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Study on Earnings Mobility

Background

The Hong Kong Institute of Economics and Business Strategies at the University of Hong Kong has recently completed a study on earnings mobility and intergenerational earnings mobility in Hong Kong over the period 1996 – 2005[1].

2. The study comprises two parts. Part one on earnings mobility examines the relationships between current and previous earnings of workers and the socio-economic attributes likely to affect such relationships, based on essentially the same methodology as adopted in the previous study conducted in 2001. Earnings mobility is expressed in terms of the probability of the employed persons moving across different income brackets over the study period. Part two on intergenerational mobility analyses the relationships between the lifetime earnings of father and child.

Purpose

3. The key findings are summarized in this paper. The full report with an Executive Summary is in Annex I. Major caveats are listed in Annex II. Members are invited to note the key findings and the analytical highlights below.

Highlights of Study Findings

(i) Earnings Mobility

4. Labour earnings in Hong Kong were generally mobile over the period 1996 – 2005. Workers who possessed the capability and inclination to work hard were able to move up the earnings ladder, regardless of their initial income level. On the other hand, individuals who had not enhanced skills in step with

[1] The current study is conducted by Dr James P. Vere of the Hong Kong Institute of Economics and Business Strategy at the University of Hong Kong. A similar study of "Earnings Mobility of Hong Kong" was conducted by Dr Alan Siu of the same institute in 2001. Both studies were done with data support from the Census and Statistics Department.

the evolving work requirements were more likely to move down the earnings ladder. Reflecting this,

- more than 50% of workers experienced earnings mobility, with 29% of workers moving up and 26% moving down;

- 42% of workers in the bottom quintile group (the lowest 20% of the earnings distribution) in 1996 succeeded in moving up the earnings ladder in 2005; and

- 68% of workers in the top quintile group (the highest 20% of the earnings distribution) in 1996 managed to maintain their top position in 2005.

5. Whereas male workers and younger workers tended to have higher earnings mobility, older workers, persons engaged in agriculture or manufacturing, and workers in elementary occupations were the ones more likely to be trapped in the lowest earnings quintile group. Education was found to be very effective in reducing the likelihood of being trapped in such a group, particularly for young people. In a general sense, education was also a key to enhancing upward earnings mobility and reducing the downward mobility.

6. This study also examines earnings of employed persons by sectors. It is noted that

- the high upward earnings mobility among persons engaged in financing, insurance, real estate and business services may be attributable in part to the resilient performance of this particular sector during the recent downturn, and the greater demand in respect of skilled workers; and

- the high downward earnings mobility among persons engaged in construction and in craft and related work is probably due to the contraction of the construction sector as well as workers' inability to shift to other trade and industries, in particular the service sector.

7. Comparing with the findings of the earlier study covering the period 1991 - 2000, earnings mobility decreased in both directions in overall terms in 1996 – 2005; and across virtually all categories of workers. While upward mobility during 1996 – 2005 might have been restrained as the Hong Kong economy was suffering from a series of setbacks including property slump and prolonged deflation following the Asian financial crisis in 1997, the global economic downturn and outbreak of SARS in 2003, downward mobility was also reduced notwithstanding that the economy was hard hit by the turmoil.

(ii) Intergenerational Earnings Mobility

8. According to the study, there was statistically significant positive correlations between lifetime earnings of father and child. The study found a 1:0.28 correlation between incremental lifetime earnings of father and child. These results are comparable to those seen in selected countries (***Table 1***). However, intergenerational poverty was not prevalent in the local economy, as 87% of children with fathers in the lowest earning quintile group were found to have moved up from the bottom quintile group.

9. While a positive correlation was observed with regard to intergenerational educational attainment, those children whose fathers had lower educational attainment of only primary level still had fairly good opportunities to receive secondary or higher education, with the chance being estimated at more than 91%.

Table 1: Estimates of Intergenerational Earnings Elasticities in Selected Studies

Study	Place	Earnings Elasticity
Wiegand (1997)	Germany	0.34
Osterbacka (2001)	Finland	0.13
Jäntti and Osterbacka (1996)	Finland	0.22
Ostergberg (2000)	Sweden	0.13
Gustafsson (1994)	Sweden	0.14
Björklund and Jäntti (1997)	Sweden	0.28
Corak and Heisz (1999)	Canada	0.23
Lillard and Kilburn (1995)	Malaysia	0.26
Atkinson, Maynard and Trinder (1983)	York, England	0.42
Hertz (2001)	South Africa	0.44
Dearden, Machin and Reed (1997)	Britain	0.57
Latest Study on Earnings Mobility	**Hong Kong - Father and child**	**0.28**
	- Father and son	**0.36**
	- Father and daughter	**0.18**

Notes : (1) The larger the earnings elasticity , the stronger the intergeneration link.
(2) All studies, except the latest study on earnings mobility in Hong Kong, focus on the link between father and son only.

(iii) Policy Implications

10. It is imperative for the government to continue investing heavily in education as a means to enhance upward earnings mobility and strengthen an individual's ability to break away from intergenerational poverty.

11. From a wider perspective, it is essential to enhance the quality of Hong Kong's workforce through education and training, with a view to meeting the rapidly changing economic and labour market conditions.

Economic Analysis and Business Facilitation Unit
Financial Secretary's Office
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Annex II

Caveats of the Study

1. The research sample of the study is restricted to workers with positive monthly earnings in 1996, 2001 and 2005. Workers who received nil employment earnings in any one of the three reference years are therefore not captured in the study. Specifically, the sample does not cover:

   – workers who immigrated to Hong Kong after 1996;
   – workers who joined the labour market after 1996;
   – workers who left the labour market before 2005; and
   – workers who were out of job in any one of the three reference years.

2. A sample restricted to workers with positive monthly earnings in all three reference years would tend to produce a skew towards individuals with higher capabilities and thus a better chance to consistently remain in the labour force, as individuals who lose their jobs frequently are more likely to be excluded.

3. Earnings data for earlier years included in the part on earnings mobility, as well as data on father's characteristics such as age, education, occupation and industry in the part on intergenerational mobility were collected based on respondents' memory and thus recall errors may occur.

4. At least part of earnings mobility is associated with the individual's life cycle, for instance upward mobility as the individual changes from part-time work to full-time work after completing education and downward mobility when the individual approaches retirement.

5. Analysis of earnings mobility based on three particular reference years may be affected by transitory fluctuations in earnings.

6. For the part on intergenerational mobility, lifetime earnings of fathers were imputed by characteristics such as age, education, occupation and industry, so that discrepancies may arise between the imputed and actual lifetime earnings.

Annex I

Special Topic Enquiry on Earnings Mobility

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Special Topic Enquiry on Earnings Mobility -- Table of Contents

EXECUTIVE SUMMARY

1. The objective of this report is to provide a snapshot of earnings mobility and intergenerational earnings mobility in Hong Kong. The report comprises two parts:

   - Part One – Earnings Mobility: examines the relationships between current and previous earnings of workers and those socio-economic attributes that are likely to affect such relationships. The methodology used in the current exercise is essentially the same as that used by Dr Alan Siu's prior study on earnings mobility conducted in 2001, with the data updated to the fourth quarter of 2005.

   - Part Two – Intergenerational Earnings Mobility: a new area of the study, focusing on the relationships between father and child's lifetime earnings.

Earnings Mobility

2. Labour earnings in Hong Kong could be seen as generally mobile over a longer period of time. In particular:

   - For workers in the bottom quintile group (lowest 20% of the earnings distribution) in 1996, 42% of them had succeeded to move up the earnings ladder in 2005. This was notwithstanding that the remaining 58% of them stayed at the bottom.

   - For workers in the top quintile group (highest 20% of the earnings distribution) in 1996, 68% of them managed to maintain their top position in 2005, while the other 32% moved down the earnings ladder.

   - For workers in all the quintile groups taken together, the probabilities of moving up (upward mobility), staying put and moving down (downward mobility) the earnings ladder were estimated at 29%, 45% and 26% respectively over the period 1996-2005.

3. Overall, earnings mobility in Hong Kong has decreased in the past decade. Nevertheless, the trend was not continuously downward and considerable fluctuations were noted for some years. Specifically, earnings mobility was lower in 2001-2005 than in 1996-2001, irrespective of sex, age, or educational attainment. This was the time when the Hong Kong economy was suffering from a property slump and prolonged deflation following the Asian financial crisis and the subsequent global economic downturn and outbreak of SARS. Details of the analysis are highlighted below:

   - In terms of sex, male workers generally had higher earnings mobility than female workers. Yet a more detailed comparison showed that female workers had higher upward mobility, but lower downward mobility. This is believed to be related to the trend of improving educational attainment among female workers in recent years.

   - In terms of age, upward mobility was higher among young workers whereas older workers, in particular older male workers, were more vulnerable to downward mobility.

- In terms of educational attainment, education is of great help in enhancing upward mobility and reducing downward mobility. Yet upward mobility for degree holders showed a levelling off, probably because these people had relatively limited room for further advancement from their high initial earnings.

- In terms of economic sector and occupational category, upward earnings mobility was the highest among persons engaged in financing insurance, real estate and business services and those working as clerks. On the other hand, downward earnings mobility was the highest among persons engaged in construction and those working as craft and related workers.

4. While earnings mobility generally increased over a longer time span, older workers, persons engaged in agriculture or manufacturing, as well as workers in elementary occupations were more likely to be trapped in the lowest earnings quintile group. Nevertheless, education was found to be effective in reducing the chance of being trapped at the bottom earnings quintile group, especially for young people.

5. Comparing with the study findings for the earlier period 1991 - 2000, earnings mobility decreased in both directions in overall terms in 1996-2005; and across virtually all categories of workers. Whilst upward mobility during 1996-2005 might have been restrained by events such as the Asian financial crisis and SARS, downward mobility was also reduced notwithstanding that the economy was hard hit by the turmoil.

Intergenerational Earnings Mobility

6. As regards the intergeneration link, it was found that there were statistically significant, positive correlations between father's lifetime earnings and child's lifetime earnings. Specifically, a 1% increase in father's lifetime earnings was associated with a 0.28% increase in child's lifetime earnings. These results are comparable to those seen in some countries. Restricted to father and son, the relationship in Hong Kong is similar to that in Germany, and stronger than that in Finland, Sweden, Canada and Malaysia, though weaker than that in South Africa and the Great Britain. Having said that, among those children whose fathers were in the lowest earnings quintile group, only 13% were trapped at the bottom quintile group.

7. Further analysis by educational attainment revealed a positive correlation of intergenerational educational attainment between father and child. In general, the more educated a father, the higher the level of education his child would likely attain. As for the less educated fathers with only primary or secondary education, their children still possess fairly good opportunities to receive secondary or higher education, with the chance of receiving only primary education being estimated at less than 9%.

8. Analysed by economic sector and occupational category, the study found no clear evidence that the child's lifetime occupation or economic sector engaged was determined by his or her father's. Conceivably the mix of occupations and economic sectors of younger generation hinged less on that of the older one, but more on developments in the economy generally and the labour market in particular.

Policy Implications

9. As the study indicates, education can effectively enhance upward earnings mobility and strengthen an individual's ability to break away from intergenerational poverty. This is borne out particularly by the upward earnings mobility observed among female workers as well as among children in those families where the household heads are less educated. It is therefore imperative for the government to continue with its heavy investment in education. From a wider perspective, the study also points to the need to enhance the quality of Hong Kong's workforce through education and training, with a view to meeting the rapidly changing economic and labour market conditions.

Special Topic Enquiry on Earnings Mobility

Introduction

The objective of this report is to provide a snapshot of earnings mobility and intergenerational earnings mobility of Hong Kong. It is divided into two parts. Part one (earnings mobility) examines the relationship between the current and previous earnings of local workers and explores characteristics that are likely to affect this relationship. Part two (intergenerational earnings mobility) studies the relationship between children's lifetime earnings and those of their fathers.

Part One – Earnings Mobility

Part one is an update of Dr. Alan Siu's prior study on earnings mobility done in 2001, undertaken with new survey data collected in the fourth quarter of 2005. When the sample is restricted to workers with positive monthly earnings in 1996, 2001 and 2005, there are 5,932 observations in total. Where applicable, the results are deemed as quite comparable with Dr. Siu's. This is an encouraging finding, since it shows that methodology generates consistent results across separate independent samples.

In general, earnings mobility in Hong Kong has decreased across virtually all categories of workers over time. Though upward mobility during 1996-2005 might have been restrained by events such as the Asian financial crisis and SARS, downward mobility was also reduced notwithstanding that the economy was hard hit by the turmoil. For male workers, upward and downward mobility have both decreased. For female workers the picture is slightly more optimistic, since upward mobility has increased while downward mobility has decreased. Also worth noting is that earnings mobility is inversely related to age: older workers are subject to considerable downward mobility, which is understandable because many of them have quit their primary careers at old age. On the other hand, education is found to be of great help in reducing downward earnings mobility, particularly among young people. Finally, when analysed by occupation and economic sector, earnings mobility has declined most significantly among craftsmen and construction workers.

Part one of the study also focuses special attention on the problem of being "trapped at the bottom," or stuck in the lowest earnings quintile group with no upward earnings mobility.

This problem is most severe for older women with low education, as well as manufacturing workers and workers in elementary occupations. Furthermore, the chances of being trapped at the bottom have generally increased from 1996-2001 to 2001-2005. A comparison with Dr. Siu's earlier results also indicates that earnings mobility has declined virtually on all fronts.

1.1 Data reliability

Since the earnings data were collected in 2005, those earnings reported for the earlier years in 1996 and 2001 had to be based on memory. To check that the data are reliable, we compare the density of recalled earnings for 1996 and 2001 with the density of actual earnings in those years, calculated from General Household Survey (GHS) data. Figure 1 shows these densities. The reliability of recalled earnings data was also explored with an ordered probit model, which is a statistical model that predicts earnings quintile groups based on respondents other characteristics (i.e. age, sex, education, industry, occupation). Both of these methods indicate a high degree of consistency between recalled and actual earnings. Therefore, it is worthwhile to work with the recalled earnings data despite the potential for recall error.

1.2 Correlation of Earnings Over Time

We work with logarithm of earnings. The logarithms of earnings are highly correlated over time. The correlation coefficients between the log earnings for all, male and female workers are tabulated as follows (lmearnYY = log monthly earnings in year YY):

Correlation Coefficients	All Workers	Male	Female
Corr(lmearn96,lmearn01)	0.8497	0.8311	0.8647
Corr(lmearn01,lmearn05)	0.8438	0.8234	0.8694
Corr(lmearn96,lmearn05)	0.7171	0.6820	0.7617

- A higher correlation means less mobility.
- Earnings mobility over the two periods of 1996-2001 and 2001-2005 was quite stable.
- Earning mobility for female workers was less than that of male workers in both periods.
- There was more mobility over a longer time span.
- Comparison with Dr. Siu's earlier study suggested that earnings mobility in Hong Kong had decreased, especially for male workers. The correlation coefficient for male workers between 1996 and 2000 was 0.7658, yet it increased to 0.8311 between 1996 and 2001. The recession of 2001 might have been a material factor behind this higher correlation

coefficient and thus lower earnings mobility.

1.3 Transitional Probabilities

Another way to measure earnings mobility is to estimate transitional probabilities based on workers' earnings quintile groups at different times. Each row of the table represents the earnings quintile group of the worker in the starting year (i.e. lowest, 2nd lowest, middle, 2nd highest, highest). Similarly, each column represents the earnings quintile group of the worker in the ending year. Each cell contains the probability that a worker in the row earnings quintile group in the starting year ends up in the column earnings quintile group in the end year (so the elements of each row will add up to 100%).

Table 1 displays these transitional probabilities for all workers over three intervals: 1996 to 2001, 2001 to 2005 and 1996 to 2005.

We have the following observations:

— There was more mobility over a longer time span.

— Earnings mobility was less for female workers than for male workers in both 1996-2001 and 2001-2005.

— There was considerable earnings mobility over the whole time period. From 1996 to 2005, the probabilities of moving up, staying put, and moving down were 29.14%, 44.79%, and 26.07%. These probabilities were 26.60%, 41.54% and 31.86%, respectively, for male workers, and 33.64%, 50.56%, 15.80%, respectively, for female workers.

— For workers in the bottom quintile group (lowest 20% of the earnings distribution) in 1996, 41.59% of them had succeeded to move up the earnings ladder in 2005. This was notwithstanding that the remaining 58.41% of them stayed at the bottom.

— For workers in the top quintile group (highest 20% of the earnings distribution) in 1996, 68.43% of them managed to maintain their top position in 2005, while the other 31.57% moved down the earnings ladder.

- For all workers between the two five-year periods:

  — Earnings mobility was lower in the second period. The probability of staying put

increased from 55.94% in the first period to 62.23% in the second. Yet the trend was not continuously downward and considerable fluctuations were noted for some of the intervening years. In particular, earnings mobility was lower in 2001-2005 than in 1996-2001, irrespective of sex, age, or educational attainment. This was the time when the Hong Kong economy was suffering from a property slump and prolonged deflation following the Asian financial crisis and the subsequent global economic downturn and outbreak of SARS.

— Both the probabilities of moving up and dropping down were lower in the second period than in the first period.

— Mobility rates were lower for both the bottom and the top groups than for other groups. Indeed, the probability of staying put exhibited a "U" shape as earnings increased.

— In comparison with Dr. Siu's study, earnings mobility (both upward and downward) was lower from 1996 to 2005 than it was from 1991 to 2000.

- For male workers:

— The probabilities of staying in the same earnings quintile group were 53.12% and 60.58%, respectively, for the two periods.

— There was less mobility between 2001 and 2005 than between 1996 and 2001.

— Both upward and downward mobility decreased. Upward mobility fell from 21.78% in the first period to 19.16% in the second. Downward mobility also fell, from 25.10% to 20.26%.

— Mobility for male workers was considerably higher than that for female workers. This was mainly attributable to the high mobility of male workers in the lowest-quintile and highest-quintile groups. Between 1996 and 2005, 44.60% of men in the lowest quintile group stayed put, compared to 67.55% for female workers in the lowest quintile group. The corresponding figures for male and female workers staying in the highest quintile groups were 63.90% and 82.09%. Differences in mobility between other groups, though present, were not as significant.

— Compared with Dr. Siu's study, earnings mobility decreased for male workers between 1996 and 2005, largely because of reductions in their upward mobility.

- For female workers:

  — The probability of staying in the same earnings quintile group increased from 60.97% to 67.94%.

  — Reductions in both upward and downward mobility were likewise observed. The probability of moving up decreased from 25.70% to 21.24%, and the probability of moving down decreased from 13.34% to 10.83%.

  — Mobility of female workers was considerably lower than that of the entire workforce.

  — However, female workers were more likely to move up and less likely to drop down than male workers. This was believed to be related to the trend of improving educational attainment for females in recent years.

  — In comparison with Dr. Siu's study, earnings mobility for female workers was lower between 1996 and 2005 than it was between 1991 and 2000. Whereas upward mobility increased from 28.30% to 33.64%, downward mobility decreased by a larger magnitude from 29.17% to 15.80%.

1.4 Age and Education

To obtain a more detailed picture of earnings mobility, it is useful to examine the transitional probabilities for workers with specific characteristics. The first characteristics to be examined are age and education. Workers are categorized into three groups according to their age in 2005: 30 to 39, 40 to 49, and 50 to 65. Four education levels are also used: primary or below, some secondary, some post-secondary, and degree or higher. The estimated transitional probabilities for male and female workers, grouped by the three age categories and four education levels, are shown in Tables 2, 3 and 4.

1.4.1 Results by Age

See Table 2.

— Earnings mobility was lower between 2001 and 2005 than between 1996 and 2001 for both male and female workers, regardless of age.

- Across both sexes:

  — Regardless of age, earnings of male workers were more mobile than those of female workers.

  — Regardless of age, female workers had more upward mobility and less downward mobility than male workers.

- For the four age categories:

  — Upward mobility was the highest for the 30-39 group. Over the whole period, male workers in this age category had a 42.99% probability of moving up, while those aged 50 to 65 had only a 16.53% probability. The corresponding figures for female workers were 47.73% and 17.39%.

  — Downward mobility was higher for older workers. Over the whole period, the probabilities of male workers moving down were 21.09%, 30.14% and 42.66%, respectively, for the three age groups. The corresponding figures for female workers were 13.73%, 16.67% and 17.59%. Male workers aged 50 to 65 appeared to be the most vulnerable.

  — The 40-49 age group tended to be the least mobile among all male workers. Over the whole period, male workers aged 40-49 had a 45.63% chance of staying in the same earnings quintile group, while the corresponding figures are 35.92% and 40.81% for men aged 30-39 and 50-65, respectively. A similar pattern was noted for the 1996-2001 and 2001-2005 sub-periods.

  — This phenomenon applied only to male workers, however. Among female workers, the 50-65 age group appeared to be the least mobile.

- Comparison with earlier study:

  — Compared with the period 1991-2000, studied by Dr. Siu, earning mobility was lower in 1996-2005, regardless of age or sex.

  — For male workers, upward mobility decreased uniformly for all age cohorts. Meanwhile, downward mobility decreased for the 50-65 group. Changes in downward mobility were insignificant for the other two age groups.

— For female workers, upward mobility increased significantly, especially among those aged 40-49 (from 18.19% to 30.16%). Meanwhile, the chance of moving down decreased uniformly. Interestingly, the reduction in downward mobility was positively related to age. Female workers in the oldest age group experienced the most significant decrease in downward mobility.

1.4.2 Results by Educational Attainment

See Table 3.

— Earnings mobility was higher for male workers with low educational attainment (primary or below and some secondary) than for their female counterparts, but it was lower for male workers with better educational attainment (some post-secondary and degree or above).

- Downward mobility:

  — For male workers, downward earnings mobility and educational attainment were inversely related, suggesting that education could help in reducing the downward mobility. Between 1996 and 2005, downward earnings mobility for male workers at the four education levels were 45.90%, 33.11%, 18.18% and 11.85%, respectively.

  — For female workers, however, downward earnings mobility and educational attainment had an inverted "U" shape relationship. Between 1996 and 2005, the probabilities of downward movement for female workers with different education levels were 14.07%, 17.65%, 17.11% and 9.15%.

  — Regardless of education level, female workers were less likely to move down the earnings ladder than their male counterparts.

- Upward mobility

  — Upward mobility exhibited an inverted "U" shape as education increased. Over the whole period, the probabilities of moving up for the four educational levels were 18.31%, 29.30%, 32.17% and 22.63% for male workers. The corresponding figures for female workers were 16.79%, 39.19%, 34.65% and 32.75%. This indicates that education was of great help in enhancing upward earnings mobility. This notwithstanding, the upward mobility for degree holders showed a levelling off, probably because these individuals

had relatively limited room for further advancement from their high initial earnings.

— The probabilities of moving up were higher for female workers than for their male counterparts at all education attainment levels, except for primary education or below.

- Between the two periods 1996-2001 and 2001-2005

— Earnings mobility was lower during the second period, regardless of sex or educational attainment.

— For male workers, downward mobility dropped among those with low education levels (primary/below or some secondary), but increased among those with higher education levels. The probability of moving up decreased for all male workers, except those with primary education or below.

— For female workers, downward mobility decreased for all education groups except primary or below, while upward mobility also decreased for all groups except those with some post-secondary education.

- Comparison with earlier study:

— Compared with the period 1991-2000 as studied earlier by Dr. Siu, earnings mobility decreased during 1996-2005 except for female workers in the top two education levels.

— Compared with 1991-2000, upward mobility for male workers decreased uniformly. Meanwhile, downward mobility increased or else remained unchanged.

— For female workers, upward mobility increased during 1996-2005, especially for those with degree level or above.

1.5 Industry and Occupation

See Table 4.

Workers were also divided according to the industry and occupation they engaged in the initial year. In total, there were eight industry categories (excluding Mining and Quarrying industry) and nine occupation categories.

1.5.1 Results by Industry

- Between the two periods
  - All industrial sectors saw a decrease in earnings mobility from 1996-2001 to 2001-2005.
  - Upward mobility decreased in most of the sectors (except for manufacturing) .
  - Also, five out of the eight selected industries experienced a reduction in downward earnings mobility. This reduction was significant in agriculture, manufacturing and construction.
- Of the whole period 1996-2005
  - Overall, the situation was most favourable for financing, insurance, real estate and business services (with high upward mobility and low downward mobility), but least favourable for construction (the reverse).
  - The construction industry had the highest earnings mobility, while agriculture had the lowest.
  - However, it should be noticed that the transitional probabilities might not be precisely estimated for agriculture and fishing, and electricity, gas and water supplies due to the limited sample size.

1.5.2 Results by Occupation

- Between 1996-2001 and 2001-2005
  - Earnings mobility decreased across all occupations between the two periods.
  - Most occupations saw reductions in upward mobility (notable exceptions being managers and administrators, and plant and machine operators and assemblers).
  - Seven out of nine occupations (i.e. all except clerks and professionals) saw a decrease in downward mobility.

- Overall period 1996-2005

  — Overall, the situation was most favourable for clerks (high upward mobility together with relatively low downward mobility), but least favourable for craftsmen, and plant and machine operators and assemblers.

  — Clerks had the highest upward mobility, whereas managers and administrators had the lowest.

  — On the other hand, craft and related workers had the highest downward mobility, while professionals had the lowest.

  — However, the estimated transitional probabilities for agricultural and fishery workers might not be very precise, as very few workers reported themselves as being engaged in that sector.

1.6 Key Observations

— Earnings mobility was lower in the second period than the first, regardless of sex, age, or educational attainment.

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— Mobility was higher for male workers than for female workers, regardless of age. It was inversely related to education for male workers and had an inverted “U” shaped relationship with education for female workers.

— Female workers were less likely to move down the earnings ladder than male workers, regardless of age or educational attainment. Yet young female workers with high educational attainment were more likely to move up than their male counterparts.

— Young workers had a better chance of moving up the earnings ladder than older workers.

— Older workers were subject to considerable downward mobility, with older male workers being the most vulnerable.

— Less educated people were more likely to move down the earnings ladder.

— Higher educational attainment increased the chance of upward earnings mobility, yet this applied only up to the secondary or post-secondary level. It curtailed downward mobility

for all male workers, yet increased downward mobility for female workers with secondary or post-secondary education.

— When the period from 1996 to 2005 was compared with 1991-2000 (studied by Dr. Siu), earnings mobility decreased across virtually all categories of workers. Though upward mobility during 1996-2005 might have been restrained by events such as the Asian financial crisis and SARS, downward mobility was also reduced notwithstanding that the economy was hard hit by the turmoil. Male workers experienced reductions in upward mobility, regardless of age or educational attainment. Meanwhile, female workers experienced upward mobility, especially for degree holders, and also reduced downward mobility, particularly for those with some secondary education or below.

— Most industries and occupations saw decreases in earnings mobility (both upward and downward) from 1996-2001 to 2001-2005.

— Over the whole period from 1996 to 2005, construction did the worst among all industrial sectors, and craft and related workers did the worst among all occupation categories.

1.7 Trapped at the bottom

Of particular interest is the phenomenon of being "trapped at the bottom," or stuck in the lowest earnings quintile group. To assess the dimensions of this problem, it is useful to first examine the probability that a worker with certain characteristics will be present in the lowest earnings quintile group in the first place. The next step is to examine the probability that workers in the lowest earnings quintile group at the beginning of a five-year or ten-year interval will remain there.

1.7.1 Initial Probability of Being in the Lowest Earnings Quintile Group

The probabilities that workers with certain characteristics will fall into the lowest earnings quintile group in 1996, 2001, and 2005 are given in Table 5.

We have the following observations:

— Female workers were more likely to be in the lowest earnings quintile group than their male counterparts. Older female workers were the most likely to fall in such a group.

— Education lessened the probability of being in the lowest earnings quintile group, especially among women.

— The probability of being at the lowest end of the earnings distribution had increased between 1996 and 2005 for the age cohort 50-65.

— Analysed by economic sector and occupation category, the relative status of a given occupation or sector tended to be quite stable over time. However, some of the estimates might not be very precise because of limited sample size.

— Workers engaged in agriculture and fishing, or in manufacturing were most likely to fall in the lowest earnings quintile group.

— Workers in elementary occupations were the most vulnerable among all occupation categories. Indeed, their chances of being in the lowest earnings quintile group had increased from 52.22% in 1996 to 57.75% in 2001, and further to 63.55% in 2005.

1.7.2 Probability of Remaining in the Lowest Earnings Quintile Group

The probabilities that workers with certain characteristics remain in the lowest earnings quintile group are given in Table 6.

- Age and Education

  — It should be noted that the probability of being trapped in the lowest earnings quintile group might not be accurately estimated for workers with post-secondary education or above, due to the limited sample size. For instance, only one male worker with post-secondary education in our sample fell into this category in the first period. Similar problems arose when the probabilities were tabulated according to industry or occupation.

  — Older workers (especially older female workers) were more likely to be trapped at the bottom. Between 1996 and 2005, the chance of staying at the bottom for male workers over 50 was 59.59%, compared with a 29.27% chance for male workers in their thirties. The corresponding figures for female workers were 80.62% and 45.30%.

  — Education helps to curtail the chance of getting trapped at the bottom, particularly for young people. Between 1996 and 2005, the chance of being trapped in the lowest earnings quintile group was 58.33% for male workers with primary education or below. It fell to 39.88% for those with some secondary education. The corresponding figures

for female workers were 82.72% and 58.77%.

— Unfortunately, the chance of being trapped at the bottom seemed to have increased from 1996-2001 to 2001-2005, for almost all age and educational categories.

— Moreover, in comparison with Dr. Siu's results, it seemed that the situation had deteriorated virtually across all categories of worker.

- Industry

— The relative status of a given industry was quite stable, except for (1) financing, insurance, real estate and business services and (2) manufacturing. Financing, insurance, real estate and business services was the industry in which workers were the least likely to be trapped for the period 1996-2001, yet was nearly the industry in which workers were most likely to be trapped during 2001-05. On the other hand, the change in the relative status of manufacturing was mostly due to increases in the chances of getting trapped in other industries.

— Workers in the agriculture and fishing or the manufacturing industry were most likely to be trapped at the bottom.

— The chances of getting trapped at the bottom had increased among all industries except for manufacturing.

- Occupation

— The statistics were probably misleading for managers and administrators and professionals due to the extremely small sample sizes.

— Workers in elementary occupations were most likely to be trapped at the bottom income group.

— There was a slight increase in the probability of staying at the bottom income group across occupations.

Part Two - Intergenerational Earnings Mobility

Part two of this study is an examination of intergenerational earnings mobility, or the relationship between fathers' and their children's (typically, but not necessarily, their sons') lifetime earnings. Three indicators are studied here.

First, we follow the common approach to estimate the intergenerational earnings elasticity by applying least squares to the regression of a logarithmic measure of the child's lifetime earnings on a logarithmic measure of the father's lifetime earnings, with controls for both the child's and the father's age. When this procedure was carried out, the estimated intergenerational earnings elasticity in Hong Kong was 0.283 for all workers, 0.357886 for male workers and 0.17775 for female workers. These figures are quite comparable to those of several OECD countries (for a survey, see Gary Solon, "Cross-Country Differences in Intergenerational Earnings Mobility," *Journal of Economic Perspectives*, summer 2002).

Second, we grouped both fathers and children into quintile groups according to their lifetime earnings. The probabilities of the child falling into different quintile groups were estimated conditional on the father's lifetime earnings quintile group. Our study suggested that lifetime earnings status diverged considerably among children whose fathers belonged to the bottom or second lowest quintile group. Children of fathers in the highest income class, however, were most likely to stay in the top quintile group.

Finally, we examined the link between the industry, occupation and educational levels of fathers and their children. Basically we found no strong correlation between fathers' and children's industries. Lifetime occupation varied considerably among children with fathers in basic occupations, yet for children whose fathers had high-level jobs, their lifetime occupations were more concentrated in these high level jobs. In terms of educational attainment, we found that in general the more educated the father was, the more education the child would receive. Most children received some secondary education if their fathers attained the secondary level or below, yet they still had fairly good chances to receive post-secondary education or become degree holders. Children of fathers who received post-secondary or degree education, however, were concentrated as degree holders.

2.1 Estimation of Lifetime Earnings

Although people's earnings vary considerably over their lifetimes, their earnings percentiles when compared to others with the same age tend to remain stable (particularly from age 30 onward). Therefore, a common way of measuring someone's lifetime earnings is to compare

the earnings of that person with the earnings of other people of similar age.

In this study, we used the 2005 earnings data to reflect the lifetime earnings of both the father and the child below the maximum retirement age (i.e. 60). For fathers who were between 61 and 64 in 2005, (who were below 60 in 2001) we used inflation-adjusted earnings data from 2001. For fathers who were between 65 and 69 in 2005, we used 1996 data. We excluded workers or fathers above 69 in 2005, because their lifetime earnings could not be derived from data available. We also excluded children below 30, since earnings in the early period of one's career are not reliable indicators of future lifetime earnings.

2.2 Data Reliability

The fathers' monthly earnings were reported by their children and therefore could not be free of recall errors. To check the extent of this bias, two methods were employed: regression analysis of reported fathers' earnings on reported fathers' characteristics, compared with an analogous regression of self-reported earnings on self-reported characteristics; and comparison of the densities of reported fathers' earnings and actual earnings of men at comparable ages. Unfortunately, both methods suggested an unacceptable degree of error in respondents' reports of their fathers' earnings. This was confirmed when directly-reported fathers' earnings were used to estimate the relationship between fathers' and children's earnings; the estimation results were poor and generally as one would expect given severe measurement error problems in the directly-reported father's earnings variable. For this reason, the directly-reported measure of father's earnings was not used.

A more promising method is to use father's characteristics such as age, education, occupation and industry (which respondents can recall much more accurately) to impute fathers' earnings. When imputed fathers' earnings were used in the analysis, the results were much better and generally in line with what one would expect given similar studies that had been carried out for other countries. Hence, imputed fathers' earnings were used in the following analysis.

2.3 Intergenerational Earnings Mobility

In this section, we follow the common approach by regressing log lifetime earnings of children on log lifetime earnings of their fathers, with controls for the age of both the child and the father. The estimated lifetime earnings elasticity (denoted as β) is what the literature defines as "intergenerational earnings mobility." Common practice is to estimate this elasticity for fathers and sons, but there is no reason it cannot be estimated for fathers and daughters as well.

Respondents were not asked for information about mothers' earnings.

We estimated β first with imputed fathers' lifetime earnings. The β coefficient was 0.28308 for all children, 0.35886 for sons and 0.17775 for daughters, and all were significantly different from zero at 5% level. The interpretation of this coefficient is the following. Using the coefficient for sons as an example, a 1% increase in fathers' lifetime earnings was associated with a 0.36% increase in sons' lifetime earnings. Hence, the larger the coefficient, the stronger the relationship between fathers' and sons' lifetime earnings.

In addition, we rejected the hypothesis that the β coefficient was significantly different between sons and daughters at 5% level. In other words, we could not prove statistically that the link between lifetime earnings between father and son is closer than that between father and daughter. See Table 7 for more details on the estimates and the full regression results.

Most studies done previously have limited themselves to estimating intergenerational earnings mobility between fathers and sons. Studies of selected countries offer a wide range of β coefficients, from 0.11 to 0.57. The β coefficient (for the son only) of Hong Kong is well above that of Finland, Sweden, Canada and Malaysia, but is lower than that of South Africa and the Great Britain (see Solon (2002) for a survey). It is very close to the estimate of Germany by Wiegand (1997).

The β coefficients based on directly-reported fathers' lifetime earnings were also calculated, but the estimates were about 0.05, which was unreasonably low. This confirmed further that the reported fathers' earnings were of poor quality. The consequence of the textbook measurement error problem is that the regression coefficients will be biased toward zero, and in this case it appears that the bias is quite severe. For this reason, the directly-reported earnings data are not used beyond this point, and the analysis makes use of imputed earnings only.

2.4 Transitional Probabilities

We grouped both the father and the child data into quintile groups according to their lifetime earnings. The probability for the child falling into different earnings quintile groups was estimated, conditional on the father's earnings quintile group. See Table 8.

The estimated probabilities should be taken cautiously, however. By restricting the sample to fathers and children between 30 and 69, with positive measure of lifetime earnings, we limited the sample size to 732, with 418 sons and 314 daughters. Grouping the observations by quintile group implied that we had approximately 140 observations in each quintile group when

all children were concerned. The problem was worse when sons and daughters were studied separately and the comparison between them might not contain much information at this stage. Hence it was not possible to study the transitional probabilities in as much detail as in Part One, since the number of usable data points was much less.

Nevertheless, we can make the following observations:

— Lifetime earnings status varied considerably among children whose fathers belonged to the bottom or second quintile group. For instance, the probabilities of falling into the second, third, fourth and top earnings quintile groups were 24%, 30%, 21% and 12% for children whose fathers were in the lowest earnings quintile group. Only 13% of the children were trapped at the bottom as their fathers were.

— Considerable variation existed also among children whose fathers belonged to the third or fourth earnings quintile group. It should be noted, however, that the chance of being in the top quintile group was much higher for those children with a fourth-quintile group-father. Those with a third-quintile group-father were instead more likely to fall into the fourth quintile group.

— For fathers at the top of the earnings distribution, however, approximately 47% of their children stayed at the top. Only 24.1% of their children were of or below the third quintile group.

— Similar patterns held for sons and daughters, when they were studied separately (for brevity, these results are not shown).

2.5 Industry, Occupation and Education

The links between lifetime industry, occupation and educational attainment of fathers and children were studied in this section. The population was divided into eight industrial categories, nine occupational categories and four educational levels. To measure lifetime industry and occupation, we used 2005 data for fathers below 60 in 2005, 2001 data for those between 61 and 64 in 2005 (below 60 in 2001), and 1996 data for those between 65 and 69 in 2005 (below 60 in 1996). The objective of this strategy was to identify fathers' industries and occupations while they were still of prime working age. We did not consider the population beyond age 69. To measure lifetime education, we used the most current data for fathers and children. Then the probability of the child falling into each different categories was estimated, conditioning on the father's category. These probabilities are given in Table 9.

2.5.1 Industry

— The estimated probabilities for the agriculture and fishing industry and the electricity, gas and water industry should be taken cautiously because very few fathers belonged o these industries.

— Compared with their fathers, a considerable proportion of the children worked either in the wholesale, retail and import/export trades, restaurants and hotels industry or the financing, insurance, real estate and business services industry. In contrast, the proportion of manufacturing, construction and transport, storage and communications workers fell significantly between the two generations.

— Female workers were more concentrated in (1) sales, restaurants and hotels and (2) personal and community service industries. Male workers had a higher chance to work in the transportation sector.

— There was considerable divergence between fathers' and children's industries. For instance, 33.98% of the children with a father engaged in manufacturing worked in the wholesale, retail and import/export trades, restaurants and hotels industry and 24.27% of them worked in the financing, insurance, real estate and business services industry. We saw no clear evidence that the child's lifetime industry was determined by his or her father's.

— We have also found no evidence that the intergenerational link between industry was stronger or weaker for daughters for two reasons. First, the sample size problem emerges when we separate the sample into sons and daughters. Second, divergence between sons' and daughters' industries may be mainly attributed to the intrinsic difference between the two genders. For instance, women are more likely to work in the wholesale, retail and import/export trades, restaurants and hotels industry. As a result, the chance of a daughter being in this industry was much higher, or at least not significantly lower than a son's chance of being in this industry, regardless of the father's industry.

2.5.2 Occupation

— Very few fathers were agricultural workers. Thus the corresponding intergenerational probability should be considered carefully. For female workers, the chances of becoming elementary workers, craftsman, or plant operators were fairly low.

— Compared with their fathers, the children were more concentrated in high-level occupations. By “high-level occupations,” we mean managers and administrators, professionals, associate professionals and clerks. Similarly, by “low-level occupation” we mean agricultural/fishery workers, craftsman, plant and machine operators and assemblers, and workers in elementary occupations.

— Very few fathers were professionals. However, it deserves attention that when fathers were professionals, virtually none of their children took up low-level occupations.

— Similarly, when fathers were managers and administrators, associate professionals and clerks, their children seldom took up low-level occupations.

— On the other hand, there was considerable divergence in children’s occupations when fathers held low-level jobs. For instance, 27.93% of the children with fathers in elementary occupations were technicians, and 21.17% of them were clerks. Their chance of holding elementary occupations themselves, however, was only 7.66%.

— The intergenerational link between occupations may not differ significantly between sons and daughters. Partly this is due to the limited sample size problem. In addition, the divergence between the two genders may be attributable to intrinsic differences in occupational choice. Women are in general more likely to be clerks, and the intergenerational probabilities for daughters to become clerks were considerably higher than those for sons, regardless of the father’s occupation. Similarly, women are seldom craftsmen, plant and machine operators and assemblers, or workers in elementary occupations. The corresponding probabilities for daughters to fall into these categories were much lower than for sons, regardless of the father’s occupation.

2.5.3 Education

— The relationship between fathers’ and children’s education can tell us something about the transmission of human capital, an important determinant of lifetime income.

— Children received more education than their fathers. Over 70% of the fathers in our sample received at most primary education. Only 2% of them received some post-secondary education and only 4.3% of them were degree holders. In contrast, 57% of the children received some secondary education, and 35% of them had some post-secondary education or were degree holders.

— In general, more highly-educated fathers tended to have more highly-educated children.

— For fathers with only primary or secondary education, however, the children still had fairly good opportunities to receive secondary or above education. For instance, among fathers with only primary education, 63.93% of their children attained secondary education, 10.24% went to post-secondary school, and 17.04% were degree holders. The chance of their children receiving only primary education as they themselves did, however, was only 8.79%.

— For fathers with post-secondary or higher education, over 50% of their children were degree holders. Around 20-30% of their children attained only secondary education, but the chances of this outcome were much lower than the children whose fathers attained only secondary education or below.

— Overall speaking, daughters were more likely to receive primary or below education than sons, regardless of the father's education. The difference was, however, insignificant.

— For fathers with primary education, the chances of receiving different levels of education were fairly similar between sons and daughters.

— For fathers with secondary or post secondary education, their daughters were more likely to be degree holders than their sons. The sons instead had a considerably higher chance of attaining secondary education.

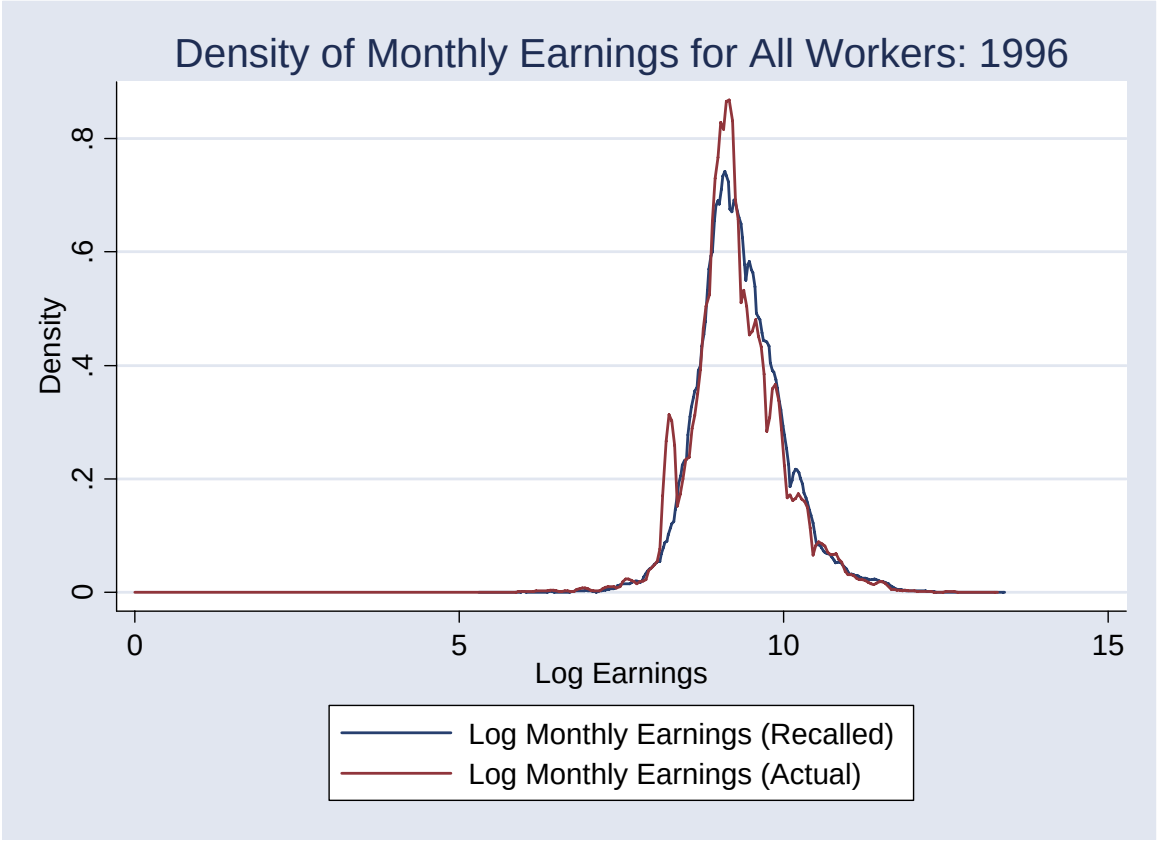
— The converse was true for degree-holding fathers. Their daughters were much less likely than their sons to attain a degree or above. This gap was mainly filled by daughters receiving some secondary education.

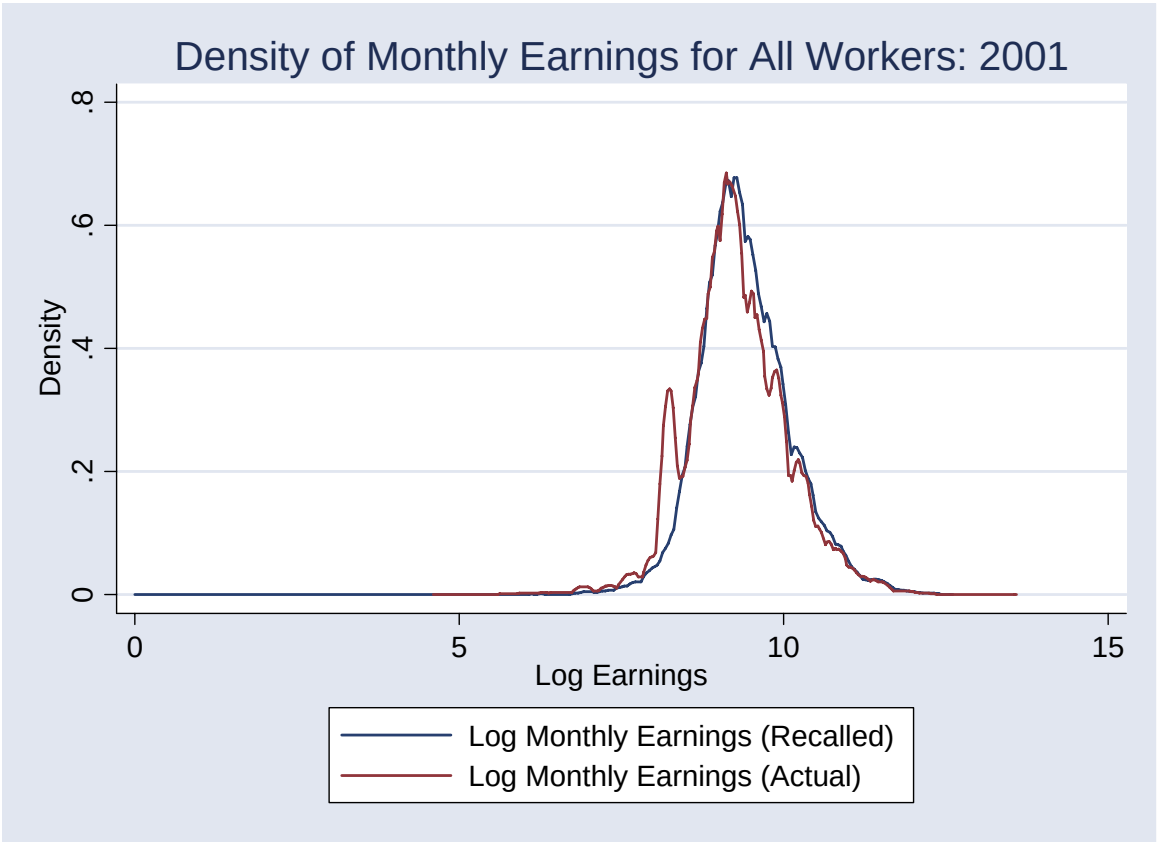
Policy Implications

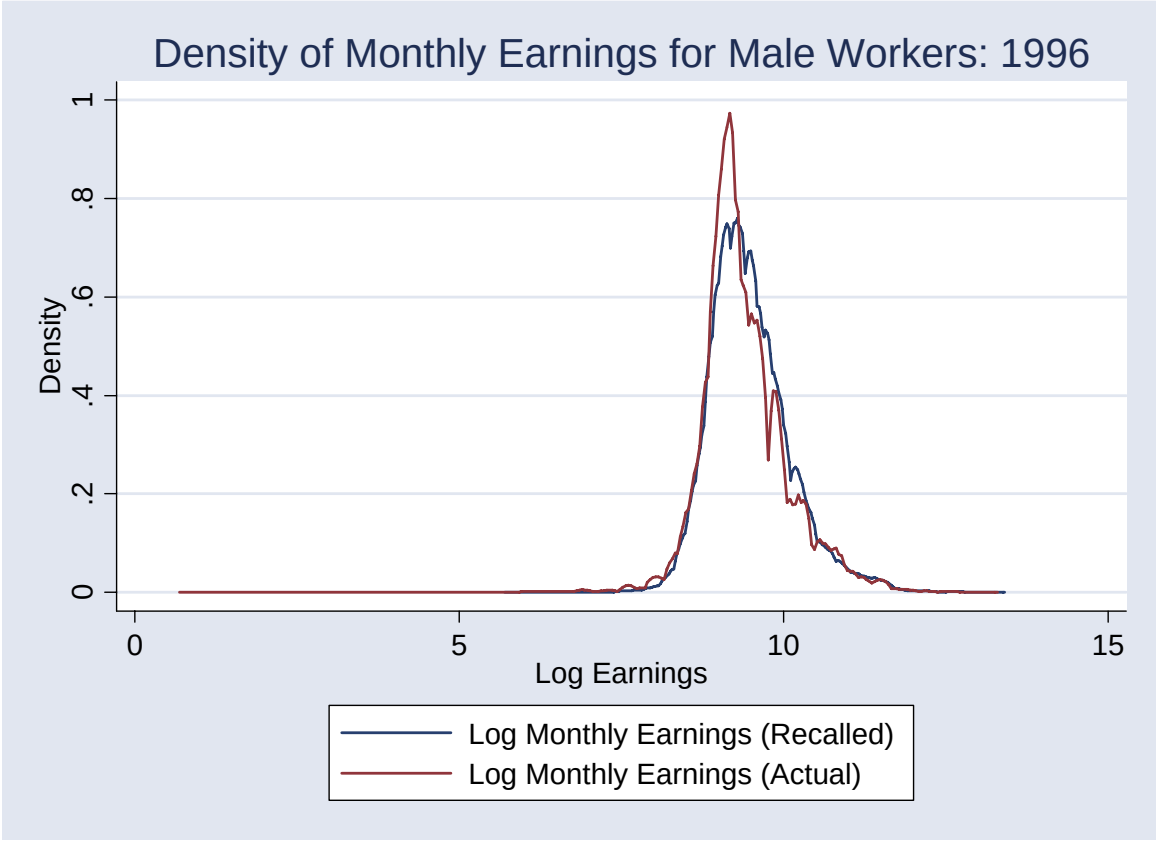
As the study indicates, education can effectively both enhance upward earnings mobility and reduce downward mobility, as well as strengthen an individual's ability to break away from intergenerational poverty. This is borne out particularly by the upward mobility observed among female workers (Section 1.4.2)and among children in those families where the household heads are less educated (Part Two). It is therefore imperative for the government to continue with its heavy investment in education. On one hand, education would help an

individual to climb up the earnings ladder and reduce the chance of moving down. On the other hand, in view of the rapidly changing technological, economic and labour market conditions, there is an increasing need to upgrade the quality of the local workforce through education and training to help improve Hong Kong's overall competitiveness.

Figure 1 Reliability of Recalled Earnings Data






Density of Monthly Earnings for Male Workers: 1996
Density
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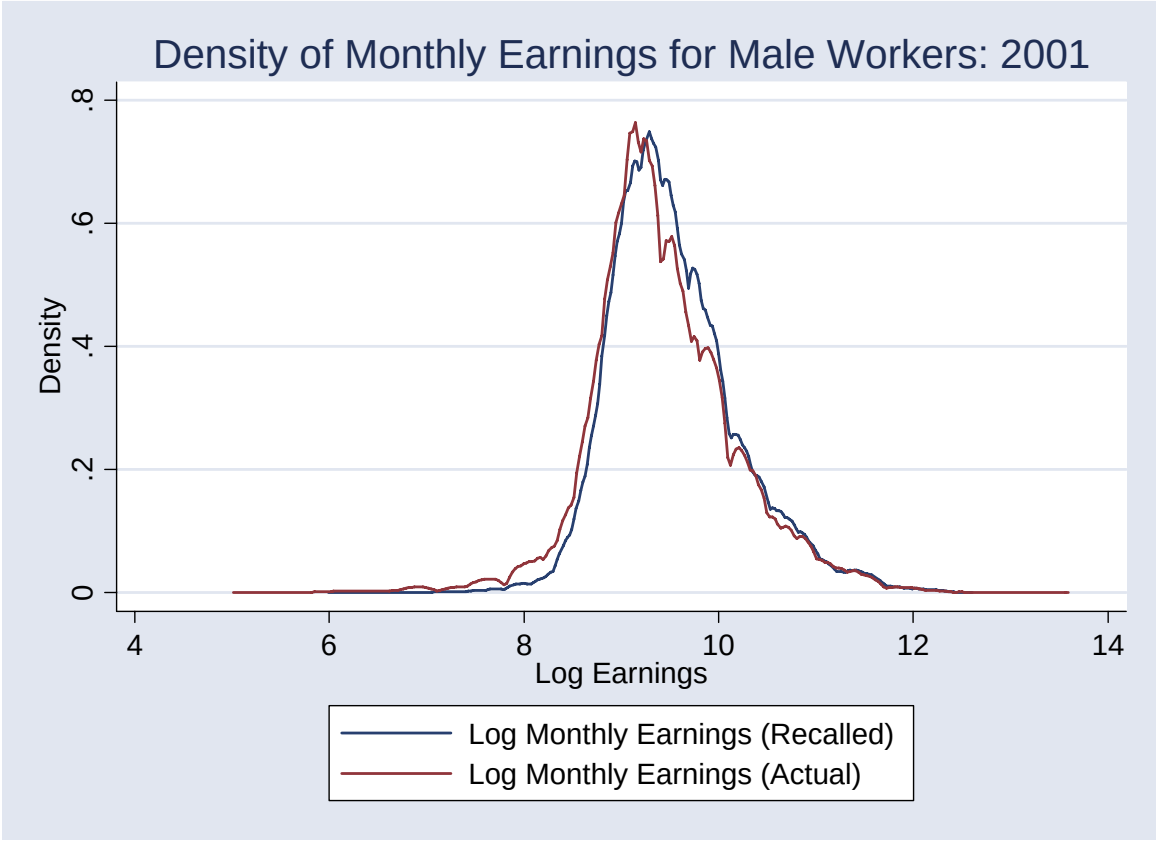
.4
.6
.8
1
0
5
10
15
Log Earnings
Log Monthly Earnings (Recalled)
Log Monthly Earnings (Actual)


Density of Monthly Earnings for Male Workers: 2001
Density
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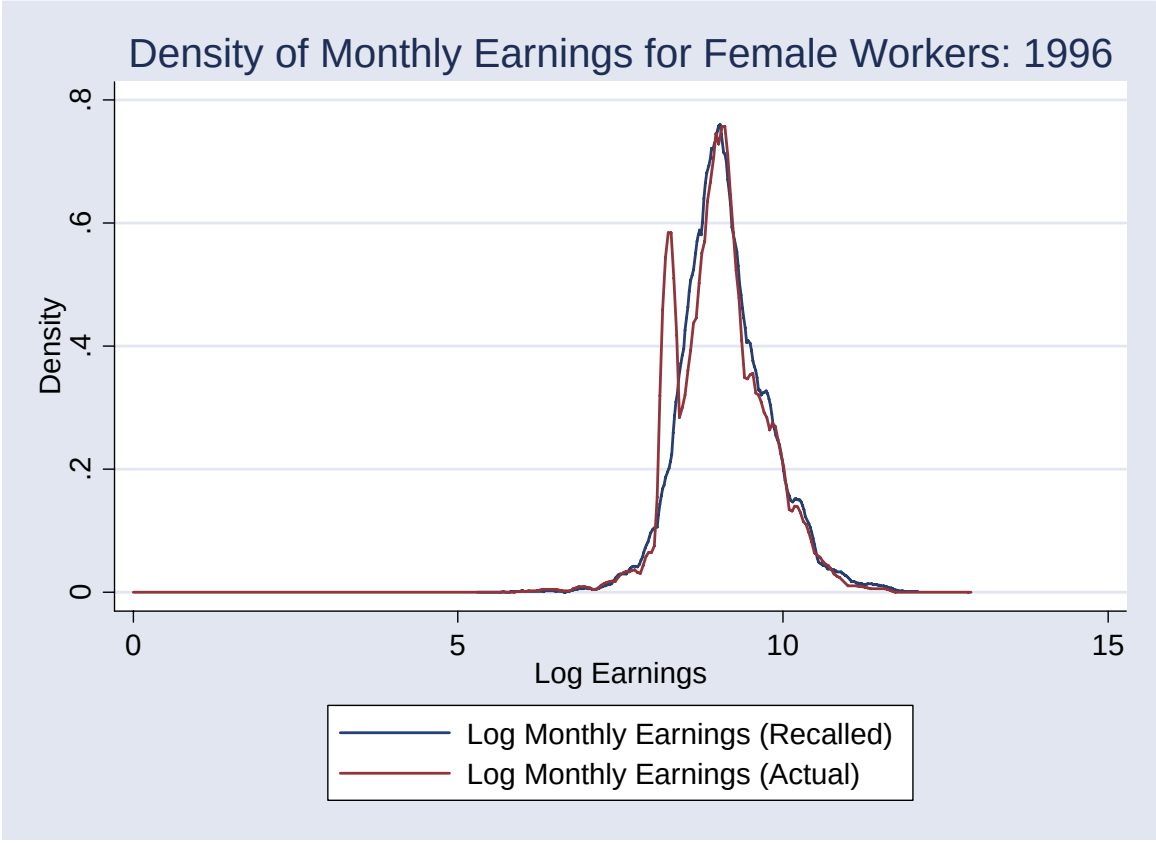
.6
.8
4
6
8
10
12
14
Log Earnings
Log Monthly Earnings (Recalled)
Log Monthly Earnings (Actual)


Density of Monthly Earnings for Female Workers: 1996
Density
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.2
.4
.6
.8
0
5
10
15
Log Earnings
Log Monthly Earnings (Recalled)
Log Monthly Earnings (Actual)

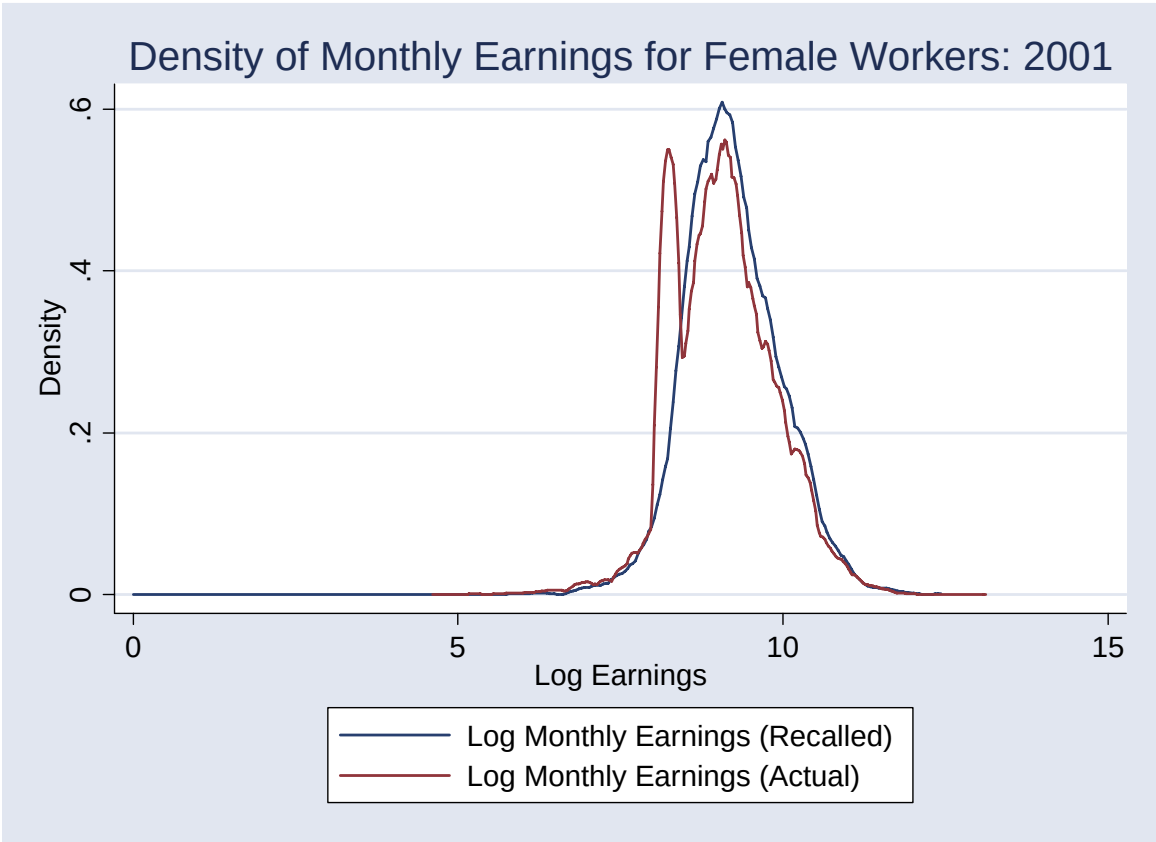
Density of Monthly Earnings for Female Workers: 2001
Density
0
.2
.4
.6
0
5
10
15
Log Earnings
Log Monthly Earnings (Recalled)
Log Monthly Earnings (Actual)

Table 1 Mobility Rates by Quintile Group

Table 1.1 Mobility Rates by Quintile Group for All Workers

Between 1996 and 2001

Quintile Group in 1996	Quintile Group in 2001				
	Bottom	2nd	3rd	4th	Top
Bottom	66.61%	25.42%	6.14%	1.83%	0
2nd	17.87%	49.47%	25.35%	6.60%	0.70%
3rd	8.34%	23.04%	40.85%	24.52%	3.25%
4th	2.66%	6.95%	18.61%	51.12%	20.65%
Top	1.35%	1.85%	4.29%	19.70%	72.81%

Between 2001 and 2005

Quintile Group in 2001	Quintile Group in 2005				
	Bottom	2nd	3rd	4th	Top
Bottom	74.40%	21.77%	3.00%	0.75%	0.08%
2nd	22.13%	49.65%	22.13%	6.01%	0.08%
3rd	9.27%	16.41%	48.47%	24.66%	1.19%
4th	4.75%	7.12%	10.43%	59.71%	17.98%
Top	1.52%	1.61%	1.61%	9.10%	86.17%

Between 1996 and 2005

Quintile Group in 1996	Quintile Group in 2005				
	Bottom	2nd	3rd	4th	Top
Bottom	58.41%	26.45%	10.36%	4.46%	0.32%
2nd	24.91%	33.89%	27.11%	11.88%	2.20%
3rd	15.69%	22.76%	25.80%	28.13%	7.63%
4th	8.49%	10.74%	17.08%	38.75%	24.95%
Top	3.37%	4.71%	5.39%	18.10%	68.43%

Overall movement

	1996-2001	2001-2005	1996-2005
Upward	23.19%	19.91%	29.14%
No	55.94%	62.23%	44.79%
Downward	20.86%	16.86%	26.07%

Table 1.2 Mobility Rates by Quintile Group for Male Workers

Between 1996 and 2001

Quintile Group in 1996	Quintile Group in 2001				
	Bottom	2nd	3rd	4th	Top
Bottom	54.40%	33.80%	9.00%	2.80%	0
2nd	16.84%	50.80%	26.27%	5.81%	0.29%
3rd	9.13%	25.32%	40.53%	22.28%	2.75%
4th	3.06%	7.78%	20.56%	51.11%	17.50%
Top	1.68%	1.91%	5.04%	21.19%	70.18%

Between 2001 and 2005

Quintile Group in 2001	Quintile Group in 2005				
	Bottom	2nd	3rd	4th	Top
Bottom	64.09%	28.38%	5.79%	1.54%	0.19%
2nd	23.88%	50.59%	20.94%	4.47%	0.12%
3rd	10.10%	18.75%	47.96%	22.00%	1.20%
4th	5.01%	7.88%	11.81%	59.07%	16.23%
Top	1.79%	2.17%	1.66%	10.23%	84.14%

Between 1996 and 2005

Quintile Group in 1996	Quintile Group in 2005				
	Bottom	2nd	3rd	4th	Top
Bottom	44.60%	33.80%	16.20%	5.20%	0.20%
2nd	25.54%	36.72%	25.69%	10.16%	1.89%
3rd	16.88%	24.73%	26.50%	25.22%	6.67%
4th	9.58%	12.92%	18.47%	37.64%	21.39%
Top	3.92%	5.49%	6.50%	20.18%	63.90%

Overall movement

	1996-2001	2001-2005	1996-2005
Upward	21.78%	19.16%	26.60%
No	53.12%	60.58%	41.54%
Downward	25.10%	20.26%	31.86%

Table 1.3 Mobility Rates by Quintile Group for Female Workers

Between 1996 and 2001

Quintile Group in 1996	Quintile Group in 2001				
	Bottom	2nd	3rd	4th	Top
Bottom	74.70%	19.87%	4.24%	1.19%	0
2nd	19.46%	47.43%	23.94%	7.83%	1.34%
3rd	6.31%	17.17%	41.67%	30.30%	4.55%
4th	1.55%	4.65%	13.18%	51.16%	29.46%
Top	0.34%	1.69%	2.03%	15.20%	80.74%

Between 2001 and 2005

Quintile Group in 2001	Quintile Group in 2005				
	Bottom	2nd	3rd	4th	Top
Bottom	82.23%	16.74%	0.88%	0.15%	0
2nd	18.79%	47.87%	24.38%	8.95%	0
3rd	7.27%	10.76%	49.71%	31.10%	1.16%
4th	4.11%	5.28%	7.04%	61.29%	22.29%
Top	0.88%	0.29%	1.47%	6.49%	90.86%

Between 1996 and 2005

Quintile Group in 1996	Quintile Group in 2005				
	Bottom	2nd	3rd	4th	Top
Bottom	67.55%	21.59%	6.49%	3.97%	0.40%
2nd	23.94%	29.53%	29.31%	14.54%	2.68%
3rd	12.63%	17.68%	23.99%	35.61%	10.10%
4th	5.43%	4.65%	13.18%	41.86%	34.88%
Top	1.69%	2.36%	2.03%	11.82%	82.09%

Overall movement

	1996-2001	2001-2005	1996-2005
Upward	25.70%	21.24%	33.64%
No	60.97%	67.94%	50.56%
Downward	13.34%	10.83%	15.80%

Table 2 Mobility Rates by Quintile Group and Age

Table 2.1 Male Workers

Age 30-39

	1996-2001	2001-2005	1996-2005
Upward	34.01%	26.94%	42.99%
No	49.45%	57.11%	35.92%
Downward	16.55%	15.94%	21.09%

Age 40-49

	1996-2001	2001-2005	1996-2005
Upward	19.13%	18.69%	24.23%
No	55.38%	62.49%	45.63%
Downward	25.49%	18.82%	30.14%

Age 50-65

	1996-2001	2001-2005	1996-2005
Upward	15.40%	13.55%	16.53%
No	53.15%	60.89%	40.81%
Downward	31.45%	25.56%	42.66%

Table 2.2 Female Workers

Age-30-39

	1996-2001	2001-2005	1996-2005
Upward	36.52%	30.10%	47.73%
No	50.76%	58.56%	38.54%
Downward	12.72%	11.34%	13.73%

Age 40-49

	1996-2001	2001-2005	1996-2005
Upward	24.30%	18.19%	30.16%
No	62.32%	71.24%	53.17%
Downward	13.38%	10.56%	16.67%

Age 50-65

	1996-2001	2001-2005	1996-2005
Upward	11.07%	12.45%	17.39%
No	74.70%	77.08%	65.02%
Downward	14.23%	10.47%	17.59%

Table 3 Mobility Rates by Quintile Group and Educational Attainment

Table 3.1 Male Workers

Primary or Below

	1996-2001	2001-2005	1996-2005
Upward	14.75%	17.56%	18.31%
No	47.81%	54.87%	35.79%
Downward	37.43%	27.57%	45.90%

Some Secondary

	1996-2001	2001-2005	1996-2005
Upward	23.65%	21.11%	29.30%
No	50.17%	57.78%	37.60%
Downward	26.18%	21.11%	33.11%

Some Post-Secondary

	1996-2001	2001-2005	1996-2005
Upward	30.42%	18.47%	32.17%
No	57.34%	66.90%	49.65%
Downward	12.24%	14.63%	18.18%

Degree or Above

	1996-2001	2001-2005	1996-2005
Upward	18.10%	12.95%	22.63%
No	73.71%	78.09%	65.52%
Downward	8.19%	8.96%	11.85%

Table 3.2 Female Workers

Primary or Below

	1996-2001	2001-2005	1996-2005
Upward	11.36%	11.69%	16.79%
No	77.04%	80.85%	69.14%
Downward	11.60%	7.46%	14.07%

Some Secondary

	1996-2001	2001-2005	1996-2005
Upward	28.50%	25.62%	39.19
No	56.11%	62.23%	43.16%
Downward	15.38%	12.15%	17.65%

Some Post-Secondary

	1996-2001	2001-2005	1996-2005
Upward	31.58%	23.21%	34.65%
No	56.58%	59.38%	48.25%
Downward	11.84%	17.41%	17.11%

Degree or Above

	1996-2001	2001-2005	1996-2005
Upward	29.23%	15.19%	32.75%
No	62.68%	79.43%	58.10%
Downward	8.10%	5.38%	9.15%

Table 4 Mobility Rates by Industry and Occupation*

	96-01			01-05			96-05		
(%)	**up**	**no**	**down**	**up**	**no**	**down**	**up**	**no**	**down**
Agriculture and Fishing	18.18	59.09	22.73	11.76	82.35	5.88	9.09	68.18	22.73
(Sample Size)	(22)			(17)			(22)		
Manufacturing	18.72	55.89	25.39	21.89	60.14	17.97	25.26	45.42	29.32
Electricity, Gas & Water	36.54	51.92	11.54	10.42	72.92	16.67	28.85	59.62	11.54
(Sample Size)	(52)			(48)			(52)		
Construction	16.14	41.68	42.17	16.72	49.53	33.75	16.97	30.15	52.88
Wholesale, Retail and Import/export Trades, Restaurants & Hotels	23.96	56.68	19.36	22.21	62.77	15.02	32.10	44.42	23.49
Transport, storage & Communications	21.84	50.96	27.20	20.56	57.32	22.13	28.74	35.38	35.89
Financing, Insurance, Real Estate and Business Services	30.00	58.00	12.00	20.91	66.86	12.23	35.50	48.50	16.00
Community, Social & Personal Services	24.55	66.53	8.91	16.15	74.09	9.76	29.80	57.52	12.67
Managers and Administrators	11.42	69.10	19.48	15.28	75.91	8.82	16.85	61.99	21.16
Professionals	19.71	75.14	5.14	10.76	81.87	7.37	20.86	70.29	8.86
Associate Professionals	29.50	51.26	19.23	26.44	59.36	14.20	38.90	38.29	22.80
Clerks	37.50	50.73	11.77	27.17	58.96	13.87	46.56	37.92	15.52
Service Workers & Shop Sales Workers	22.59	57.53	19.88	19.59	63.89	16.52	28.15	46.54	25.31
Skilled Agricultural/ Fishery Workers	21.05	57.89	21.05	13.33	80.00	6.67	10.53	68.42	21.05
(Sample Size)	(19)			(15)			(19)		
Craft and Related Workers	18.59	44.24	37.17	18.79	51.89	29.31	22.12	32.59	45.29
Plant and Machine Operators and Assemblers	16.85	53.20	29.94	18.44	53.67	27.89	20.47	39.97	39.55
Elementary Occupations	15.85	67.08	17.08	12.76	72.55	14.69	20.77	56.31	22.92

* The estimated probabilities for the agriculture industry should be taken cautiously because of small sample.

Table 5 Initial Probability of Being in the Lowest Earnings Quintile Group, by Workers' Characteristics

Table 5.1 By Sex

	1996	2001	2005
Male	13.09%	13.56%	17.67%
Female	35.08%	31.64%	31.88%

Table 5.2 By Age and Education

		Male			Female		
		1996	**2001**	**2005**	**1996**	**2001**	**2005**
Age	**30-39**	16.55%	11.71%	11.91%	22.80%	15.37%	15.49%
	40-49	9.00%	9.63%	12.33%	33.45%	30.87%	31.22%
	50-65	15.56%	20.08%	29.11%	57.11%	58.50%	58.70%
Edu	**Primary**	19.67%	25.10%	36.09%	74.32%	75.37%	72.13%
	Secondary	14.59%	13.75%	17.51%	34.17%	28.76%	30.49%
	Post-Secondary	3.85%	1.74%	6.85%	8.77%	6.25%	9.69%
		(11/286)	(5/287)	(22/321)	(20/228)	(14/224)	(22/227)
	Degree /Above	0.86%	1.59%	3.03%	4.23%	2.85%	2.99%
		(4/464)	(8/502)	(19/628)	(12/284)	(9/316)	(15/501)

Table 5.3 By Occupation

		1996	2001	2005
Occupation	**Managers and Administrators**	0.74%	1.73%	2.81%
	Professionals	0.51%	2.27%	1.17%
	Associate Professionals	7.91%	6.12%	6.64%
	Clerks	29.36%	19.89%	18.08%
	Service Workers & Shop Sales Workers	27.48%	26.24%	27.69%
	Skilled Agricultural/Fishery Workers (No. of Observations)	52.63% (10/19)	66.67% (10/15)	53.33% (8/15)
	Craft & Related Workers	14.14%	15.15%	19.79%
	Plant and Machine Operators & Assemblers	26.67%	23.73%	28.33%
	Elementary Occupations	52.22%	57.75%	63.55%

Table 5.4 By Industry

		1996	2001	2005
Industry	**Agriculture (No. of Observations)**	50.00% (11/22)	64.71% (11/17)	52.63% (10/19)
	Manufacturing	34.86%	30.62%	28.37%
	Electricity, Gas & Water (No. of Observation)	3.85% (2/52)	6.25% (3/48)	12.77% (6/42)
	Construction	9.39%	13.72%	23.41%
	Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	26.73%	23.60%	21.87%
	Transport, Storage & Communications	13.52%	15.96%	22.16%
	Financing, Insurance, Real Estate and Business Services	14.20%	15.70%	22.09%
	Community, Social & Personal Services	18.10%	19.15%	22.41%

Table 6 Probability of Remaining in the Lowest Earnings Quintile Group, by Workers' Characteristics

Percentage of Workers at the Bottom Quintile Group in the Initial Period being Trapped at the Bottom in the Ending Period

Table 6.1 By Age, Sex and Education

	Male Workers			Female Workers		
	96-01	**01-05**	**96-05**	**96-01**	**01-05**	**96-05**
Overall	54.40%	64.09%	44.60%	74.70%	82.23%	67.55%
Age in 2005						
30-39	47.56%	48.28%	29.27%	50.28%	66.39%	45.30%
40-49	50.35%	58.17%	41.96%	75.79%	83.27%	68.42%
50-65	63.21%	75.10%	59.59%	88.93%	97.84%	80.62%
Primary / Below	64.58%	73.77%	58.33%	88.70%	90.43%	82.72%
Some Secondary	51.61%	59.01%	39.88%	67.54%	75.21%	58.77%
Post-Secondary	9.09%	60%	27.27%	40.08%	71.43%	45.00%
(No.)	(1)	(3)	(3)	(8)	(10)	(9)
Degree or Above	50%	50%	0	33.33%	100%	33.33%
(No.)	(2)	(4)	(0)	(4)	(9)	(4)

Table 6.2 By Industry

Industry	96-01	01-05	96-05
Agriculture and Fishing	81.82%	81.82%	90.91%
(No. of Observations)	(9/11)	(9/11)	(10/11)
Manufacturing	76.4%	73.4%	66.29%
Electricity, Gas & Water	0	0	0
(No. of Observations)	(0/2)	(0/3)	(0/2)
Construction	50.88%	60.92%	47.37%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	67.77%	74.43%	59.22%
Transport, Storage and Communications	55.66%	70.45%	47.17%
Financing, Insurance, Real Estate and Business Services	46.49%	80.43%	46.49%
Community, Social & Personal Services	72.68%	78.70%	60.66%

Table 6.3 By Occupation

Occupation	96-01	01-05	96-05
Managers and Administrators	75.00%	63.64%	100.00%
(No. of Observations)	(3/4)	(7/11)	(4/4)
Professionals	50%	50%	50%
(No. of Observations)	(1/2)	(1/2)	(1/2)
Associate Professionals	48.35%	53.62%	26.37%
Clerks	49.82%	63.28%	42.05%
Service Workers & Shop Sales Workers	70.98%	75.24%	63.84%
Skilled Agricultural/Fishery Workers	80.00%	80.00%	80.00%
(No. of Observations)	(8/10)	(8/10)	(8/10)
Craft & Related Workers	50.93%	58.33%	42.59%
Plant and Machine Operators & Assemblers	75.00%	72.96%	67.19%
Elementary Occupations	82.40%	86.47%	75.66%

Table 7 Correlation of Lifetime Earnings

Correlation of lifetime earnings between fathers and children

	All Workers	Sons	Daughters
log father's lifetime earnings	.28308	.35886	.17775
	(.05170)	(.06968)	(.07696)
Age	.58892	.58953	.62875
	(.12066)	(.16627)	(.17504)
age square	-.00828	-.00813	-.00907
	(.00169)	(.00233)	(.00247)
father's age	.02574	.11585	-.06053
	(.66816)	(.93260)	(.94954)
father's age square	-.00025	-.00103	.00047
	(.00583)	(.00814)	(.00829)
_cons	-4.08141	-7.56140	-.96994
	(19.24838)	(26.81842)	(27.41462)

Table 8 Transitional Probability---Based on Estimated Father's Lifetime Earnings Data

The chance of falling into different earnings quintile groups conditional on father's lifetime earnings quintile group

	Lifetime Earnings Quintile Group of the Child					
Lifetime Earnings Quintile Group of the Father		Bottom	Second	Third	Fourth	Top
	Bottom	13%	24%	30%	21%	12%
	(obs.)	(13)	(24)	(30)	(21)	(12)
	Second	8.41%	23.62%	27.18%	22.01%	18.77%
	(obs.)	(26)	(73)	(84)	(68)	(58)
	Third	11.97%	19.72%	22.54%	28.17%	17.61%
	(obs.)	(17)	(28)	(32)	(40)	(25)
	Fourth	7.14%	20.41%	20.41%	18.37%	33.67%
	(obs.)	(7)	(20)	(20)	(18)	(33)
	Top	4.82%	4.82%	14.46%	28.92%	46.99%
	(obs.)	(4)	(4)	(12)	(24)	(39)

Table 9 Correlation of Industry, Occupation and Educational Level between Fathers and Children[#]

Table 9.1 Correlation of industry between father and child

		Lifetime Industry of Child							
		Agri	**Manu**	**Elec**	**Cons**	**Whol**	**Tran**	**Fina**	**Soci**
Lifetime Industry of Father	**Agriculture and Fishing**	16.67%	8.33%	0.00%	41.67%	25.00%	8.33%	0.00%	0.00%
	Manufacturing	0.97%	7.77%	1.94%	6.80%	33.98%	14.56%	24.27%	9.71%
	Electricity, Gas & Water	0.00%	0.00%	0.00%	16.67%	33.33%	0.00%	33.33%	16.67%
	Construction	0.00%	9.20%	0.00%	17.24%	27.59%	6.90%	21.84%	17.24%
	Wholesale, Retails and Import/Export Trades, Restaurants and Hotels	0.00%	6.15%	0.56%	5.59%	34.08%	10.06%	27.93%	15.64%
	Transport, Storage and Communications	0.00%	5.56%	0.79%	2.38%	36.51%	15.08%	18.25%	21.43%
	Financing, Insurance, Real Estate and Business Services	0.00%	7.75%	0.78%	6.20%	31.01%	6.98%	22.48%	24.81%
	Community, Social and Personal Services	0.00%	9.57%	0.00%	9.57%	24.35%	7.83%	26.96%	21.74%

[#] The estimated probabilities for the agriculture industry and electricity, gas and water industry should be taken cautiously because of small sample.

Table 9.2 Correlation of industry between father and son

		Lifetime Industry of Son							
		Agri	**Manu**	**Elec**	**Cons**	**Whol**	**Tran**	**Fina**	**Soci**
Lifetime Industry of Father	**Agriculture and Fishing**	18.18%	0.00%	0.00%	45.45%	27.27%	9.09%	0.00%	0.00%
	Manufacturing	1.69%	8.47%	3.39%	8.47%	28.81%	20.34%	18.64%	10.17%
	Electricity, Gas & Water	0.00%	0.00%	0.00%	33.33%	33.33%	0.00%	0.00%	33.33%
	Construction	0.00%	10.00%	0.00%	26.00%	26.00%	6.00%	22.00%	10.00%
	Wholesale, Retail and Import/export Trades, Restaurants and Hotels	0.00%	5.32%	1.06%	8.51%	35.11%	12.77%	26.60%	10.64%
	Transport. Storage and Communications	0.00%	4.55%	0.00%	3.03%	31.82%	19.70%	22.73%	18.18%
	Financing, Insurance, Real Estate and Business Services	0.00%	10.96%	0.00%	10.96%	30.14%	10.96%	20.55%	16.44%
	Community, Social and Personal Services	0.00%	10.67%	0.00%	14.67%	14.67%	10.67%	28.00%	21.33%

Table 9.3 Correlation of industry between father and daughter

		Lifetime Industry of Daughter							
		Agri	**Manu**	**Elec**	**Cons**	**Whol**	**Tran**	**Fina**	**Soci**
Lifetime Industry of Father	**Agriculture and Fishing**	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Manufacturing	0.00%	6.82%	0.00%	4.55%	40.91%	6.82%	31.82%	9.09%
	Electricity, Gas & Water	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%
	Construction	0.00%	8.11%	0.00%	5.41%	29.73%	8.11%	21.62%	27.03%
	Wholesale, Retail & Import/export Trades, Restaurants and Hotels	0.00%	7.06%	0.00%	2.35%	32.94%	7.06%	29.41%	21.18%
	Transport, Storage and Communications	0.00%	6.67%	1.67%	1.67%	41.67%	10.00%	13.33%	25.00%
	Financing Insurance, Real Estate and Business Services	0.00%	3.57%	1.79%	0.00%	32.14%	1.79%	25.00%	35.71%
	Community, Social & Personal Services	0.00%	7.50%	0.00%	0.00%	42.50%	2.50%	25.00%	22.50%

Table 9.4 Correlation of occupation between father and child

	Lifetime Occupation of Child									
		mana	**prof**	**asso**	**cler**	**sswk**	**agri**	**craf**	**plan**	**elem**
Lifetime Occ of Father	**Managers and Administrators**	26.19%	16.67%	33.33%	10.71%	2.38%	0.00%	4.76%	1.19%	4.76%
	Professionals	22.22%	22.22%	22.22%	11.11%	22.22%	0.00%	0.00%	0.00%	0.00%
	Associate Professionals	15.66%	18.07%	28.92%	21.69%	8.43%	0.00%	3.61%	2.41%	1.20%
	Clerks	3.45%	20.69%	48.28%	20.69%	3.45%	0.00%	0.00%	3.45%	0.00%
	Service Workers and Shop Sales Workers	6.41%	11.54%	29.49%	16.67%	17.95%	0.00%	2.56%	6.41%	8.97%
	Skilled Agricultural/Fishery Workers	9.09%	0.00%	0.00%	9.09%	9.09%	9.09%	18.18%	0.00%	45.45%
	Craft and Related Workers	6.36%	7.27%	29.09%	20.00%	16.36%	0.91%	12.73%	5.45%	1.82%
	Plant and Machine Operators and Assemblers	10.77%	8.46%	28.46%	16.92%	12.31%	0.77%	9.23%	6.92%	6.15%
	Elementary Occupations	4.50%	5.86%	27.93%	21.17%	12.61%	0.00%	10.36%	9.91%	7.66%

Table 9.5 Correlation of occupation between father and son

	Lifetime Occupation of Son									
Lifetime Occ of Father		mana	prof	asso	cler	sswk	agri	Craf	plan	elem
	Managers and Administrators	23.53%	25.49%	25.49%	5.88%	3.92%	0.00%	7.84%	1.96%	5.88%
	Professionals	40.00%	20.00%	20.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%
	Associate Professionals	10.00%	22.50%	30.00%	12.50%	12.50%	0.00%	7.50%	5.00%	0.00%
	Clerks	6.67%	20.00%	60.00%	0.00%	6.67%	0.00%	0.00%	6.67%	0.00%
	Service Workers and Shop Sales Workers	9.30%	9.30%	25.58%	6.98%	20.93%	0.00%	4.65%	9.30%	13.95%
	Skilled Agricultural/ Fishery Workers	10.00%	0.00%	0.00%	0.00%	10.00%	10.00%	20.00%	0.00%	50.00%
	Craft and Related Workers	8.06%	11.29%	19.35%	6.45%	17.74%	1.61%	22.58%	9.68%	3.23%
	Plant and Machine Operators and Assemblers	13.16%	14.47%	22.37%	6.58%	10.53%	1.32%	14.47%	10.53%	6.58%
	Elementary Occupations	5.43%	2.33%	29.46%	6.98%	13.18%	0.00	17.83%	14.73%	10.08%

Table 9.6 Correlation of occupation between father and daughter

	Lifetime Occupation of Daughter									
Lifetime Occ of Father		mana	prof	asso	cler	sswk	agri	craf	plan	elem
	Managers and Administrators	30.30%	3.03%	45.45%	18.18%	0.00%	0.00%	0.00%	0.00%	3.03%
	Professionals	0.00%	25.00%	25.00%	25.00%	25.00%	0.00%	0.00%	0.00%	0.00%
	Associate Professionals	20.93%	13.95%	27.91%	30.23%	4.65%	0.00%	0.00%	0.00%	2.33%
	Clerks	0.00%	21.43%	35.71%	42.86%	0.00%	0.00%	0.00%	0.00%	0.00%
	Service Workers and Shop Sales Workers	2.86%	14.29%	34.29%	28.57%	14.29%	0.00%	0.00%	2.86%	2.86%
	Skilled Agricultural/ Fishery Workers	0.00%	0.00%	0.00%	100.%	0.00%	0.00%	0.00%	0.00%	0.00%
	Craft and Related Workers	4.17%	2.08%	41.67%	37.50%	14.58%	0.00%	0.00%	0.00%	0.00%
	Plant and Machine Operators and Assemblers	7.41%	0.00%	37.04%	31.48%	14.81%	0.00%	1.85%	1.85%	5.56%
	Elementary Occupations	3.23%	10.75%	25.81%	40.86%	11.83%	0.00%	0.00%	3.23%	4.30%

Table 9.7 Correlation of educational attainment between fathers and children

		Educational Attainment of Child			
		Primary / Below	Some Secondary	Post Secondary	Degree /Above
Educational Attainment of Father	Primary/ Below	8.79%	63.93%	10.24%	17.04%
	Some Secondary	2.12%	47.00%	15.31%	35.57%
	Post Secondary	1.41%	30.99%	16.90%	50.70%
	Degree /Above	1.91%	24.84%	9.55%	63.69%

Table 9.8 Correlation of educational attainment between fathers and sons

		Educational Attainment of Son			
		Primary / Below	Some Secondary	Post Secondary	Degree /Above
Educational Attainment of Father	Primary/ Below	7.98%	64.03%	10.80%	17.19%
	Some Secondary	0.94%	51.41%	13.15%	34.51%
	Post Secondary	0.00%	34.21%	18.42%	47.37%
	Degree /Above	1.43%	14.29%	8.57%	75.71%

Table 9.9 Correlation of educational attainment between fathers and daughters

		Educational Attainment of Daughter			
		Primary / Below	Some Secondary	Post Secondary	Degree /Above
Educational Attainment of Father	Primary/ Below	9.65%	63.83%	9.65%	16.88%
	Some Secondary	3.31%	42.55%	17.49%	36.64%
	Post Secondary	3.03%	27.27%	15.15%	54.55%
	Degree /Above	2.30%	33.33%	10.34%	54.02%