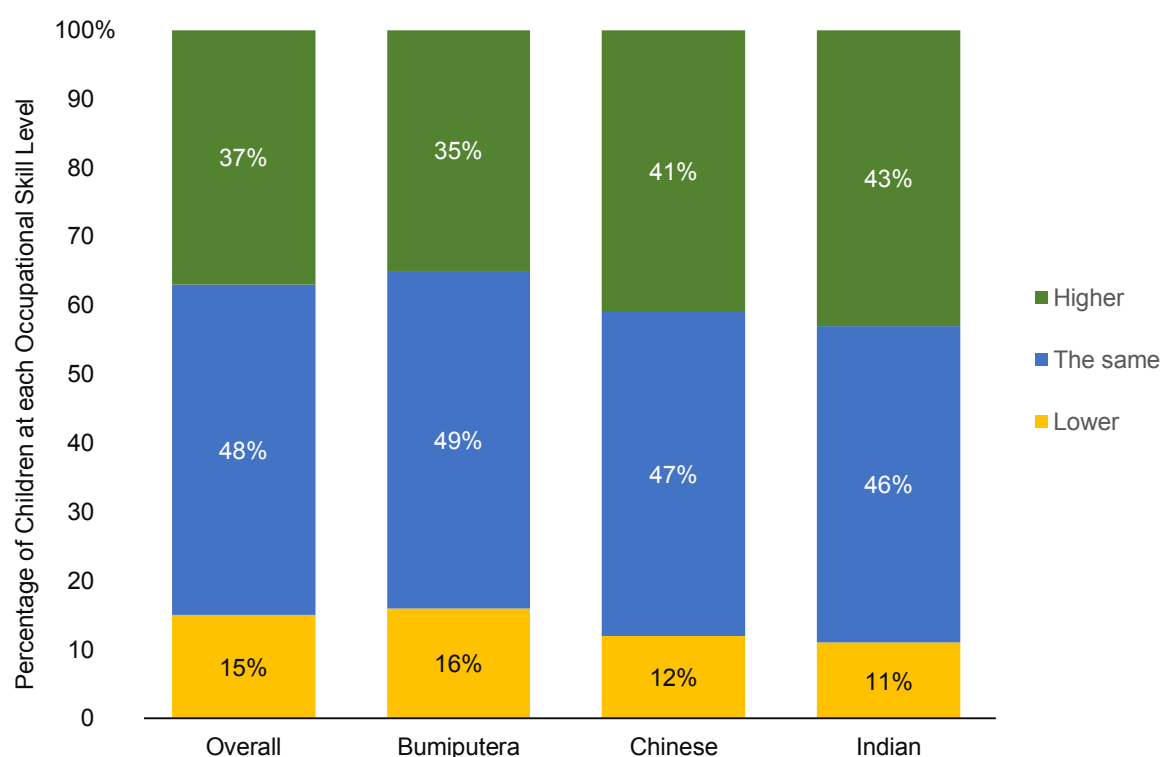
Figure **8** below shows that there is positive occupational skill mobility in Malaysia particularly for children born to low-skilled parents and become high-skilled regardless of ethnicity. It is observed however that the occupational skill mobility among Indian children born to low-skilled parents was lower compared to other ethnic groups. About 19% of Indian children with low-skilled parents have high-skilled jobs, compared to Bumiputera (25%), and Chinese (39%). This is consistent with the finding that the proportion of children born to parents without formal education but have attained tertiary education is the lowest among the Indians (5%).

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[14] Occupational skill mobility is defined by at least one level change in occupational skill level of children compared to their parents'. Occupations are classified by the Malaysia Standard Classification of Occupation 2008 (MASCO-08), the Department of Statistics Malaysia, and the World Bank. Accordingly, managers and professionals, for instance, are considered high skill, clerical workers are considered mid skill, and elementary occupations are considered low skill.

Despite this, the share of children born to high-skilled parents who are also high-skilled at the same time, is the highest among Indians. While the national average of children with high-skilled parents that also are high-skilled is 63%, the figure among the Indians is 72%. This is higher than among the Chinese (68%), and the Bumiputera (60%). Among those with mid-skilled parents, the share of children who themselves are mid-skilled is also the highest among the Indians (60%), followed by the Bumiputera (56%), and the Chinese (50%). It is quite possible that if the Indian category is decomposed into sub-ethnic groups, the groups may have fared quite differently.

Figure 8: Percentage of children at each occupational skill level, by parent's occupational skill level
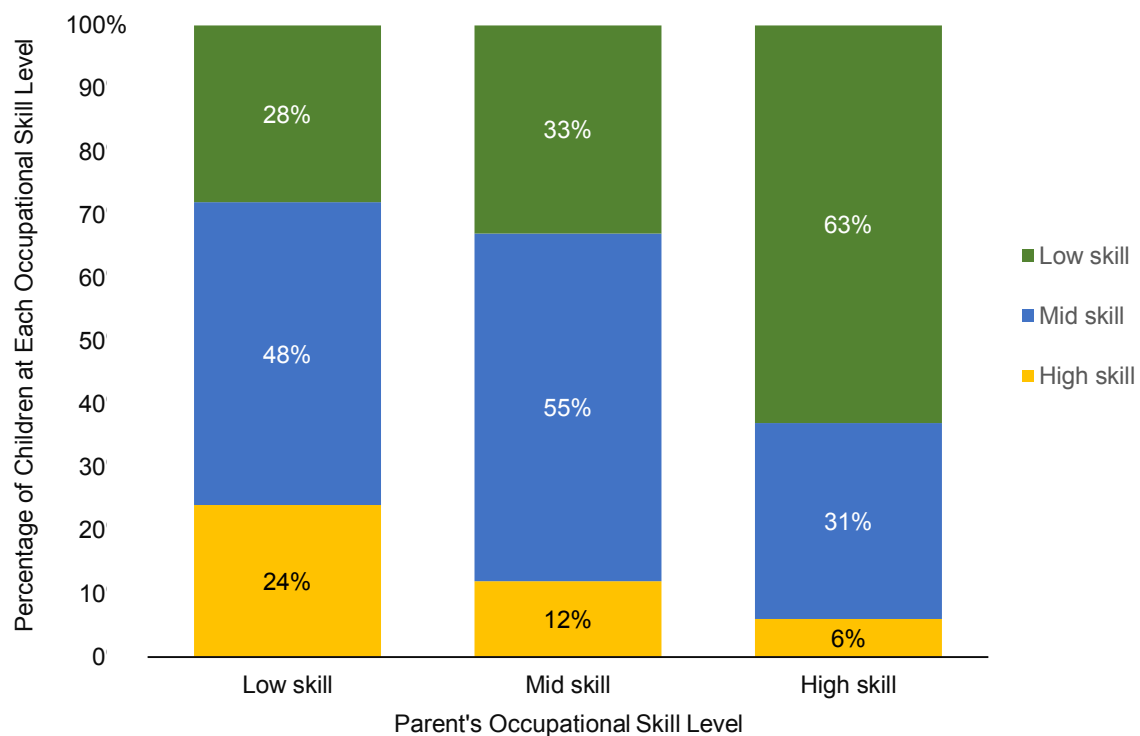
Figure 9: Percentage of children at each occupational skill level, by ethnic group and parent's occupational skill level
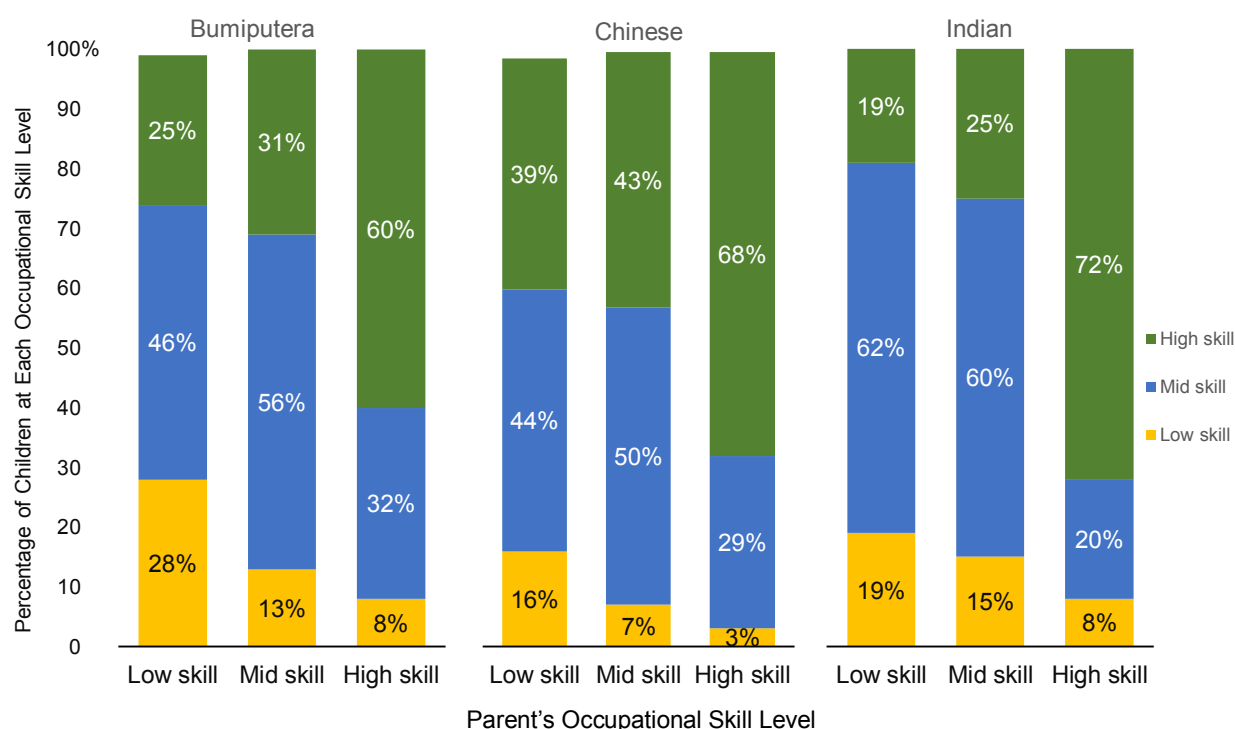
4.4 Income mobility

Does education and occupational skill mobility of the children translate into a higher income compared to the parents? Figure 10 shows that, on average, half of the children earn a higher income than their parents in absolute terms. In particular, 8 in 10 of the children born to parents in the bottom income quintile[15] (first quintile or Q1) have higher incomes than their parents. In contrast, only 1 in 10 of those born to parents in the top income quintile (fifth quintile or Q5) earn more than their parents.

As shown in Figure 11, after adjusting for inflation, children's median income is about 8% higher compared to the parents'. Among those in Q1, the median income of children currently in Q1 is higher than that of the parents' generation. Among those in the fourth quintile (Q4), while the median income of the current Q4 children is higher, the difference is small, slightly less than 3%. Only the children in Q5 have fared worse than the parents than the parents in Q5, whereby their median income is lower by 22%.

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[15] Income quintile is a grouping of the sample by income. The quintiles are derived by dividing the sample (sorted by income in ascending order) into five quintiles, with approximately 20% of respondents in each quintile. The income quintile for the parents and children differs according to the income distribution of their respective generation.

Figure 10: Percentage of children with higher income than their parents, overall and by parent's income quintile
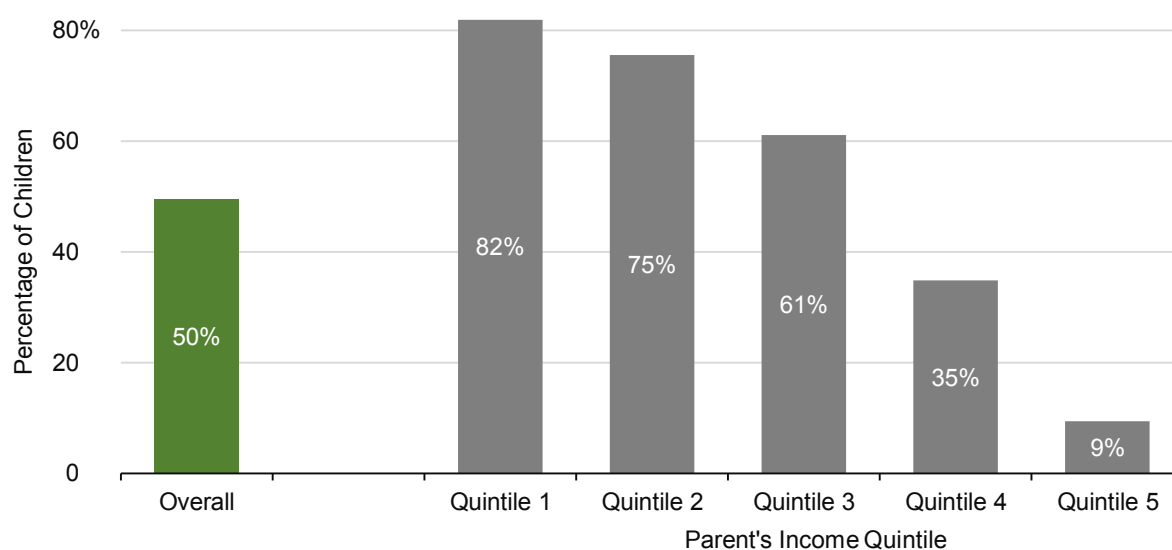
Figure 11: Median, minimum, and maximum income of parents and children, overall and by income quintile (RM)[16]

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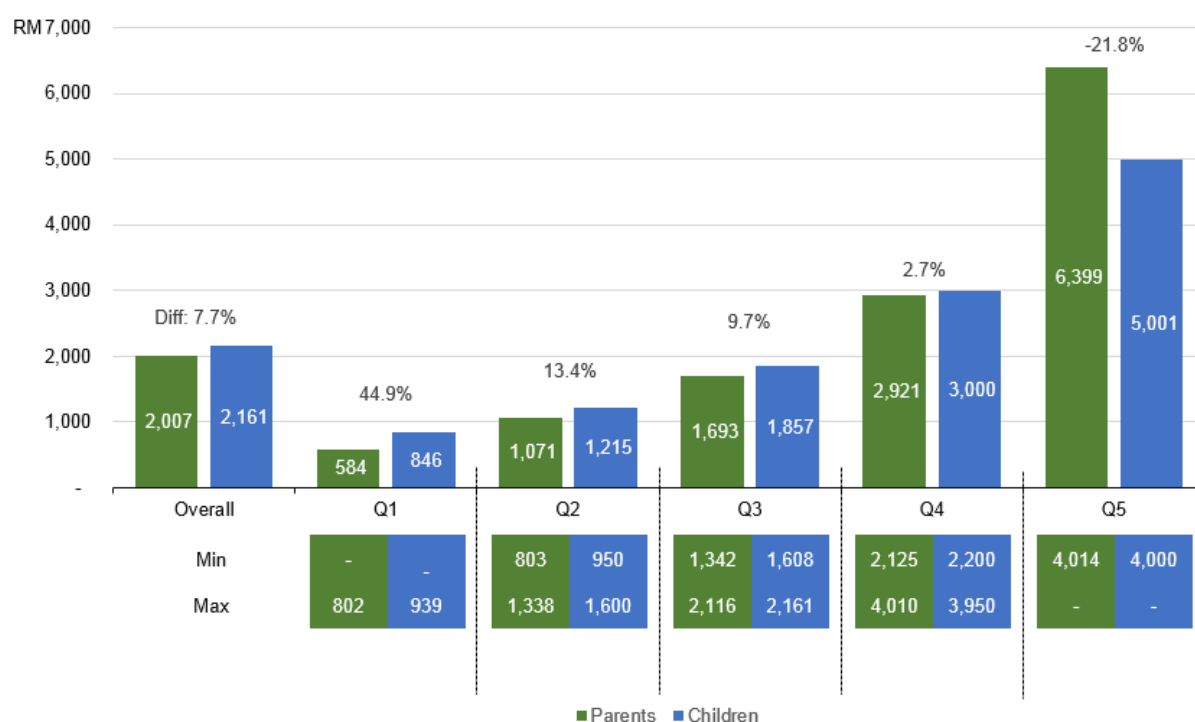
[16] Calculations include working parents and children only. Parent's income is inflation-adjusted to the year 2015.

While many children have higher incomes than their parents in absolute terms, this does not indicate whether they have performed better than their parents in relative terms. That is, despite having higher incomes than their parents, do they manage to climb up the income ladder? Or despite having higher incomes, do they move down the income ladder?

Figure 12 answers those questions; it shows that 74% of children born to parents in the bottom quintile have moved up the ladder by at least one quintile. Meanwhile, for children born to parents in the middle quintiles (Q3 and Q4), the proportion who have moved up is comparably less than those who have either stayed or moved down by at least one quintile. On the other hand, among those born in the top quintile, 32% have stayed in the same quintile and 68% have moved down by at least one quintile. 10% have moved all the way down to the bottom quintile. Children born into the top quintile have the most prospects of remaining at the top (32% have stayed put), while the proportion of children making it to the top quintile diminishes steadily as their parent's position in the income distribution declines.

Figure 12: Percentage of children in each income quintile, by parent's income quintile
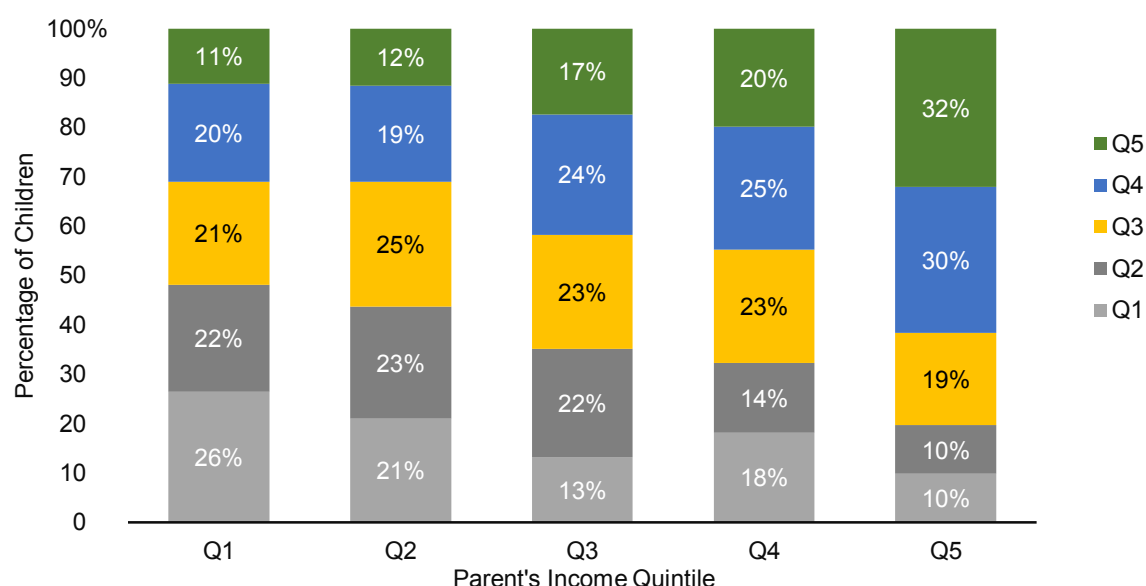
Among ethnic groups (Figure 13), Chinese children born to parents in the bottom quintile have experienced more upward mobility, with 89% moving up, compared to Bumiputera children (73%) and Indian children (62%). Meanwhile, the proportion of children born to parents in the top quintile who have stayed in the top quintile is highest among Chinese (42%), followed by Indians (31%) and Bumiputera (27%).

Figure 13: Percentage of children in each income quintile, by ethnic group and parent's income quintile
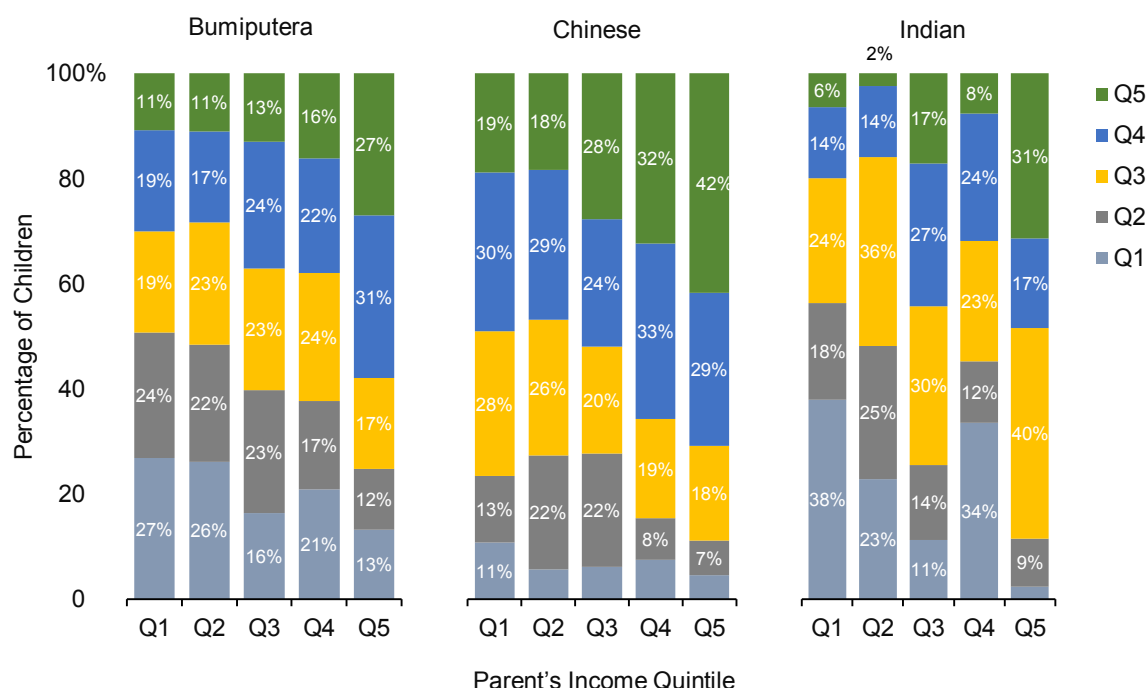
Comparing absolute and relative income status, Figure 14 shows that upward income mobility alone is not always adequate to move up the income distribution. In particular, while about half of children earn higher incomes than their parents, only 35% have moved up by least one income quintile. A remaining 13% have higher incomes, while staying in the same income quintile. In this category, a relatively higher proportion comprise children born into the third and fourth quintiles.

On the other hand, while half the children earn lower incomes than their parents, only 38% of them have moved down by at least one quintile. A remaining 12% are considered 'vulnerable', having stayed in the same quintile despite having lower incomes. In this category, relatively higher proportions are contributed by children born at both ends of the income distribution (Q1 and Q5).

Upward income mobility is highest among those born into the lowest income quintile, as 74% of them have moved up by at least one quintile. In other words, most poor children grow up to earn more, not only absolutely, but also relatively, with almost 3 in 4 children moving up by at least one quintile. The converse also holds, with children of rich parents slipping relatively, if not absolutely. Nonetheless, while upward income mobility is highest among those in Q1, at 74%, 13% of those born into Q1 are actually worse off than their parents.

A 'middle class squeeze' is observable among children born to middle income parents. In particular, 17% of children born into Q3 and 15% of children born into Q4 have higher incomes than their parents, but have not moved up into a higher income quintile. Interestingly, 2% of children born in Q3 have moved down to a lower income quintile despite having higher incomes. While 42% of children from Q3 have moved up by at least one quintile, only 17% have managed to climb above income quintiles Q3 and Q4 (M40). Among children from Q4, only 20% have moved up to Q5, the top 20% of the income distribution (T20). These observations suggest that children born into

M40 have faced much more difficulty elevating their status to join the T20. This is consistent with Figure 11, where the median income gap between the M40 and T20 quintiles is relatively large. In line with this observation, 23% of children from Q5 have lower incomes than their parents while managing to stay in the same quintile.

Among children born to parents in the bottom quintile, upward mobility is the highest among the Chinese (89%) followed by the Bumiputera (73%) and the Indians (62%) (Figure 15). On the other hand, the proportion of children in Q1 that have fallen in the 'vulnerable' category is the lowest among the Chinese (3%) which is significantly lower compared to the Indians (22%) and the Bumiputera (13%). For children born in the middle quintiles, in particular Q4, the highest proportion that have climbed up to Q5 is among the Chinese (32%). This is relatively higher compared to the Indians (8%) and the Bumiputera (16%). At the top end of the income distribution, 58% of the Chinese born in the top quintile have experienced downward mobility, which is the lowest when compared to the Indians (69%), and the Bumiputera (73%). Despite having a relatively lower proportion of moving down from Q5, the Chinese who stay in Q5 are observed to be the most vulnerable. 29% of the Chinese children have stayed in Q5 but actually have lower income than their parents, compared to other ethnic groups in Q5—the Bumiputera (19%) and the Indians (24%).

Figure 14: Percentage of children who experience income mobility in relative and absolute terms, by parent's income quintile

n=4,999	Parent's Income Quintile					
	Q1	Q2	Q3	Q4	Q5	All families
Upwardly Mobile	**74%**	**56%**	**42%**	**20%**	**0%**	**35%**
Up four quintiles and higher income	11%	0%	0%	0%	0%	2%
Up three quintiles and higher income	20%	12%	0%	0%	0%	5%
Up two quintiles and higher income	21%	19%	17%	0%	0%	11%
Up one quintile and higher income	22%	25%	24%	20%	0%	18%
Riding the Rising Tide	**8%**	**18%**	**17%**	**15%**	**9%**	**13%**
Same quintile but higher income	8%	18%	17%	15%	9%	14%
Status Quo	**5%**	**0%**	**0%**	**0%**	**0%**	**1%**
Same quintile and same income	5%	0%	0%	0%	0%	1%
Vulnerable	**13%**	**4%**	**6%**	**10%**	**23%**	**12%**
Same quintile but lower income	13%	4%	6%	10%	23%	12%
Falling Despite the Rising Tide	**0%**	**1%**	**2%**	**0%**	**0%**	**1%**
Down by at least one quintile but higher income	0%	1%	2%	0%	0%	1%
Downwardly Mobile	**0%**	**21%**	**33%**	**55%**	**68%**	**38%**
Down one quintile and lower income	0%	20%	19%	23%	30%	20%
Down two quintiles and lower income	0%	0%	13%	14%	19%	10%
Down three quintiles and lower income	0%	0%	0%	18%	10%	6%
Down four quintiles and lower income	0%	0%	0%	0%	10%	2%

Percentage of Children

Figure 15: Percentage of children who experience income mobility in relative and absolute terms, by ethnic group and parent's income quintile

	Parent's Income Quintile																	
	Chinese						Bumiputera						Indian					
	Q1	Q2	Q3	Q4	Q5	All families	Q1	Q2	Q3	Q4	Q5	All families	Q1	Q2	Q3	Q4	Q5	All families
Upwardly Mobile *Up by at least one quintile and higher income*	89%	73%	52%	32%	0%	38%	73%	52%	37%	16%	0%	34%	62%	52%	44%	8%	0%	39%
Riding the Rising Tide *Same quintile but higher income*	2%	19%	18%	17%	13%	15%	8%	19%	16%	15%	8%	13%	15%	13%	18%	11%	7%	14%
Status Quo *Same quintile and same income*	6%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Vulnerable *Same quintile but lower income*	3%	3%	2%	17%	29%	14%	13%	3%	7%	7%	19%	10%	22%	12%	12%	13%	24%	16%
Falling Despite the Rising Tide *Down by at least one quintile but higher income*	0%	0%	1%	0%	0%	0%	0%	1%	3%	0%	0%	1%	0%	1%	5%	0%	0%	2%
Downward Mobility *Down by at least one quintile and lower income*	0%	6%	27%	34%	58%	32%	0%	25%	37%	62%	73%	42%	0%	22%	20%	68%	69%	30%

SECTION 5: DETERMINANTS OF MOBILITY

In this section, the determinants of income mobility in Malaysia is explored using the logistic regression model. Relative income mobility is selected as the dependent variable, while the independent variables are the education level, location (urban/rural), gender and ethnicity of the adult child, government assistance for education in terms of loans and scholarships, family structure i.e. if raised by both parents, and if the parents have any types of savings[17].

Firstly, the factors that promote upward relative income mobility among adult children born to parents in the bottom 40% (B40) were examined[18]. Relative income mobility is categorized as upward if the income quintile of the child is higher than his/her parent's. Assuming all other characteristics are the same, a child with tertiary education is 4.6 times more likely to move up than those without tertiary education. Asset ownership is also important, whereby a child born to parents with savings has higher odds to move up by 1.6 times, compared to those with parents that have no savings. It is observed that a male child has 3.6 times better odds to move up the ladder, compared to a female child. Furthermore, a child raised in urban areas has 1.5 times better odds to move up compared to those raised in rural areas.

Secondly, the factors that may influence the downward relative income mobility for the top 20% (T20) were also examined[19]. The results show that a tertiary educated parent increased the odds for the child to stay at the top quintile by 1.5 times. However, the child's education level plays a bigger role in ensuring that he/she stays at the top, compared to the parent's education level. A child without a tertiary education has 6 times more odds to move down the ladder, compared to those with tertiary education. Additionally, a child raised by single parents has 2.5 times more chances to move down, compared to a child raised by both parents. Interestingly, gender and ethnicity plays a role in downward mobility for children born to parents in the top quintile. Holding other characteristics constant, a daughter has 3 times more chances to move down, compared to a son, and a Bumiputera child has almost twice the odds to move down compared to a Chinese child.

Ethnicity only seems to matter for downward relative income mobility for the T20, but not for upward relative income mobility for the B40. However, significant statistical evidence suggests that ethnicity influences education and occupational skill upward mobility.

As tertiary education is key to explaining upward relative income mobility, a regression analysis was run to examine factors influencing whether or not a child from the B40 has tertiary education[20]. The following statistically significant key factors were observed:

- A child born to a parent with tertiary education has 5 times more chances of attaining tertiary education than those born to parents without tertiary education
- A child who received financial assistance for education is 3.9 times more likely to attain tertiary education
- A child who attended kindergarten is 2 times more likely to attain tertiary education
- A child raised in an urban area has 1.4 times more likely to attain tertiary education

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[17] See Appendix 5: Key Variables for Regression for details on each of these variables.
[18] See Table 4 in Appendix 6: Regression Results.
[19] See Table 5 in Appendix 6: Regression Results.
[20] See Table 6 in Appendix 6: Regression Results.

- An Indian child is 0.4 times as likely as a Bumiputera child to attain tertiary education

As can be seen from the regression results, ethnicity is significant in determining tertiary education attained by children from the B40. An Indian child, regardless of gender, born to parents in the B40 had lesser chances of attaining tertiary education compared to a Bumiputera child.

The importance of attaining tertiary education is further emphasized by its significance in determining whether a child becomes highly-skilled. Subsequently, a regression analysis was run to examine factors influencing whether a child from the B40 is highly-skilled[21]. The following were observed:

- A child born to a parent with tertiary education is 1.9 times more likely to be highly-skilled than those born to parents without tertiary education
- A child with tertiary education is 10.7 times more likely to be highly-skilled than one without tertiary education
- A male child is 1.9 times more likely to be highly-skilled
- A Chinese child is 1.9 times more likely to attain tertiary education compared to a Bumiputera child
- A child born to parents with savings is 1.8 times more likely to be highly-skilled

In short, the logistic regression found that children who attain tertiary education were about 11 times more likely to have high skill jobs compared to those without tertiary education.

SECTION 6: CONCLUSION AND POLICY IMPLICATIONS

The purpose of this paper is to better understand intergenerational mobility between two recent generations.

We find that Malaysia has been a relatively socially mobile society. One's starting point is not the most important determinant of mobility. Upward education mobility is high—with 62% of children better educated than their parents. Upward education mobility is remarkable among children born to non-tertiary educated parents. Among those born to parents without formal education, 33% had a tertiary education, although the proportion is much less among Indian children; only 5% of Indians born to parents without formal education attained a tertiary education.

Upward occupational skill mobility is less than education mobility, as only 37% of children have better skills than their parents. This suggests that obtaining a higher education level does not necessarily ensure a higher occupational skill level. Nevertheless, upward occupational skill mobility is more pronounced among children with low-skilled parents: overall, 76% of them are better skilled. Chinese children with low-skilled parents experienced slightly higher occupational skill mobility with 84% better skilled.

The income of children is fairly independent of their parents' income. Almost 3 in 4 of children born to parents in the bottom quintile moved up, while 2 in 3 born into the top quintile moved down. In other words, children born to parents in the bottom income quintile did not generally

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[21] See Table 7 in Appendix 6: Regression Results.

stay 'poorer' as adults while those born to parents in the top income quintile did not necessarily stay 'richer' as adults.

Furthermore, our analysis shows that 19% of a child's income is associated with his/her parent's income. This is similar to Nordic countries (i.e. Denmark, Finland, and Sweden) and Canada, where about only 15% to 20% of parental income advantage or disadvantage is passed on to the next generation. In other words, recent adult income in Malaysia is less dependent on parental income, while a larger proportion of income is associated with other factors besides parental income.

The study finds a 'middle class squeeze' has occurred for children born to middle income parents. The majority have not only moved down the income distribution but also have lower incomes compared to their parents.

What is the difference between those who managed to 'climb' the income distribution and those who did not? We find that a host of factors have played a role in upward relative income mobility.

For children from the B40, their education matters most. Gender and geography also matter. Children raised in rural areas have lower likelihood of upward mobility compared to those raised in urban areas, while females have less odds of moving up compared to males. Savings are also important. Children born to parents with some savings have better odds of climbing up the income distribution.

However, among children born to the T20, having a tertiary education is key to staying on top. A child raised by both parents is more likely to maintain the same income quintile. Gender and ethnicity are also significant for downward mobility among children with parents in the top quintile. A female and a Bumiputera have higher chances of slipping down the distribution, compared to their male and Chinese counterparts respectively.

The above findings suggest that the extent to which the life circumstances of children are tied to or influenced by their parents' declines for more socially mobile societies, as in Malaysia and the Nordic countries listed. The study finds that children born to the poorest parents do not generally stay poor as adults, while those born to rich parents do not necessarily stay rich as adults. In other words, their circumstances are more likely to be based on their own capabilities or other external circumstances.

What can we do, in terms of policies, to promote upward mobility?

First, the evidence points to education playing a positive role in upward mobility. Thus, facilitating wider access to educational opportunities can enhance upward mobility. Thus, policies promoting early childhood education, tertiary education as well as ensuring children stay in school are important. This also requires a rethinking the financing model for higher education, as the high cost of tertiary education serves as a barrier to upward income mobility among children of low-income parents. It also calls for special programs targeting low income Indian children as these groups face the most obstacles to upward education mobility as only 5% of Indians born to parents without formal education have attained tertiary education.

Second, women are less upwardly mobile than men. This is not surprising, as there is a gender discrimination in labour markets, especially in terms of compensation. Therefore, policies to

remove gender barriers and encourage higher female labour market participation should be continued.

Third, policies that focus on assisting children from rural areas are vital, as urban children are more likely to move up compared to rural children. For instance, access to boarding schools, higher education and scholarship should take into account the urban-rural divide, and the socio-economic backgrounds of parents, particularly of those from rural areas.

Fourth, having some form of assets is important for upward mobility. Policies that encourage asset ownership and purchasing power for parents, especially from the low income group, are also important.

Finally, some form of "middle class squeeze" has occurred. Hence, a lot more emphasis needs to be placed on middle income groups, without neglecting those in lower income groups and the pockets of poverty which still persist. The call for inclusive development policies as outlined in the Eleventh Malaysia Plan is a step in the right direction.

Overall, social mobility is about the spread of opportunities and incentives. Every child in Malaysia, regardless of race, religion, descent, place of birth and gender, must be given an equal opportunity in life. Policies that promote upward mobility, especially among lower and middle income groups, require all socio-economic barriers (particularly ethnicity and gender) to be reduced, if not removed. Upward mobility is necessary, not only because it promotes economic growth and reduces inequality, but more importantly, to ensuring social stability and cohesion for generations to come.

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APPENDIX 1: IGE BY COUNTRIES

Table 1: International comparison of IGE

Author	Location and sons' year	Son's Earnings Measure	Father's Earnings Measure	IGE
Corak and Heisz (1999)	Canada 1995	Log annual earnings of son in 1995 (ages 29 – 38)	Log of five-year average of annual earnings	0.23
Atkinson, Maynard and Trinder (1983)	England (York) 1975-78	Log hourly earnings in 1975 – 78	Log weekly earnings in 1950	0.42
Atkinson (1981)	England (York) 1975-78	Log of hourly earnings in 1975 – 78	Log of weekly earnings in 1950	0.44
		Log of weekly earnings in 1975 – 78	Log of weekly earnings in 1950	0.36
Dearden, Machin and Reed (1997)	England 1991	Log weekly earnings in 1991 (age 33)	Prediction of log weekly earnings based on education and social class	0.57
Jantti and Osterbacka (1996)	Finland 1990	Log annual earnings in 1990 (ages 30 – 40)	Log of two-year average of annual earnings	0.22
Osterbacka (2001)	Finland 2001	Log of three-year average of annual earnings (ages 25 – 45)	Log of two-year average of annual earnings	0.13
Couch and Dunn (1997)	Germany 1983-88	Log of multiyear average of annual earnings in 1983 – 88	Log of multiyear average of annual earnings in 1983 – 88	0.11
Wiegand (1997)	Germany 1994	Log monthly earnings in 1994 (ages 27 – 33)	Five-year average of log monthly earnings	0.34
Lillard and Kilbern (1995)	Malaysia 1988	Log annual earnings in 1988	Log annual earnings in 1976 – 77	0.26
Soltow (1965)	Norway (Sarpsborg) 1960	Log of income in 1960	Log of income in 1960	0.14
Herz (2001)	South Africa 1993 and 1998	Monthly earnings in 1993 or 1998 (ages 16 – 39)	Monthly earnings in 1993 or 1998	0.44
de Wolff and van Slijpe (1973)	Sweden (Malmo) 1963	Log of income in 1963	Income-class dummy in 1938	0.69
Gustafsson (1994)	Sweden (Stockholm) 1977-80	Four-year average of log individual income in 1977-80 (ages 31 – 41)	Log individual income in 1955	0.14

Bjorklund and Jantti (1997)	Sweden 1990	Log annual earnings in 1990 (ages 29 – 38)	Prediction of log annual earnings based on education and occupation	0.28
Osterberg (2000)	Sweden 2000	Three-year average of log annual earnings in 2000 (ages 25 – 51)	Three-year average of log annual earnings	0.13
Girod (1984)	Switzerland (Geneva) 1980	Household Income in 1980	Household Income in 1950	0.31
Freeman (1981)	United States 1966 (older white)	Log of hourly earnings in 1966	Log of income in three-digit occupation when sons aged 14	0.22
Freeman (1981)	United States 1966 (older black)	Log of hourly earnings in 1966	Log of income in three-digit occupation when sons aged 14	0.02
Freeman (1981)	United States 1969 (young white)	Log of hourly earnings in 1966	Log of income in three-digit occupation when sons aged 14	0.16
Freeman (1981)	United States 1969 (young black)	Log of hourly earnings in 1966	Log of income in three-digit occupation when sons aged 14	0.17
Behrman and Taubman (1983)	United States 1981 – 82	Log of earnings in 1981 – 82	Log of earnings in 1981 – 82	0.18
Hauser, Sewell, and Lutterman (1975)	United States (Wisconsin) 1965 – 67	Earnings in 1965 – 67	Income in 1957 – 60	0.28
Tsai (1983)	United States (Wisconsin) 1974	Log of hourly earnings in 1974	Log of income in 1957 – 60	0.28

Sources: Becker and Tomes (1986, Table 1) and Solon (2002, Table 1)

Income

For the respondent's income at the age of 35, the monthly income is recorded based on the respondent's memory; hence, a reference year is not specified. Income at 35 is of four types:

Table 2: Categories of income

Categories	Details
INCS1	Salaries and Wages (before tax). This includes allowance, bonus, commission, concessionary food and accommodation, overtime pay, etc.
INCS2	Income from self-employment. This usually is from agricultural activities, business activities, and for personal use.
INCS3	Other sources of income. This includes renting out the house (or a room in the house), financial assets such as dividends from the Employment Provident Fund, *Tabung Haji*, bonds etc.
INCS4	Total current transfers. This includes obtaining remittances from family members, scholarship, alimony, recurring transfers from the Ministry of Welfare Malaysia, gifts in kind or in cash.

The final income is the total income of INCS1 – INCS4.

For the first child income, the monthly income is recorded based on information obtained from the head of family and spouse. In this study, our analysis only compares the INCS1 and INCS2 of parent and child.

There are missing income data for the head of family (9.7% of the total sample size). It is treated by using the predictive mean scoring using K-nearest neighbour technique. First, the attributes of income are defined as a function of time, educational attainment, occupation, industry, work hours, state, stratum, ethnicity and gender. The equation is as follows:

$$Income_p = Year_{35} + Educ + Occupation + Industry + WorkingHours + State + Stratum + Ethnicity + Gender$$

Then, k=5 was selected and 50 imputations for each of the 484 cases were ran. Of the 50 imputations, the median values were taken as an estimate for the missing income values.

The missing value for the adult child is imputed by inference using data from the 2014 Labour Force and Wages Survey Report.

Education

The education recorded is the highest level of education obtained by the respondent. If the respondent (usually a family member in the family roster) is still a student, and is awaiting his/her results, the highest level of education only records the certificate or level of education officially completed by the student.

No formal education refers to an individual who has never been to school or has failed to finish his/her first year of school. If the respondent was educated in a religious school or private school unregistered by the Ministry of Education, the respondent is considered not to have any formal education.

Primary education refers to Standard 1 – 6 and religious schools registered under the Ministry of Education.

Secondary school refers to Form 1 – 5, including Junior Middle 3, Senior Middle 3 and religious schools registered under the Ministry of Education.

Tertiary education refers to any level of education above Form 5.

Occupation

Occupation recorded is the respondent and household member's current occupation.

The respondent's occupation at 35 years old is also recorded. Respondents and household members who do not work and respondents who did not work when they were 35 years old are recorded as unemployed.

To include unemployed respondents and household members in the analysis, their occupational skill level is imputed according to their education level. The classification of occupations is based on the Malaysia Standard Classification of Occupations 2008 as used in the Labour Force Survey Reports as below:

Table 3: Classification of occupation, by skill level

Occupation	First Classification Level	Second Classification Level	Education Level	Skill Type
Managers	1	1	Tertiary education	High skill
Professionals	2			
Technicians and associate professionals	3			
Clerical support workers	4	2	Secondary education	Mid skill
Service and sales workers	5			
Skilled agricultural, forestry and fishery workers	6			
Craft and related trades workers	7			
Plant and machine-operators and assemblers	8			

			Primary education and below	Low skill
Elementary occupations	9	3		
Unemployed	10	4	-	-

APPENDIX 3: SAMPLE SIZE

Table 4: Number of households interviewed

	Rural	**Urban**	**TOTAL**
Johor	118	154	272
Kedah	171	130	301
Kelantan	286	115	401
Melaka	152	139	291
Negeri Sembilan	103	160	263
Pahang	266	125	391
Pulau Pinang	41	324	365
Perak	136	168	304
Perlis	164	91	255
Selangor	60	273	333
Terengganu	214	112	326
Sabah	174	109	283
Sarawak	96	96	192*
Kuala Lumpur	-	675	675
Putrajaya	-	347	347
TOTAL	1,981	3,018	4,999

Note: Except for Sarawak, all states achieved the optimum number of respondents recommended by the Department of Statistics Malaysia, with some states attaining even higher-than-optimum response rates. To address over- and under-representation of respondents, post-stratification weights were applied to adjust for possible bias in the sample. This is done by using household and population data provided by the Department of Statistics Malaysia.

APPENDIX 4: ANALYTICAL FRAMEWORK FOR MOBILITY

Education mobility transition matrices measure education mobility by comparing a parent and a child's education levels. Education mobility is defined by at least a one level change in a child's education level compared to his/her parent's.

Occupational skill mobility transition matrices measure occupational skill mobility by comparing a parent and a child's occupational skill levels. Occupational skill mobility is defined by at least a one level change in a child's occupational skill level compared to his/her parent's.

Income mobility is measured in absolute and relative terms. Income mobility in absolute terms compares the income level of parents and children in real terms. Income mobility in relative terms compares the income quintiles of parents and children. Additionally, relative income mobility is also analysed using transition matrices.

APPENDIX 5: KEY VARIABLES FOR REGRESSION

The following logistic regression equations were used:

Upward relative income mobility for children born in the B40:
Dependent Variable: inc_higher
Independent Variables: non_grad_hoh, graduate_fc, male_fc, ethnic(base=Bumi), no_fin_assist, no_kinder_fc savings, parent1, urban35

Downward relative income mobility for children born in the T20:
Dependent Variable: inc_lower
Independent Variables: graduate_hoh, non_grad_fc, female_fc, ethnic(base=Chinese), fin_assist kinder_fc, no_savings, parent1, urban35

Tertiary education attainment for children born in the B40:
Dependent Variable: graduate_fc
Independent Variables: graduate_hoh, female_fc, ethnic(base=bumi), fin_assist, kinder_fc, savings parent1, urban35

High skill occupational skill level for children born in the B40:
Dependent Variabe: high_skill_fc
Independent Variable: graduate_hoh, graduate_fc, male_fc, ethnic(base=bumi), fin_assist, kinder_fc savings, parent1, urban35

where;

Variables	Details
inc_higher	Child's income quintile is higher than parent's income quintile
inc_lower	Child's income quintile is lower than parent's income quintile
graduate_hoh	Parent has tertiary education
graduate_fc	Child has tertiary education
non_grad_hoh	Parent has no tertiary education
non_grad_fc	Child has no tertiary education
high_skill_fc	Child is high-skilled
male_fc	Son
female_fc	Daughter
Ethnic(base=bumi)	Ethnic group (0=Bumiputera, 1=Chinese, 2=Indian)
Ethnic(base=Chinese)	Ethnic group (0=Chinese, 1=Bumiputera, 2=Indian)
fin_assist	Child received financial assistance for education
no_fin_assist	Child did not receive financial assistance for education
no_kinder_fc	Child did not attend kindergarten
kinder_fc	Child attended kindergarten
savings	Parent has savings
no_savings	Parent has no savings
parent1	Child was not raised by both parents
urban35	Household in urban area when parent was aged 35 years (Proxy for area child was raised in i.e. child was raised in an urban area)

Table 5: Summary of regression results

	Upward relative income mobility for children born in the B40	Downward relative income mobility for children born in the T20	Tertiary education attainment for children born in the B40	High skill occupational skill level for children born in the B40
Parent is tertiary educated		1.482 [0.948,2.318]	5.044*** [2.079,12.24]	1.946 [0.940,4.029]
Parent is not tertiary educated	1.242 [0.583,2.645]			
Child is tertiary educated	4.649*** [3.219,6.714]			10.66*** [7.347,15.48]
Child is not tertiary educated		6.068*** [3.197,11.52]		
Male child	3.628*** [2.720,4.838]			1.368 [0.986,1.899]
Female child		3.020*** [1.978,4.610]	1.138 [0.844,1.535]	
Chinese against Bumiputera	1.440 [0.864,2.399]		1.379 [0.844,2.255]	1.908* [1.077,3.379]
Indians against Bumiputera	1.060 [0.661,1.700]		0.362** [0.196,0.665]	0.958 [0.523,1.756]
Bumiputera against Chinese		1.868* [1.153,3.024]		
Indian against Bumiputera		1.682 [0.666,4.251]		
Child received government's financial assistance for education		1.080 [0.698,1.669]	3.928*** [2.842,5.430]	1.172 [0.823,1.668]

Child did not receive financial assistance for education	1.280 [0.911,1.798]			
Child attended kindergarten		1.502 [0.814,2.773]	1.993*** [1.476,2.692]	0.994 [0.673,1.467]
Child did not attend kindergarten	1.085 [0.819,1.438]			
Parent has savings	1.684* [1.108,2.558]		1.455 [0.927,2.285]	1.833* [1.056,3.179]
Parent has no savings		1.626 [0.603,4.388]		
Child was not raised by both parents	1.408 [0.839,2.361]	2.508 [0.942,6.674]	1.342 [0.890,2.026]	1.061 [0.629,1.790]
Child was raised in an urban area	1.524** [1.129,2.056]	1.097 [0.668,1.800]	1.408* [1.044,1.900]	1.037 [0.682,1.579]
Observations	1976	978	1976	1976
Pseudo R2	0.147	0.120	0.150	0.243

95% confidence intervals in brackets

* p < 0.05, ** p < 0.01, *** p < 0.001

Note: The variables used in each model are variables that result in odds ratios of more than one for ease of interpretation. Multiple pairs of variables have a perfect inverse relationship, e.g., parent is tertiary educated and parent is not tertiary educated. For these variables, only one of the variables is included in the model.

Table 6: Results of logistic regression on upward relative income mobility for children born into the B40

```
Logistic regression                          Number of obs    =       1976
                                             Wald chi2(10)    =     146.06
                                             Prob > chi2      =     0.0000
Log pseudolikelihood = -1262102.2            Pseudo R2        =     0.1466
```

inc_higher	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
non_grad_hoh	1.24234	.4790982	0.56	0.574	.5834206	2.645449
graduate_fc	4.648969	.8717841	8.19	0.000	3.219123	6.713912
male_fc	3.627763	.5327087	8.78	0.000	2.720486	4.837614
_Iethnic_bu_1	1.439783	.3750351	1.40	0.162	.8641239	2.398934
_Iethnic_bu_2	1.060322	.2553684	0.24	0.808	.6613537	1.699971
_Iethnic_bu_3	1	(omitted)				
no_fin_assist	1.279688	.2221521	1.42	0.155	.9106187	1.798339
no_kinder_fc	1.085031	.1558048	0.57	0.570	.8188682	1.437706
savings	1.683884	.3593349	2.44	0.015	1.108329	2.558324
parent1	1.407625	.3715686	1.30	0.195	.8390673	2.361443
urban35	1.523637	.2329059	2.75	0.006	1.129185	2.05588
_cons	.1780157	.0904787	-3.40	0.001	.0657392	.4820499

Table 7: Results of logistic regression on downward relative income mobility for children born into the T20

```
Logistic regression                          Number of obs    =        978
                                             Wald chi2(10)    =      59.17
                                             Prob > chi2      =     0.0000
Log pseudolikelihood = -837016.14            Pseudo R2        =     0.1201
```

inc_lower	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
graduate_hoh	1.482134	.3382271	1.72	0.085	.9476347	2.31811
non_grad_fc	6.067893	1.983385	5.52	0.000	3.197493	11.51506
female_fc	3.020065	.651796	5.12	0.000	1.978374	4.610247
_Iethnic_ch_1	1.867525	.4592589	2.54	0.011	1.153295	3.024075
_Iethnic_ch_2	1.682445	.7957459	1.10	0.271	.6658067	4.251416
_Iethnic_ch_3	1	(omitted)				
fin_assist	1.079562	.2398407	0.34	0.730	.6984582	1.668609
kinder_fc	1.502474	.4697366	1.30	0.193	.8141147	2.772863
no_savings	1.626271	.8235683	0.96	0.337	.602742	4.387875
parent1	2.507743	1.252381	1.84	0.066	.9422979	6.673872
urban35	1.096773	.2773418	0.37	0.715	.6681483	1.800366
_cons	.3360248	.1381218	-2.65	0.008	.1501371	.7520638

Table 8: Results of logistic regression on tertiary education attainment for children born into the B40

```
Logistic regression                          Number of obs    =        1976
                                             Wald chi2(9)     =      133.16
                                             Prob > chi2      =      0.0000
Log pseudolikelihood = -1291089.5            Pseudo R2        =      0.1502
```

graduate_fc	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
graduate_hoh	5.044262	2.281154	3.58	0.000	2.079031	12.23867
female_fc	1.137924	.1736711	0.85	0.397	.8437268	1.534703
_Iethnic_bu_1	1.379103	.3458495	1.28	0.200	.8435946	2.25455
_Iethnic_bu_2	.3615711	.1125288	-3.27	0.001	.1964632	.6654358
_Iethnic_bu_3	1	(omitted)				
fin_assist	3.928228	.6487205	8.28	0.000	2.842016	5.429588
kinder_fc	1.993121	.3055077	4.50	0.000	1.475912	2.691576
savings	1.455259	.335065	1.63	0.103	.926736	2.285202
parent1	1.34238	.2818181	1.40	0.161	.8895592	2.025704
urban35	1.408497	.2152969	2.24	0.025	1.043867	1.900496
_cons	.1256894	.0345429	-7.55	0.000	.073344	.2153934

Table 9: Results of logistic regression on high occupational skill level for children born into the B40

```
Logistic regression                          Number of obs    =        1976
                                             Wald chi2(10)    =      228.73
                                             Prob > chi2      =      0.0000
Log pseudolikelihood = -1037802.7            Pseudo R2        =      0.2433
```

high_skill_fc	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
graduate_hoh	1.945836	.7225007	1.79	0.073	.939831	4.028678
graduate_fc	10.66422	2.027144	12.45	0.000	7.347261	15.47863
male_fc	1.368168	.2286794	1.88	0.061	.985978	1.898504
_Iethnic_bu_1	1.908091	.5563761	2.22	0.027	1.077455	3.379085
_Iethnic_bu_2	.9580559	.2962836	-0.14	0.890	.5225796	1.756423
_Iethnic_bu_3	1	(omitted)				
fin_assist	1.171768	.2110113	0.88	0.379	.823299	1.667729
kinder_fc	.993806	.1975125	-0.03	0.975	.6731794	1.467143
savings	1.832723	.5150981	2.16	0.031	1.056481	3.179306
parent1	1.061243	.2829914	0.22	0.824	.6292647	1.789767
urban35	1.037342	.2223027	0.17	0.864	.6815676	1.578827
_cons	.0470104	.0155434	-9.25	0.000	.0245898	.0898738