

Special Topic Enquiry on Earnings Mobility

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Introduction

The objective of this study is to examine earnings mobility and intergenerational earnings mobility in Hong Kong. It consists of two parts. Part One, which focuses on earnings mobility, examines the relationship between workers' current and past earnings, as well as factors that might influence this relationship. Part Two, which focuses on intergenerational earnings mobility, examines the relationship between parents' and children's lifetime earnings, from the perspectives of both mothers and fathers.

Part One -- Earnings Mobility

- 1.1 Part One of the Special Topic Enquiry is an update of two prior studies of earnings mobility in Hong Kong. The first, carried out by Dr. Alan Siu of the University of Hong Kong (HKU) in 2001 (2001 study), made use of survey data that had been collected in the fourth quarter of 2000. The second, carried out by Dr. James Vere of HKU in 2006 (2006 study), made use of survey data that were collected in the fourth quarter of 2005. The study is now in its third round, and this report presents an analysis of the situation in the fourth quarter of 2008. This report also presents the changes that have occurred since the last two rounds. The target population analysed in this part of the study is the set of people in Hong Kong who were between the ages of 30 and 65 in 2008, currently employed in the fourth quarter of 2008, and also in 1998 and 2003.
- 1.2 "Earnings mobility" is the term used to describe the relationship between an individual's current and past earnings. If current earnings are very similar to past earnings, and there is not much chance to earn more or less than before, earnings mobility is very low. However, if there is a good chance of earning more or less than before, then earnings mobility is very high.
- 1.3 Upward earnings mobility is a key characteristic of a harmonious and stable society. When considering a ten-year horizon, the overall picture of earnings mobility in Hong Kong is positive. Between 1998 and 2008, 33% of workers moved to a higher earnings quintile, and only 20% moved to a lower earnings quintile (Table 1.1).

- 1.4 When compared to the results of the 2006 study, overall earnings mobility in Hong Kong has declined. However, the changes have been relatively balanced. At the top end, it has become more difficult to advance to a higher earnings quintile. For instance, according to the 2006 study, the probability of moving from the fourth earnings quintile to the top quintile between 2001 and 2005 was 18%. Between 2003 and 2008, this probability was 13%. This is especially true for those who were employed by the financial industry, which, given recent events in the financial market, is quite understandable. However, the reverse has occurred at the low end of the earnings distribution. According to the 2006 study, the probability of moving from the second earnings quintile to a higher earnings quintile between 2001 and 2005 was 28%. Between 2003 and 2008, this probability was 36%. From a social welfare perspective, it is good that the prospects of the least fortunate in society have improved (Table 1.1).
- 1.5 Education is a very important determinant of upward earnings mobility, especially at young ages (i.e., between ages 30 to 39). Beyond age 39, education no longer contributes materially to upward mobility, but it remains an important defence against downward mobility at any age. Moreover, those in professional occupations were able to shield themselves from at least some of the negative changes at the top of the earnings distribution. By contrast, the downward mobility rates of managers and administrators were more than twice as high. These two observations are not unrelated; in practice, they show that holding a specialized, in-demand skill is an important protection against economic ups and downs. Further, education reduces both the probability that one will fall to the lowest earnings quintile and, once there, the probability that one will remain in that quintile.
- 1.6 Finally, Part One also examined whether or not the Government's Continuing Education Fund (CEF) has a discernable effect on earnings mobility. Although there may be some positive effect, this effect was not statistically significant after taking into account the fact that participants are not a random selection from the population ($p = 0.74$). Respondents were selected randomly from the Hong Kong population in the STE, albeit the relatively small sample on persons having CEF identified in the STE which does not support detailed analysis. For a similar study in future, a statistical survey on a sufficiently large sample on persons having CEF would be preferred so as to support detailed analysis.

1.1 Data Reliability

Comparisons of Earnings Densities

- 1.7 Since the analysis of earnings mobility depends on the ability of respondents to accurately report their employment earnings from five and ten years ago (i.e., in 2008 they must have been able to recall their earnings from 2003 and 1998), it is important to check whether these data are accurate and consistent with contemporaneously-collected data from past years.
- 1.8 One way of doing so is to compare a graph of recalled earnings from the STE data with a graph of actual earnings from General Household Survey (GHS) data from the relevant years. The graphs are earnings densities, which describe the proportion of the population at each earnings level. These comparisons--which were carried out for the whole population, and also separately for men and women--are given in Figure 1. As with the 2001 and 2006 studies, the graphs are quite similar to one another, and there do not appear to be any obvious biases in the recalled data.

Comparisons Using Earnings Models

- 1.9 The above checks do not take into account the relationship between earnings and other demographic characteristics, such as age, education, industry or occupation. If one part of the population tends to over-report recalled earnings, but another tends to under-report recalled earnings, then the biases would cancel out and the above method would not reveal any discrepancy. To check if there are any recall biases of this type, two earnings models were estimated with both the recalled and the actual data. The first model was a censored regression model of respondents' log earnings. The second model was an ordered probit model of respondents' earnings quintiles.
- 1.10 A censored regression model is like an ordinary linear regression model, except that it is designed especially for use with truncated data. The STE and GHS data are truncated because exact earnings are not known. Instead, what is known is that earnings fall within a certain range (e.g., between HK\$10,000 and HK\$10,999 per month). Because employment earnings are reported in this form, it is more appropriate to use a censored regression model than an ordinary linear regression model.

- 1.11 An ordered probit model is a multiple variable model that predicts the chance that one of several outcomes will occur. This type of model is appropriate when the possible outcomes have a natural ordering. In this case, the use of an ordered probit model is appropriate because there is a one-to-one relationship between earnings and earnings quintiles--as one's earnings increase, one's earnings quintile will also increase. All together, there are five "outcomes", which correspond to the five earnings quintiles.
- 1.12 For the 2003 recalled data, neither of these models revealed any bias in recalled earnings after controlling for respondents' demographic characteristics. More specifically, chi-squared tests failed to reject the null hypothesis of no bias at any conventional significance level (for the censored regression model, $p = 0.63$; for the ordered probit model, $p = 0.73$).
- 1.13 For the 1998 recalled data, the models indicated the possibility of negative bias in the recalled earnings. According to the censored regression model, recalled earnings in the STE data tended to be about 6.3% less than the actual earnings of comparable respondents from the GHS data. In the ordered probit model, there was a similar tendency for the STE earnings quintiles to be too low¹. Because of this, it is important to understand why this bias exists and whether or not it is problematic for the analysis that follows. There are two main explanations for why a negative bias might result. The first is that (a) respondents are accurately reporting their job characteristics, but under-reporting their earnings. The second is that (b) respondents are over-reporting their job characteristics, but accurately reporting their earnings.
- 1.14 Fortunately, the data are most consistent with hypothesis (b). When comparing the educational distribution of the 1998 GHS respondents and the 2008 STE respondents, there is a tendency for the STE respondents to report higher levels of education, notwithstanding that both samples are from the same population (i.e., the Hong Kong working population, in 1998, between the ages of 20 and 55). For instance, the probability that an STE respondent will report having received tertiary education in 1998 is 24.1%, while the corresponding probability for GHS respondents is only 17.7%. This is apparent from the table below. One possible reason for the difference is that the two

¹ After controlling for demographic characteristics, STE respondents were 1.3% more likely than comparable GHS respondents to put themselves in the lowest quintile; 1.2% more likely to put themselves in the second-lowest quintile; 0.2% less likely to put themselves in the middle quintile; 1.7% less likely to put themselves in the second-highest quintile; and 0.6% less likely to put themselves in the highest quintile.

surveys do not reflect the same cohort in 1998. The GHS is based on the population residing in Hong Kong in 1998 whereas the STE is based on the recalled data of Hong Kong population in 2008. The cohort for the GHS and STE are not exactly the same because of the inflow of new arrivals and expatriates and the outflow of emigrants and deaths between 1998 and 2008.

Education Level	% of population in 1998 (according to STE data)	% of population in 1998 (according to GHS data)
No Schooling	1.2	1.9
Primary	16.8	20.0
Secondary	51.9	56.5
Matriculation	6.0	3.9
Tertiary (non-degree)	9.6	4.3
Tertiary (degree)	12.1	11.9
Tertiary (post-graduate)	2.4	1.5

1.15 A similar pattern can be observed in the occupational distributions. A comparison of the occupational distributions is presented below:

Occupation	% of population in 1998 (according to STE data)	% of population in 1998 (according to GHS data)
Managers and administrators	11.2	8.1
Professionals	6.5	5.9
Associate professionals	19.9	16.0
Clerks	16.6	18.9
Service and shop sales workers	13.1	14.3
Craft and related workers	11.5	11.0
Plant and machine operators and assemblers	8.7	8.6
Elementary occupations	11.4	16.9
Others	1.1	0.3

1.16 The key observation from the above table is that, for some reason, STE respondents tended to report higher-level occupations than one would have expected. The STE respondents were more likely to say that they were working in higher-skilled jobs such as associate professionals and managers and administrators and less likely to say that they were working in elementary occupations. It suggests that the problem with the model is with recalled occupations, not with recalled earnings.

Conclusions Regarding Data Reliability

- 1.17 When respondents in the STE data were asked about their earnings and the jobs they held in 2003, their answers were consistent with the answers provided in 2003 by comparable respondents in the GHS data. Although several different checks were carried out, none of these checks yielded any measurable recall bias.
- 1.18 When the STE respondents were asked about 1998, however, there was some tendency for them to over-report their job characteristics and past educational attainment. While their actual earnings were accurately reported, an unusually high number of them seem to have regarded themselves as managers and professionals ten years ago, or to have received non-degree tertiary education.
- 1.19 Since the actual earnings figure is accurate, the problems that this bias might create are limited in scope. The recalled data of five years ago are still fully reliable because the analysis relies mostly on respondents' reported past earnings, not their reported past occupations. However, there is some possibility that the calculations of social mobility over the past ten years might underestimate the degree of upward social mobility. For example, consider a person who was in an elementary occupation ten years ago, but in a clerical occupation today. If this person claimed to have always been in a clerical occupation, then the degree of upward social mobility for people in elementary occupations will be underestimated.

1.2 Correlation of Earnings over Time

- 1.20 The standard measure of earnings mobility is the correlation between log earnings in two different years of interest. When the log earnings are highly correlated across years, it means that earnings mobility is low. Alternatively, when the correlation is low, it means that earnings mobility is high.
- 1.21 In the 2001 and 2006 studies, exact data on recalled earnings were available, and so the correlation could be calculated as the within-sample correlations of log earnings over the relevant years. However, due to newly imposed confidentiality restrictions, these exact data are no longer available in current round of study; they were released in categorical form. Therefore, it was necessary to estimate this correlation by using maximum

likelihood methods² to fit a lognormal distribution to the censored data and then determine the correlation from the resulting estimates. The correlations have the same interpretation as in prior studies, although unlike prior results, the validity of the estimates depends on the assumption that logarithmic earnings are normally distributed. In practice, however, this approximation is usually reasonable where earnings are concerned.

- 1.22 Calculations of the correlations of log earnings of respondents between various years are given in Tables 0.1, 0.2, and 0.3. The periods of interest are 1998-2003, 2003-2008, and 1998-2008.
- 1.23 Tables 0.1 and 0.2 show that the correlation of earnings across years tends to be lower for men than for women. This finding is expected because women tend to choose more stable occupations and switch jobs less often than men. In addition, the correlation measured across a ten-year horizon is lower than the correlation measured across a five-year horizon. This is also normal, because it is more likely that someone will change jobs over ten years than over five years.
- 1.24 The correlations in Tables 0.1, 0.2 and 0.3 are higher than analogous correlations that were measured in the 2001 and 2006 studies. By way of comparison, the correlation between log earnings in 2003 and 2008 for the whole population (i.e., workers between the ages of 30 and 65 in 2008, with positive earnings in 1998, 2003, and 2008) was 0.87. The correlation for the period 2001-2005 (from the 2006 study) was 0.84, and the correlation for the period 1996-2000 (from the 2001 study) was 0.80. Moreover, the correlation for 1991-1996 (also from the 2001 study) was 0.77. Since a higher correlation corresponds to lower earnings mobility, it is apparent that there is a long-term trend of *declining* earnings mobility in Hong Kong.
- 1.25 Table 0.1 also includes estimates of the correlation between log earnings across the periods of interest for additional demographic groups. When comparing the periods 1998-2003 and 2003-2008, the movement of earnings mobility in terms of key socioeconomic characteristics is summarised below:

² Maximum likelihood estimation is a method of estimation where one calculates the probability of observing the data, given that the parameter to be estimated has a certain value. One then chooses the parameter estimate to maximize this probability. Intuitively, this can be thought of as choosing the "most likely" parameter value, given the data that have been collected. Results similar to those in Table 0.1 were obtained from the exact data, except for those specific to elementary occupations and "other" occupations for which there were a small number of observations.

- Age - earnings mobility fell the most for workers in their 30s. This is expected because earnings increase most rapidly in the early years of one's career.
- Education - earnings mobility increased for workers with the highest education (i.e. those with a degree or above), but decreased for all other groups.
- Industry - earnings mobility declined the most rapidly in the manufacturing; construction; and financing, insurance, real estate and business services sectors³.
- Occupations - earnings mobility fell the most for clerks, followed by associate professionals. On the other hand, earnings mobility increased for plant and machine operators and assemblers.⁴

1.26 The reduction in earnings mobility within the finance sector is cause for concern. In its natural state, the finance sector is a very dynamic segment of the economy. However, the correlation of 0.89 for the period 2003-2008 is unusually high. In fact, it is comparable to the correlation of 0.91 for the community, social and personal services sector. Since "community, social and personal services" includes the education sector and other very stable sectors, it is remarkable that mobility within these two sectors has been similar over the past five years. This result may reflect the adverse effects of the financial tsunami; since many firms in the finance sector are freezing their headcount, it is natural that job changes are much less frequent than they were before.

1.27 In addition to these results, Tables 0.2 and 0.3 contain correlation coefficients calculated for more detailed subgroups. From these results, it can be observed that the decline in earnings mobility for individuals in their 30s was most pronounced for men with secondary or post-secondary education.

1.3 Transitional Probabilities

1.28 In order to take a more detailed look at earnings mobility, it is useful to look beyond correlations and calculate transitional probabilities based on earnings quintiles at the

³ The "other" sector is small and includes industries such as agriculture and mining which do not have a significant presence in Hong Kong. Therefore, it is best not to attach too much importance to the results in the "other" sector.

⁴ "Other" occupations are rare occupations that are not easily classifiable under the ordinary occupational classification scheme. Since very few individuals are in "other" occupations, it is best not to attach too much importance to this category.

beginning and end of the periods of interest. A "transitional probability" is the probability that, over a certain period of time, a person will "transition" from one earnings quintile to another earnings quintile. If the new earnings quintile is higher than the old one, there has been upward mobility. If the new earnings quintile is lower than the old one, there has been downward mobility. Finally, if the new earnings quintile is the same as the old one, there has been no mobility. Since there are five "old quintiles" and five "new quintiles," there are twenty-five (i.e., 5 x 5) different combinations, and so there are twenty-five different transitional probabilities.

- 1.29 In the transitional probability tables, each row represents the earnings quintile group of the worker in the starting year (i.e., the "old quintile"). Similarly, each column represents the earnings quintile group of the worker in the ending year (the "new quintile"). 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 ending year. Therefore, the elements of each row should add up to 100%.
- 1.30 Transitional probabilities for the whole population of workers (i.e., the set of people, aged 30 to 65 in 2008, with positive earnings in 1998, 2003 and 2008) are given in Table 1.1. Tables 1.2 and 1.3 contain estimates of transitional probabilities that are calculated separately for men and women. In addition, the "overall movement" tables describe the percentage of the population that moved up or down within the earnings distribution over time.
- 1.31 When interpreting the "overall movement" tables, it is important to note that there is not necessarily a one-to-one trade-off between upward movements and downward movements. For example, suppose there is a group of ten workers. If the lowest-paid one becomes the highest-paid one, but all the others stay the same, there will be one upward movement (of nine ranks, from #10 to #1) and nine downward movements (of one rank each). In this example, the percentage of "up" movement is 10%, the percentage of "down" movement is 90%, and the percentage of "no" movement is 0%.
- 1.32 Generally speaking, earnings mobility was the greatest for those in the middle quintiles of the earnings distribution. For instance, between 1998 and 2008, those in the top and bottom quintiles were more likely than not to remain in those quintiles (the probabilities are 75% and 54%, respectively). However, the probability of remaining in the same

quintile for those in the middle was much less (for the 2nd, 3rd and 4th quintiles, the probabilities are 33%, 40% and 43%).

- 1.33 The 54% probability of staying in the lowest earnings quintile between 1998 and 2008 is a figure of special concern, because it is not good for the very poorest members of society to be trapped in that position. The phenomenon of being "trapped at the bottom" is examined in more detail in Section 1.8.
- 1.34 The position of workers in the second-lowest earnings quintile is somewhat better. According to Table 1.1, a worker in the second-lowest earnings quintile in 1998 had a 50.54% chance of moving to a higher earnings quintile in 2008 (34.97% + 12.58% + 2.99%), and only a 16.54% chance of moving to the lowest earnings quintile. Therefore, workers in this group have a reasonable chance of improving their situation, and in most cases it does not deteriorate.
- 1.35 When compared to results for the period 1996-2005 from the 2006 study, the overall trend is that earnings mobility has declined the most for those in the upper segments of the earnings distribution. For the lowest quintile, the probability of remaining in that quintile did not change very much (58% for 1996-2005, compared with 54% for 1998-2008). However, the probabilities of staying in the 3rd, 4th and top quintiles increased substantially. For the 3rd quintile, the probability increased from 26% to 40%. For the 4th quintile, the probability increased from 39% to 43%. Finally, for the top quintile, the probability increased from 68% to 75%.
- 1.36 The overall levels of upward and downward mobility have been relatively stable over the past decade. For the period 1998-2003, 25% of respondents moved up in the earnings distribution. For 2001-2005 (from the 2006 study), this figure fell to 20%. Then, for 2003-2008, it rose to 22%. Over the same periods, downward mobility changed from 15% to 17% to 15% respectively as shown in the following table.

Mobility Rates for All Workers in the 2006 and Current (2009) Studies

	5-year Period				10-year Period	
	1996-2001		2001-2005		1996-2005	
2006 study						
2009 study		1998-2003		2003-2008		1998-2008
Up	23.2%	24.6%	19.9%	22.0%	29.1%	32.8%
No	55.9%	60.1%	62.2%	62.9%	44.8%	47.2%
Down	20.9%	15.3%	16.9%	15.1%	26.1%	20.0%

1.37 Comparison of the transitional probabilities for 2003-2008 and 2001-2005 (from the 2006 study) shows that increases in downward mobility have become more frequent in the upper end of the earnings distribution. For instance, the probability of moving from the top quintile to the 4th quintile or below increased from 14% to 18%, and the probability of moving from the 4th quintile to the 3rd quintile or below increased from 22% to 26%. However, the probabilities of moving down from the 3rd quintile to the 2nd and bottom quintiles or from the 2nd quintile to the bottom quintile declined (from 26% to 17% and from 22% to 14% respectively). Therefore, the changes were more positive (i.e. with declined downward earnings mobility) at the low end of the distribution and more negative (i.e. with increased downward earnings mobility) at the high end of the distribution.

Mobility Rates by Quintile Group for All Workers in the 2006 and Current (2009) Studies

Quintile Group in 2001 or 2003	2001 – 2005 (2006 study)			2003 – 2008 (2009 study)		
	Up	No	Down	Up	No	Down
Bottom	25.6%	74.4%	-	37.2%	62.8%	-
2 nd	28.2%	49.7%	22.1%	36.3%	49.3%	14.4%
3 rd	25.8%	48.5%	25.7%	23.1%	59.6%	17.3%
4 th	18.0%	59.7%	22.3%	12.5%	61.3%	26.2%
Top	-	86.2%	13.8%	-	81.9%	18.1%
Overall	19.9%	62.2%	16.9%	22.0%	62.9%	15.1%

1.38 Comparison of the transitional probabilities for 2003-2008 and 2001-2005 (from the 2006 study) also shows that increases in upward mobility have become more frequent in the lower end of the earnings distribution. For instance, the probability of moving from the bottom quintile to the 2nd quintile or above increased from 26% to 37%, and the probability of moving from the 2nd quintile to the 3rd quintile or above increased from 28% to 36%. However, the probabilities of moving up from the 3rd quintile to the 4th or

top quintiles, and from the 4th quintile to the top quintile declined (from 26% to 23% and from 18% to 13% respectively). Again, the changes were more positive (i.e. with increased upward earnings mobility) at the low end of the distribution and more negative (i.e. with decreased upward earnings mobility) at the high end of the distribution.

- 1.39 In addition to these general results, it is also useful to separately examine the position of male and female workers. Tables 1.2 and 1.3 show that earnings mobility tends to be less for women than for men. For instance, between 1998 and 2008, 51% of female workers remained in the same earnings quintile, while only 45% of male workers remained in the same earnings quintile. However, female workers were less likely to move down in the earnings distribution. Over the same period, 24% of male workers moved down, but only 13% of female workers did.
- 1.40 While female workers have an advantage over male workers in this respect, the changes since the 2006 study were more positive for men than for women. Between the periods of 2001-2005 (from the 2006 study) and 2003-2008, the rates of upward and downward mobility for women were virtually unchanged. For men, there were small improvements; upward earnings mobility increased from 19% to 22%, and downward earnings mobility decreased from 20% to 17%.
- 1.41 When examining the transitional probabilities for men and women, it can be seen that the negative changes at the upper end of the distribution and the positive changes at the lower end occurred primarily for men. For instance, between 2001-2005 (from the 2006 study) and 2003-2008, the probability of falling from the 2nd quintile to the bottom quintile for men declined from 24% to 15%. Similarly, the probability of rising from the 2nd quintile to the 3rd quintile or above increased from 26% to 39%. At the top end, however, the changes are reversed. The probability of falling from the 4th quintile to the 3rd quintile or below increased from 25% to 29%, and the probability of rising from the 4th quintile to the top quintile fell from 16% to 12%.

Mobility Rates by Quintile Group and Gender in the 2006 and Current (2009) Studies

Quintile Group in 2001 or 2003	2001 – 2005 (2006 study)						2003 – 2008 (2009 study)					
	Male Workers			Females Workers			Male Workers			Females Workers		
	Up	No	Down	Up	No	Down	Up	No	Down	Up	No	Down
Bottom	25.6%	64.1%	-	17.8%	82.2%	-	37.2%	55.4%	-	30.3%	69.7%	-
2 nd	25.5%	50.6%	23.9%	33.3%	47.9%	18.8%	38.8%	45.8%	15.4%	31.3%	56.4%	12.3%
3 rd	23.2%	48.0%	28.8%	32.3%	49.7%	18.0%	21.4%	59.3%	19.3%	27.4%	60.4%	12.1%
4 th	16.2%	59.1%	24.7%	22.3%	61.3%	16.4%	11.6%	59.9%	28.5%	14.4%	64.5%	21.1%
Top	-	84.1%	15.9%	-	90.9%	9.1%	-	81.8%	18.2%	-	82.3%	17.7%
Overall	19.2%	60.6%	20.3%	21.2%	67.9%	10.8%	22.0%	60.7%	17.3%	22.1%	66.8%	11.1%

1.42 For women, downward mobility also fell at lower income levels, but increases in upward mobility at these levels were much less pronounced. For example, the probability of falling from the 2nd quintile to the lowest quintile fell from 19% to 12%, but the probability of rising from the 2nd quintile to the 3rd quintile or above only decreased from 33% to 31% (not the dramatic change that was observed for men). At the top end, just as for men, there was a strong trend of increased downward mobility and reduced upward mobility. For instance, from the 2006 study, only 9% of women fell from the top quintile to the 4th quintile or below in 2001-2005; but in 2003-2008, this probability rose to 18%

1.4 Effects of Government-Funded, Employer-Funded, and Self-Sponsored Training

1.43 Although the current study is not designed to assess the effectiveness of the Government's Continuing Education Fund (CEF), the STE questionnaire did include a question as to whether respondents had applied for and received a subsidy from the CEF. Therefore, it is possible to make a preliminary assessment so as to check whether this program has had any effect on respondents' earnings mobility.

1.44 A problem that arises when undertaking this sort of program evaluation is that the participants in the program are self-selected. For instance, as shown in Table 1.1, upward mobility of participants in the period 1998-2003 was 40%, while this percentage was only 25% in the general population. Since the program was only implemented in 2002, this difference can only reflect differences between people who choose to apply for the CEF and people who do not. It cannot reflect the effectiveness of the program itself.

- 1.45 Even though this is the case, upward mobility among program participants between 2003 and 2008 is still higher than in the general population (29% vs. 22%). Therefore, it is worth examining whether, after controlling for differences in observed and unobserved characteristics, there remains an effect attributable to the policy.
- 1.46 The first step in measuring the policy effect is to see if there is still a positive effect of the policy on upward mobility after controlling for observable differences in age, education, industry and occupation of participants and non-participants. This can be done with a probit model, on the basis of characteristics in 2003, where the dependent variable is a variable equal to one if the respondent moved up in the earnings distribution between 2003 and 2008. The probit model is a way of determining how the probability of moving up in the earnings distribution depends on various factors (i.e., age, education, job characteristics, and participation in the programme). According to this model, the "policy effect" is 5.9%, which means that even after taking the other factors into account, program participants are 5.9% more likely to move to a higher income quintile than non-participants.
- 1.47 Though the 5.9% figure is positive, there still may be *unobserved* differences between participants and non-participants. Whether this is the case can be assessed by looking at upward mobility between 1998 and 2003, before the program was implemented. If there is still a "policy effect," then it must be due to unobserved differences between participants and non-participants and not the program itself. For the period 1998-2003, the "policy effect," according to the probit model, is 4.5% (which is really a self-selection effect). After taking into account of self-selection, the net effect of the policy is a 1.4% increase in the probability of moving to a higher quintile in the earnings distribution ($5.9\% - 4.5\% = 1.4\%$). However, this difference is not statistically significant ($p = 0.74$). This point notwithstanding, it is still reasonable to conclude that training and career-related education are useful for upward earnings mobility, simply because so many upwardly mobile workers choose to acquire this type of education.
- 1.48 The chief obstacle to precisely estimate the program effects was that less than 5% of respondents to the STE had participated in the program. If a special study to evaluate the effects of the CEF were undertaken, it would be important to oversample program participants in order to precisely estimate the program effects.

Where employer-funded training is concerned, it is not possible to construct a "controlled experiment" of the above sort. However, recipients of employer-funded training do have higher rates of upward mobility and lower rates of downward mobility than the general population. This is likely because workers with better future prospects tend to be the ones selected for employer-sponsored training opportunities.

- 1.49 Finally, workers who increased their educational attainment had rates of upward earnings mobility that are quite similar to those of workers whose employers had sponsored them for training opportunities. This result is intuitive because, if employers spend their training funds wisely, employees should spend their own funds even more wisely (i.e., employees would not invest in education for themselves if they did not intend to make use of it).

1.5 Age and Education

Results by Age

- 1.50 Tables 2.1 and 2.2 display calculations of upward and downward earnings mobility, for male and female workers, by age. In general, the position of women is better than that of men across all age groups. Though women do not necessarily have higher levels of upward mobility, the level of downward mobility for women is generally much lower. For instance, looking at 50 to 65 year-olds, 32% of men moved down in the earnings distribution between 1998 and 2008, though only 13% of women moved down. At younger ages, the difference is not as pronounced, but it is still present.
- 1.51 Tables 2.1 and 2.2 also show that, as men and women become older, upward mobility decreases and downward mobility increases. This is a natural pattern of earnings ability over the life cycle. In a person's younger years, upward earnings mobility is high because he or she is still acquiring experience. By middle age, additional experience does not make as much difference. At older ages, downward earnings mobility increases because workers may be exiting their main career, either voluntarily (because of early retirement) or involuntarily (because of age discrimination).
- 1.52 The good news is that, for both men and women between the ages of 30 and 39, opportunities and prospects for upward mobility have improved. According to the 2006 study, 43% of men and 48% of women in this age group moved to a higher quintile in the

earnings distribution between 1996 and 2005. Between 1998 and 2008, these percentages improved to 55% and 59% respectively, with corresponding decreases in downward mobility for both men (from 21% to 11%) and women (from 14% to 8%).

Mobility Rates by Age and Gender in the 2006 and Current (2009) Studies

Age Group	1996 – 2005 (2006 study)						1998 – 2008 (2009 study)					
	Male Workers			Females Workers			Male Workers			Females Workers		
	Up	No	Down	Up	No	Down	Up	No	Down	Up	No	Down
30-39	43.0%	35.9%	21.1%	47.7%	38.5%	13.7%	55.0%	33.5%	11.5%	58.5%	33.1%	8.4%
40-49	24.2%	45.6%	30.1%	30.2%	53.2%	16.7%	27.9%	48.1%	24.1%	29.4%	53.5%	17.1%
50-65	16.5%	40.8%	42.7%	17.4%	65.0%	17.6%	17.0%	50.9%	32.1%	20.3%	66.3%	13.4%
Overall	26.6%	41.5%	31.9%	33.6%	50.6%	15.8%	31.2%	45.2%	23.6%	35.8%	50.9%	13.3%

1.53 Among workers between 40 and 49, the changes since the last study were better for men than for women. For men in this age group, upward mobility increased from 24% between 1996 and 2005 to 28% between 1998 and 2008, and downward mobility declined from 30% to 24%. For women, the mobility patterns remained quite stable with downward mobility at 17% and upward mobility at around 30%. Therefore, women in this age group are still in a better position relative to men (17% is better than 24%), but not as much as previously.

1.54 Further, among workers between 50 and 65, women's earnings mobility over the past ten years remained similar across both surveys, but men's earnings became more stable. According to the 2006 study, 41% of men between 50 and 65 remained in the same earnings quintile in 1996 and 2005. Between 1998 and 2008, this figure rose to 51%. More than nine-tenths of this increase in stability was due to a reduction in downward mobility. For women in this age category, the percentage remaining in the same income quintile group was nearly the same, but upward mobility improved slightly (from 17% to 20%), and downward mobility fell (from 18% to 13%).

Results by Education

1.55 Calculations of earnings mobility by education category are given in Tables 3.1 and 3.2. One observation that can be made from these tables is that people with more education have much lower rates of downward earnings mobility than people with less education. For instance, between 1998 and 2008, 24% of men with a primary or below education moved down in the earnings distribution, while only 10% of men with degree or above

education moved down in the earnings distribution. For women, as their overall downward mobility is much lower than that of men, the difference in downward mobility by education category is therefore not as dramatic as men, but it is still discernable.

- 1.56 One would expect that degree holders should also have higher rates of upward mobility than those with less education. However, this is not necessarily true, because degree holders tend to reach the top quintile quite quickly, and after that they cannot rise any higher. Therefore, though the upward mobility rates for both male and female degree holders between 1998 and 2008 were lower than the upward mobility rates for men and women with post-secondary education, the true picture is revealed by the difference in downward mobility rates.
- 1.57 Since the 2006 study, earnings mobility for men improved in every education category. Comparing earnings mobility over the past five years with analogous statistics from the previous study, upward mobility improved for those with primary or below education (18% to 22%), secondary education (21% to 24%), post-secondary education (18% to 25%), and degree or higher education (13% to 15%). Levels of downward mobility also declined for the two lowest educational levels (primary or below, and secondary), but not for the two uppermost educational levels.

Mobility Rates by Educational Attainment and Gender in the 2006 and Current (2009) Studies

Educational Attainment	2001 – 2005 (2006 study)						2003 – 2008 (2009 study)					
	Male Workers			Females Workers			Male Workers			Females Workers		
	Up	No	Down	Up	No	Down	Up	No	Down	Up	No	Down
Primary or below	17.6%	54.9%	27.6%	11.7%	80.9%	7.5%	22.0%	60.7%	17.3%	22.1%	66.8%	11.1%
Secondary	21.1%	57.8%	21.1%	25.6%	62.2%	12.2%	24.2%	57.0%	18.8%	25.9%	62.0%	12.1%
Post-secondary	18.5%	66.9%	14.6%	23.2%	59.4%	17.4%	24.8%	59.6%	15.6%	23.3%	62.5%	14.2%
Degree or above	13.0%	78.1%	9.0%	15.2%	79.4%	5.4%	15.2%	76.1%	8.7%	17.0%	74.2%	8.8%
Overall	26.6%	41.5%	31.9%	33.6%	50.6%	15.8%	31.2%	45.2%	23.6%	35.8%	50.9%	13.3%

- 1.58 For women, the situation was much more static. There were large changes for women with primary or below education; the percentage moving up to a higher earnings quintile increased from 12% in 2001-2005 (from the 2006 study) to 22% in 2003-2008. However, the statistics for women with secondary education were virtually unchanged. On the other hand, downward mobility increased somewhat for those at the higher end of the education distribution. For instance, though only 5% of women with degrees moved

down in the earnings distribution between 2001 and 2005, this percentage increased to 9% between 2003 and 2008.

Results by Education and Age

- 1.59 Mobility rates for age-education groups are given in Table 2.3. What can be seen from these results is that, for workers between the ages of 30 to 39, degree holders and those with post-secondary education have very high levels of upward earnings mobility. This advantage by education largely disappears by age 40. For instance, upward mobility for workers aged 40 to 49 with a degree or more was 22% (over the period 1998-2008), while for workers with primary or below education, upward mobility was 26%. The difference at lower ages (i.e., 30 to 39) is much more pronounced (67% vs. 35%). By age 50 to 65, upward mobility for degree holders is very low (11%), though this is likely because many older workers with degrees are already at the top earnings quintile.
- 1.60 In terms of downward mobility, degree holders enjoy a substantial advantage over the whole life cycle. At the ages of 30 to 39, downward mobility between 1998 and 2008 was only 6% for degree holders, while it was 19% for workers with primary or below education. At the ages of 50 to 65, these figures were 13% and 29%, respectively.

1.6 Industry and Occupation⁵

Results by Industry

- 1.61 Earnings mobility rates by industry are presented in Table 4. Over the past ten years (1998 to 2008), the best industries for upward mobility were the financing, insurance, real estate and business services industry and the community, social and personal services industry. Both of these industries had high rates of upward mobility (41% and 30%) and low rates of downward mobility (13% and 11%). The worst industry was the construction industry, where the upward and downward mobility rates were 27% and 33% respectively.
- 1.62 Table 4 also shows that not all industries in Hong Kong experienced the same changes between 1998-2003 and 2003-2008. The changes were most positive for the construction industry, where upward mobility rose (17% to 27%) and downward mobility fell (32% to

⁵ In this section, the results for "other" industries and occupations are purposely excluded. Generally speaking, this category is very small and not indicative of the basic situation in Hong Kong.

21%). However, they were quite negative for the financing, insurance, real estate and business services industry and the community, social and personal services industry. In both of these industries, upward mobility fell by substantial margins and downward mobility increased. Relative to other industries, however, both of these industries continued to have the lowest levels of downward earnings mobility.

Results by Occupation

- 1.63 Table 4 also presents earnings mobility rates by occupation. Between 1998 and 2008, clerks have had the best earnings mobility by a very large margin. The upward mobility rate for clerks was 49%, and the downward mobility rate was only 11%. Professionals were also in a very good position, with an upward mobility rate of 33% and a downward mobility rate of only 9%. For professionals, it is also important to keep in mind that upward mobility is impossible for those who are already in the highest earnings quintile. Those in the worst position were plant and machine operators and assemblers, with an upward mobility rate of 18% and a downward mobility rate of 37%.
- 1.64 As was noted from the data reliability checks, there was a tendency for respondents to over-report their occupations from ten years ago. However, there was no such tendency over a five year period. Therefore, when making comparisons to the prior study's results, it is most useful to compare the results for 2003-2008 to the prior results for 2001-2005.
- 1.65 The top two occupations for upward earnings mobility for 2001-2005 were associate professionals and clerks. In 2003-2008, these remained very good occupations for upward mobility, and the "craft and related workers" category became the second most upwardly mobile which had previously been the fourth. In terms of downward mobility, plant and machine operators and assemblers remained the worst and improved only slightly from 28% to 27%.
- 1.66 In absolute terms, the changes since the 2006 study favoured craft and related workers the most. In this category, upward earnings mobility rose from 19% to 32%, and downward earnings mobility fell from 29% to 18%. Managers and administrators experienced the most negative changes; of which downward earnings mobility increased from 9% to 17%.

1.7 Key Observations

1.67 Since the preceding results are quite detailed, it is useful to take a wider view and consider which are the most important from an overall perspective. Key observations are presented below.

- (a) The overall picture of earnings mobility in Hong Kong is positive. Between 1998 and 2008, 33% of workers moved to a higher earnings quintile, and only 20% moved to a lower earnings quintile (Table 1.1).
- (b) Women tend to have lower earnings mobility rates than men. This is mostly, but not entirely, because women tend to have lower rates of downward earnings mobility (Tables 1.2 and 1.3).
- (c) Since the 2006 study, overall earnings mobility has declined slightly.
- (d) Since the 2006 study, negative changes in earnings mobility at the upper end of the earnings distribution have been generally balanced by positive changes in earnings mobility at the lower end of the distribution.
- (e) Although women's earnings are more protected against downward mobility than men's earnings, the magnitude of this advantage has declined since the 2006 study.
- (f) There is strong evidence that those who receive subsidies Government's Continuing Education Fund have higher levels of upward earning mobility. However, this is mostly due to self-selection, and the policy effect itself is not statistically significant ($p = 0.74$).
- (g) It is naturally the case that younger workers are more upwardly mobile than older workers. However, since the 2006 study, earnings mobility improved even further for workers between the ages of 30 and 39 (more upward earnings mobility and less downward earnings mobility). For other ages, the results are mixed.

- (h) Education is an important determinant of upward earnings mobility at young ages (30 to 39), and an important defence against downward earnings mobility at all ages.
- (i) The best industries for upward earnings mobility over the past ten years (1998 to 2008) have been the financing, insurance, real estate and business services industry and the community, social and personal services industry. However, these industries were also the hardest hit by the negative changes that have occurred since 2001-2005. The industry with the worst earnings mobility over the past ten years was the construction industry.
- (j) Of all occupations, clerks and professionals have the best earnings mobility (i.e., high upward mobility and low downward mobility). Plant and machine operators and assemblers have the worst earnings mobility (i.e., very high downward mobility). Between 2001-2005 and 2003-2008, the earnings mobility of craft and related workers improved, but for all other occupational categories it either deteriorated or stayed the same.

1.8 Trapped at the Bottom

Initial Probability of Being in the Lowest Earnings Quintile Group

- 1.68 Individuals in the very lowest earnings quintile are an area of special concern. In order to take a close look at this group, Tables 5.1 to 5.6 display estimates of the probability that someone will fall into the lowest earnings quintile, depending on various socioeconomic characteristics.
- 1.69 For the whole population, the probability of falling into the lowest quintile is, in theory, 20%. However, since the income data are reported in discrete categories, it is not possible to draw the dividing lines in such a way as to put exactly 20% of the weighted observations into each quintile group. The exact data were not used for the analysis because the release of these data would violate policies on confidentiality and personal data privacy. For this reason, each quintile does not contain exactly 20% of the weighted observations, although efforts were made to draw the dividing lines as precisely as possible. Hence, in Table 5.1, only 18% of respondents in 2008 had incomes in the

"lowest quintile". In the 2006 study, it was not necessary to report this figure because exact income data were available.

- 1.70 Women are still more likely than men to fall into the lowest earnings quintile. This probability seems to have fallen slightly, from 30% in 2003 to 25% in 2008. For men, this probability (15% - 14%) has not changed appreciably over time.
- 1.71 The probability of being in the lowest income group is greater for older workers than for younger workers. For instance, Table 5.2 shows that, while this probability is 30% for those between the ages of 50 and 65, it is only 10% for those between the ages of 30 and 39. The results by age also show that, over the past ten years, younger people between the ages of 30 and 39 have become less likely to end up in the lowest earnings quintile (especially for those with secondary or post-secondary education--see Table 5.5). This result is expected, since one's earnings normally increase rapidly in the first few years of employment. The same pattern was present in the results from the 2006 study.
- 1.72 Those between the ages of 50 and 65 were more likely to end up in the lowest earnings group in 2008 than in 1998. The interpretation of this result is that, for those born between 1943 and 1958 (i.e., those between the ages of 50 and 65 in 2008), the position of workers at the low end of the earnings distribution has deteriorated over the past ten years. To some extent, this is a natural occurrence, as earning power in certain occupations declines with age. However, the position of workers born between 1943 and 1958 is better than the position of workers born between 1940 and 1955 (who were examined in the 2006 study). For instance, the probability that a man between the ages of 50 and 65 is in the lowest income quintile was 29% in 2005 (from the 2006 study), but only 23% in 2008 (see Table 5.6).
- 1.73 The results by education in Table 5.2 show that the situation of those with only primary or below education has become progressively worse (primarily for men--again, see Table 5.6), while the situation of other education groups has been stable.
- 1.74 According to Table 5.3, the probability of being in the lowest earnings quintile group in 2008 did not vary much by sector. However, this is quite different from the situation ten years earlier. In 1998, the probability of being in the lowest earnings quintile was much lower for the construction industry and the financing, insurance, real estate and business services industry. It was also much higher for the manufacturing industry and the

wholesale, retail and import/export trades, restaurants and hotels industry. In 2008, these differences by industry were much less dramatic.

- 1.75 Finally, in Table 5.4, it can be seen that the probability of being in the lowest quintile has fallen dramatically for clerks (from 26% to 15%), though it did not change very much for other occupations. This is consistent with the key observation that clerks have consistently been in a good position from an earnings mobility standpoint. As would be expected, this probability is quite low for professionals, managers, and administrators.

Probability of Remaining in the Lowest Earnings Quintile Group

- 1.76 An area of special concern is the phenomenon of being "trapped at the bottom," or remaining in the lowest quintile group over an extended period of time. The probabilities that this would happen, for various groups of workers, are shown in Tables 6.1 through 6.4. The probability of remaining in the lowest income quintile over the period from 1998 to 2008 was higher for women (61%) than it was for men (45%). However, the position of men has remained the same while that of women has improved since the 2006 study. From the previous study's results, the probability that a woman in the lowest income quintile in 1996 remained there in 2005 was 68% while that for men remained stable at 45%.
- 1.77 The additional results in Table 6.1 are generally as one would expect. The probability of remaining in the lowest quintile is much lower for younger workers, who can naturally expect to earn higher wages as they accumulate work experience. The probability of remaining in the lowest quintile is also much lower for those with higher levels of education, though education does not help very much after age 50 (see Table 6.3; though the figures for degree holders are very imprecise, since they are based on less than ten observations).
- 1.78 In Table 6.4, it can be seen that there are some variations in the probability of remaining in the lowest earnings quintile group by industry. Then, as now, the probability of remaining in the lowest earnings quintile was relatively high for the manufacturing industry and the community, social and personal services industry. However, the situation in the wholesale, retail and import/export trades, restaurants and hotels industry has improved (from the 2006 study, the probability was 59% for the period 1996-2005; for 1998-2008, the probability was 52%).

1.79 Finally, the results by occupation indicate that, over a ten-year horizon, associate professionals, clerks and craft and related workers have the lowest chance of remaining in the lowest earnings quintile. This finding is essentially unchanged since 2006.

Part Two -- Intergenerational Earnings Mobility

- 2.1 Part Two of the Special Topic Enquiry is an analysis of intergenerational earnings mobility in Hong Kong. Intergenerational earnings mobility is the relationship between parents' and children's socioeconomic status. In most cases, this type of study focuses on fathers and sons. However, there is no reason not to look at mothers and daughters, and the analysis in this section looks at all four types of parent-child socioeconomic relationships. The target population analysed in this part of the study is the set of people in Hong Kong who were between the ages of 30 and 45 in 2008 and currently employed in the fourth quarter of 2008.
- 2.2 Hong Kong's intergenerational earnings mobility is within the standard range expected for modern, developed economies. Although it has declined slightly since the previous study in 2006, it is still in between the United Kingdom (which has less earnings mobility than Hong Kong) and western European countries (which have higher levels of earnings mobility). Given that there is much less redistribution of income in Hong Kong than in western European countries, this result is reasonable and generally in line with prior expectations.
- 2.3 The 2006 study only examined intergenerational earnings mobility from the father's perspective. When the mother's perspective was incorporated, it was found that fathers' earnings have a strong influence to sons' earnings, and mothers' earnings have a strong influence on daughters' earnings. While high-earning mothers tend to also have high-earning sons, this relationship exists largely because mothers' and fathers' earnings are highly correlated with each other (a similar point applies for fathers and daughters).⁶ From a causal perspective, the father-son and mother-daughter relationships are the ones that matter.
- 2.4 Although the connections between parents' and children's socioeconomic status are quite strong, transitional probability matrices revealed that children of poor families

⁶ The correlation arises because of marriages tend to be between people of similar educational attainment (and hence similar earning power). This phenomenon, which is known as “educational assortative marriage,” is well known in the sociological literature and has been observed in many countries. For supporting statistics from Hong Kong, see paragraph 2.41 below.

still have a reasonable chance to move up the earnings ladder (i.e., to be in a higher earnings quintile than that of their parents). For instance, the sons of fathers in the lowest- and second-lowest quintiles have higher chances of earning more than their father did (the probabilities are 82% and 59% respectively). To be sure, it is an advantage to be born into a more well-off family, but birth is not destiny. By contrast, sons of fathers in the highest and second-highest earnings quintiles have higher chances of earning less than their father did (the probabilities in this case are 69% and 54%).

2.5 In addition to these results, some insight of the mechanisms behind intergenerational earnings mobility can be gained by examining how education and job characteristics are transmitted from one generation to the next. Where education is concerned, a positive result is that, among people in Hong Kong between the ages of 30 and 45, at least some secondary education is virtually universal. This was not true in 2005, largely because the Government's 1971 compulsory education policy required three more years to fully work through this segment of the population. Where occupational characteristics are concerned, it was quite difficult for children with parents in lower-level occupations to directly enter the professional or managerial class. Over two generations, however, associate professional occupations are an important stepping stone for families to enter the upper end of the earnings distribution.

2.6 Finally, Part Two also examined three groups of children of special interest: those who lived with both parents until age 15, those whose parents were married until respondent age 15, and those whose mothers were working at respondent age 15. In these cases, it is found that mothers' earnings had more influence on children who grew up in single-parent families. This is a sensible result because children live with their mother in most single-parent families. Parents' marital status did not have a measurable effect on children's earnings, and mothers' employment status only mattered to the extent that it determined mothers' earnings.

2.1 Estimation of Lifetime Earnings

2.7 Although employment earnings vary considerably over people's lifetimes, a person's relative position in the earnings distribution, when compared to others of the same age, tends to be quite stable after age 30. For instance, if someone is in the top 10% of earners his age at age 35, he will probably also be in the top 10% of earners his age at

age 45. Because of this, estimates of lifetime earnings are often made by calculating this percentile at a particular age at a particular point in time, and then assuming that this percentile remains constant at other ages. This percentile can also be used to directly identify the lifetime earnings quintile (e.g., if a person's earnings are in the top 25% when compared with the earnings of others at the same age, his lifetime earnings would be in the second-highest quintile).

2.8 Where respondents' own earnings are concerned, this calculation is simple. They can be asked directly about their employment earnings, and these earnings can then be compared to the responses of others at the same age to determine the earnings percentile. However, respondents typically do not have an accurate idea of their parents' earnings, especially for parents who have retired. Therefore, parents' earnings were imputed from data based on their education, industry, and occupation, using data from the relevant past years of the GHS. Wherever possible, parents' earnings were imputed at age 55, since at this age most people are still employed in their primary occupations. Past this point, early retirement starts to become an issue because those who are retired may nevertheless still work part-time in jobs that are unrelated to their primary occupation. However, imputations at age 60 were still carried out for a small number of parents who were working at age 60 but not at age 55. Finally, for parents who were working at neither of those ages or who were younger than age 55 at the time of the survey, imputations were based on the current job or the last job held.

2.2 Data Reliability

2.9 Since parents' earnings are imputed from information on their education, industry, and occupation, it is important to check whether respondents have reported sensible information about their parents. The parents examined were mothers and fathers born between 1943 and 1953 (i.e., between the ages of 55 and 65, inclusive). Approximately 48% of mothers and 30% of fathers fell within this age range. Although this is not the majority of the sample, it is the best age range to examine because, past a certain point, the set of parents who are still living is no longer representative of the general cohort. Similarly, parents who are too young are also not representative because, in order to have a child between the ages of 30 and 45 by 2008, they would have had to start having children very early and would have less opportunity to finish their formal schooling.

2.10 As a further caveat, it should be noted that it is not possible to carry out exact comparisons between parents in the STE data and similarly-aged men and women in the GHS data. In the STE, the set of fathers being examined consists of men born between 1943 and 1953, who had a son or daughter between the ages of 30 and 45 in 2008. In the GHS, data on children who are not living at home is not collected, so the best that can be done is to look at men born between 1943 and 1953, who were employed at age 55. The same is also true for mothers. Another difficulty that arises is that, since the occupational coding scheme underwent substantial changes in 1993, the occupations cannot be compared directly between the two samples. Nevertheless, it is still valuable to compare the educational attainment and industrial composition of both groups, because a large discrepancy would signal a problem.

2.11 The results of the comparisons of educational attainment, for fathers in the STE and similarly-aged men in the GHS, are below:

Education Level	% of fathers ages 55-65 (STE)	% of men born between 1943 and 1953 (GHS)
No Schooling	14.8	7.7
Primary	55.2	51.1
Secondary	21.4	29.8
Matriculation	1.8	1.8
Tertiary (non-degree)	2.2	3.2
Tertiary (bachelor)	4.5	5.9
Tertiary (post-graduate)	0.1	0.5

2.12 One observation from this table is that an unusually large number of fathers aged 55-65 in the STE are reported as having "no schooling", and in general the fathers in the STE data in this age group appear to be somewhat better-educated. It should be stressed, however, that these two populations are not strictly comparable; men in the STE sample who were aged 55 to 65 in 2008 have, on average, had sons or daughters relatively early in life. Consequently, this population is expected to have less educational attainment than the population of all men aged 55 to 65 in 2008.

2.13 The results of the comparisons by industry are:

Industry	% of fathers ages 55-65 (STE)	% of men born between 1943 and 1953(GHS)
Manufacturing	15.6	25.7
Construction	9.5	10.9

Industry	% of fathers ages 55-65 (STE)	% of men born between 1943 and 1953(GHS)
Wholesale, Retail and Import/Export Trades	25.4	28.6
Transport, Storage and Communications	12.1	10.6
Financing, Insurance, Real Estate and Business Services	9.0	9.2
Community, Social and Personal Services	12.3	13.7
Others	16.1	1.3

- 2.14 In the above table, the industry of fathers in the STE data is the industry that was used to impute lifetime earnings (i.e., according to the algorithm in para 2.8 above).
- 2.15 When comparing the industries of both groups, the composition is similar--except that, in the STE, the "Other" category is unusually frequent, probably because cases where respondents had difficulty in recalling the exact industry or occupation of their parents were also included in this category. This is problematic because it indicates that the "Other" responses are not comparable between the STE data and the GHS data. Consequently, earnings were not imputed for fathers in "other" industries or occupations. These figures should also be interpreted with caution.
- 2.16 For women, the results were qualitatively quite similar. Mothers in the STE tended to be less educated than comparable women from the GHS, and the most likely explanation is the fact that, to be included in the STE data set, a mother would have to have had a child at a relatively young age. Further, as with men, "Other" responses were unusually frequent when respondents were asked about their mothers' industries and occupations. Consequently, earnings were not imputed for mothers who were reported to have worked in "other" industries or occupations.
- 2.17 After excluding the cases for which income could not be imputed, there were 757 father-son observations, 576 father-daughter observations, 452 mother-son observations, and 350 mother-daughter observations. This sample size was sufficient to discern differences between these types of relationships, but not to look closely at how the elasticity of earnings mobility within these relationships might depend on the parent's industry, occupation, or educational attainment.

2.3 Intergenerational Earnings Mobility

2.18 The standard measure of intergenerational earnings mobility is the elasticity of a child's lifetime earnings with respect to the lifetime earnings of one of his or her parents. This elasticity, denoted as β , is measured by regressing the logarithm of the child's employment earnings on the logarithm of the parent's employment earnings, with controls for the ages of both. The most common practice is to measure this elasticity for fathers and sons, but it can also be measured for mothers and daughters. These estimates are given in Tables 7.1 through 7.3.

2.19 The baseline result, given in Table 7.1, is that the elasticity of lifetime earnings between fathers and all children (i.e., combining both father-son and father-daughter relationships) is 0.40. This means that, if a father's employment earnings are 10% above average for his generation, then his children's earnings are expected to be 4% above average for their generation. This measurement is near the high end of similar measurements for OECD countries, but it is in between the United Kingdom (which has lower earnings mobility than Hong Kong) and most European countries (which have higher levels of intergenerational earnings mobility). This finding is expected because Hong Kong does not redistribute income as actively as do countries with higher levels of earnings mobility. Given the standard errors of these measurements, the level of intergenerational earnings mobility in Hong Kong has not changed materially between 2005 and 2008. However, because generational changes tend to be very slow and gradual, it would have been unusual to observe a major difference.

2.20 A table of father-son earnings elasticities from other countries or places, collected from earlier studies, is below:

Study	Place	Earnings Elasticity
Wiegand (1997)	Germany	0.34
Piraino (2007)	Italy	0.51
Comi (2003)	France	0.17
Osterbacka (2001)	Finland	0.13
Jäntti and Osterbacka (1996)	Finland	0.22
Ostergberg (2000)	Sweden	0.13

Study	Place	Earnings Elasticity
Gustafsson (1994)	Sweden	0.14
Björklund and Jäntti (1997)	Sweden	0.28
Corak (2006)	Canada	0.21
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)	The United Kingdom	0.57
Mazumder (2005)	United States	0.61
Current Study on Earnings Mobility	Hong Kong	0.42

- 2.21 One noticeable difference between the results from the 2006 study and the current study is that there is no longer much difference between father-son and father-daughter intergenerational earnings mobility. Due to the standard errors involved, it is best not to over-interpret this change. However, it is a sign that patterns of women's employment are becoming closer to patterns of men's employment, which was also observed in Part One of this report.
- 2.22 The relationship between mothers' employment earnings and the earnings of sons and daughters was also examined. Although this relationship is not as strong as that between fathers and children, it is not zero. For instance, the coefficient 0.25 in the second row of Table 7.1 means that, if a mother's earnings are 10% above average for her generation, then her son's earnings are expected to be 2.5% above average for his generation. Interestingly, just as the father-son relationship is slightly stronger than the father-daughter relationship, so too is the mother-daughter relationship slightly stronger than the mother-son relationship.
- 2.23 One issue that arises when interpreting these figures is that it is not clear whether mothers' earnings have an independent effect on children's earnings. Since mothers' earnings and fathers' earnings are very highly correlated, one would expect that the coefficients in the third column of Table 7.1 should all be positive for that reason alone. Therefore, the second and fourth columns present alternative estimates of β , where the other parent's log earnings have been controlled for in the regression analysis.

- 2.24 These alternative estimates are also quite interesting. Where the relationship between fathers and sons is concerned, mothers' earnings are virtually irrelevant; after controlling for mothers' earnings, the estimate of β is virtually unchanged (0.39 instead of 0.42). However, fathers' earnings do not have any significant effect on daughters' earnings after the mother's earnings have been taken into account ($p = 0.149$).
- 2.25 Similarly, mothers' earnings have a very strong effect on daughters' earnings, but almost no effect on sons' earnings. After controlling for fathers' earnings, the elasticity of sons' earnings with respect to mothers' earnings is only 0.03, and the relationship is not statistically significant ($p = 0.673$). However, the elasticity of daughters' earnings with respect to mothers' earnings is 0.24, which is statistically significant ($p = 0.025$) and not very different from the original estimate of 0.28. This means that, when children are deciding their career path, fathers are very important role models for sons, and mothers are very important role models for daughters.

Results by Education, Industry, and Occupation

- 2.26 It is of further interest whether intergenerational earnings mobility depends on other characteristics of the parent--for instance, the parent's educational attainment, industry, or occupation. To examine whether this is the case, Tables 7.1 through 7.3 also report estimates of β for these different subgroups.
- 2.27 Although the numbers do vary across groups, the differences are not statistically significant. A summary of the results of these hypothesis tests, for Table 7.1, is presented below. The entries in the table are p values, with $p < 0.05$ indicating that the hypothesis is rejected at the 5% significance level.

Hypothesis	Fathers	Fathers (c.m.i.)	Mothers	Mothers (c.f.i.)
No variation in earnings mobility by education	0.102	0.373	0.172	0.749
No variation in earnings mobility by industry	0.003	0.206	0.003	0.036
No variation in earnings mobility among non-construction industries	0.924	0.803	0.018	0.277
No variation in earnings mobility among non-community, social and personal service industries	0.003	0.182	0.249	0.140
No variation in earnings mobility by occupation	0.355	0.499	0.162	0.502

Notes: c.m.i. = controlling for mother's income.
c.f.i. = controlling for father's income.

- 2.28 From the results, there is never any significant variation by education or occupation. In the case of differences by industry, the rejection of the hypothesis is largely due to the construction industry (for fathers) and the community, social and personal services industry (for mothers). However, when 18 different characteristics are tested, it is not surprising that one should be significant at the 5% level (since, when carrying out a 5% significance test, there is still a 5% chance of rejecting the hypothesis even when it is true).
- 2.29 The same is true of the results in Tables 7.2 and 7.3 when we analyse sons and daughters separately.
- 2.30 The interpretation of these results is that parents' earnings can be regarded as a "sufficient statistic" where analyses of intergenerational earnings mobility are concerned. In other words, once earnings are known, there is no need to take parents' education or occupational characteristics into account.

Children of Special Interest

- 2.31 An area of special interest is the extent to which intergenerational earnings mobility depends on respondents' family status while growing up. Family status was explored along three dimensions:
- (i) whether or not the respondent lived with both parents until age 15;
 - (ii) whether or not the respondents' parents were both married until respondent age 15;
and
 - (iii) whether respondents' mothers were working at respondent age 15.
- 2.32 Because 92.8% of respondents reported no change in parents' marital status by age 15 (of those who answered the question), the effects of the second variable could not be determined with precision. Because of the high level of non-response (33.4%), and the uniformity of responses received, it would probably not be worthwhile to ask this question in future surveys
- 2.33 The answers to the other questions were somewhat more promising. For the first variable, 92.0% of respondents lived with both parents; 2.0% lived with their father only; 4.5% lived with their mother only; 0.7% lived with their grandparents; and the remaining 0.8% lived with others. This was sufficient variation to determine that

mothers' earnings have significantly *less* influence on children's earnings when children are living with both parents ($p = 0.028$). This result is sensible because most children who are not living with both parents are living with their mother only, and it is reasonable that the mother's economic status would be more influential under these circumstances.

- 2.34 For the third variable, the variation was very high; of those answering the question, 46.8% answered that their mother was working when the respondent was age 15, and 53.2% answered that their mother was not working at this time. However, there were no significant differences in the intergenerational earnings mobility elasticities between these populations ($p = 0.92$).
- 2.35 It is important not to misinterpret this result as meaning it does not matter if the mother works or not. It does matter, because mothers' earnings matter, and of course these earnings must be zero if she does not work. However, after taking her lifetime earnings into account, whether or not she happened to be working when the respondent was age 15 carries no additional significance.

2.4 Transitional Probabilities

- 2.36 According to the results in Section 2.3, the key differences in earnings mobility are according to the sexes of parents and children. However, once parents' earnings were taken into account, additional characteristics of parents' jobs (education, industry and occupation) did not further affect children's earnings.
- 2.37 Because of these findings, four different transitional probability matrices were calculated (one for each different kind of relationship). These matrices express the probability that a son or daughter will be in a particular lifetime earnings quintile, given the lifetime earnings quintile of the mother or the father. These matrices are given in Table 8.
- 2.38 Table 8 indicates that parents' earnings are very important determinants of sons' and daughters' earnings. For instance, if a father is in the top earnings quintile, his son has a 31% chance of also being in the top earnings quintile. However, if the father is in the bottom quintile, his son's chance of making it to the top is only 13%. Similarly, the

probability that the son of a father in the lowest quintile will himself be in the lowest quintile is 18%; this chance is only 9% if the father is in the highest quintile.

- 2.39 The good news is that the parents' status is not destiny. For fathers in the lowest earnings quintile, sons are 82% likely to move to a higher earnings quintile as shown in the following summary table; and for fathers in the 2nd-lowest quintile, sons are 59% likely to move to a higher quintile in the lifetime earnings distribution. The only cases where a son is more likely than not to move to a lower quintile are where the fathers are already in the second-highest or top lifetime earnings quintiles.

Transitional Probabilities for Parents' and Children's Lifetime Earnings Quintiles (LEQs)

Father's / Mother's LEQ	Father-child Analysis						Mother-child Analysis					
	Son's LEQ			Daughter's LEQ			Son's LEQ			Daughter's LEQ		
	Higher	Same	Lower	Higher	Same	Lower	Higher	Same	Lower	Higher	Same	Lower
Bottom	81.9%	18.1%	-	74.1%	25.9%	-	83.4%	16.6%	-	77.4%	22.6%	-
2 nd	59.2%	23.7%	17.1%	55.5%	20.1%	24.4%	65.2%	18.9%	15.9%	58.6%	18.9%	22.5%
3 rd	40.1%	22.9%	37.0%	41.4%	18.0%	40.6%	48.2%	21.0%	30.8%	41.0%	21.0%	38.0%
4 th	21.8%	24.1%	54.1%	24.9%	23.2%	51.9%	31.2%	24.2%	44.6%	28.3%	23.3%	48.4%
Top	-	31.0%	69.0%	-	34.3%	65.7%	-	41.4%	58.6%	-	39.8%	60.2%

- 2.40 The above table shows that sons of mothers in the top earnings quintile are even more likely to be in the top earnings quintile themselves than sons of fathers in the top earnings quintile (41% vs. 31%). However, these results should be interpreted with care. This is because, though the earnings of high-earning men's wives vary greatly, high-earning women are very likely to be married to high-earning men. Therefore, the 41% figure largely reflects the very strong influence of growing up in a family where both parents are high income earners.
- 2.41 More information on the relationship between husbands' and wives' earnings can be determined from the 2008 GHS data. Husband-wife relationships were determined with the "relationship to household head" variable in the GHS. The following two tables describe the relationship between husbands' and wives' employment earnings (with either one of them being the household head). The population examined is the set of married couples, both living together in Hong Kong, where the husband is between the ages of 30 and 65.

**Distribution of Wives' Monthly Employment Earnings, by Husbands' Monthly
Employment Earnings (2008 GHS)⁷**

Husband's Earnings	Wife's Earnings							
	Not Employed	\$0 to \$4,999	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$19,999	\$20,000 to \$29,999	\$30,000 to \$49,999	\$50,000 or more
Not Employed	60.2%	6.1%	18.9%	4.9%	2.4%	3.3%	2.2%	1.9%
\$0 to \$4,999	48.3%	14.1%	18.3%	6.5%	4.6%	3.4%	4.1%	0.7%
\$5,000 to \$9,999	46.9%	12.7%	30.3%	6.0%	1.8%	1.4%	0.6%	0.3%
\$10,000 to \$14,999	46.4%	11.3%	20.8%	10.9%	4.8%	3.3%	2.0%	0.6%
\$15,000 to \$19,999	43.2%	7.9%	15.3%	11.6%	12.5%	6.1%	2.8%	0.6%
\$20,000 to \$29,999	39.4%	5.3%	9.2%	10.6%	8.9%	17.1%	7.4%	2.1%
\$30,000 to \$49,999	38.9%	2.5%	5.2%	5.6%	6.5%	14.4%	20.1%	6.9%
\$50,000 or more	44.0%	2.7%	1.5%	3.3%	4.5%	10.7%	16.3%	16.9%

**Distribution of Husbands' Monthly Employment Earnings, by Wives' Monthly
Employment Earnings (2008 GHS)**

Wife's Earnings	Husband's Earnings							
	Not Employed	\$0 to \$4,999	\$5,000 to \$9,999	\$10,000 to \$14,999	\$15,000 to \$19,999	\$20,000 to \$29,999	\$30,000 to \$49,999	\$50,000 or more
Not Employed	22.2%	1.9%	20.3%	18.4%	9.9%	11.5%	8.6%	7.3%
\$0 to \$4,999	13.4%	3.3%	31.7%	26.1%	10.6%	9.0%	3.4%	2.6%
\$5,000 to \$9,999	18.3%	2.0%	35.3%	23.0%	9.9%	7.4%	3.3%	0.7%
\$10,000 to \$14,999	10.6%	1.5%	15.1%	26.2%	16.3%	19.7%	7.3%	3.3%
\$15,000 to \$19,999	8.9%	1.6%	6.5%	14.9%	24.4%	23.9%	12.9%	7.0%
\$20,000 to \$29,999	8.9%	0.9%	3.8%	8.6%	9.0%	34.5%	22.3%	12.0%
\$30,000 to \$49,999	6.4%	1.3%	1.9%	6.7%	5.5%	18.1%	37.2%	23.0%
\$50,000 or more	13.4%	0.5%	1.7%	4.1%	2.1%	9.1%	24.3%	44.8%

⁷In these tables, the couples analyzed are those for which either the husband or the wife is the household head.

- 2.42 From the above tables, it can be seen that, while women earning \$50,000 or more per month are 45% likely to be married to men earning \$50,000 or more per month, men earning \$50,000 per month are only 17% likely to be married to women earning \$50,000 per month. Therefore, while high-earning women are often married to high-earning men, the relationship is not as strong as in the reverse direction.
- 2.43 For daughters, the transitional probabilities are similar to the transitional probabilities for sons. This is consistent with the earlier result that sons' and daughters' elasticities of lifetime earnings (β) with respect to the lifetime earnings of mothers and fathers are similar in magnitude. However, it should be kept in mind that this result did not take into account the income of the other parent. When this was done, mother's earnings had much more influence on daughters' earnings than fathers' earnings. Hence, the most important results for daughters are the results in the fourth section of Table 8 or the mother-daughter analysis in the above summary table.
- 2.44 The results are quite positive. They show that, even if the mother's earnings are very low, a daughter still has a nearly 20% chance of making it into the top quintile of the earnings distribution (the same is true even if the father's earnings are low--this can be seen from the second section of Table 8). At the same time, a daughter derives considerable benefit from having a mother in the top 20% of the earnings distribution; in this case, the chance that her lifetime earnings also reach the top 20% rises to 40%.

2.5 Education, Industry and Occupation

- 2.45 Although earnings are very important determinants of socioeconomic status, it is valuable to take a wider view and examine how other social characteristics are passed down from parents and children. To do this, Tables 9.1, 9.2 and 9.3 display transitional probabilities that indicate the relationships between parents' and children's educational attainment, industry, and occupation. As with the earlier transitional probability matrices, the probabilities in each row sum to 100% and indicate the probability that a child will have a certain amount of education or be in a certain type of job, conditional on the parent's educational attainment or job characteristics.

Education

- 2.46 In terms of getting a basic education, the results in Table 9.1 show that, regardless of the parent's educational attainment, virtually all children in Hong Kong receive at least one year of secondary schooling. Even among parents with the least education, 96% of children receive this much secondary education (i.e., their education is in the "S1-S5" category). For parents with more education, virtually all children receive at least one year of secondary education.
- 2.47 At the same time, there are tremendous differences in educational attainment at the post-secondary and degree level. For instance, if the father has a degree, his son is 74% likely to also obtain a degree. But if the father has only primary or below education, his son's chance falls to 20%. These differences are much greater than can be ascribed to differences in academic potential.
- 2.48 When examining the transitional probabilities by sex, the father-son and mother-son relationships are very similar to one another, as are the father-daughter and mother-daughter relationships. To some extent, this is because mother's and father's educational attainments are very highly correlated with one another. Moreover, after taking parents' education into account, the degree prospects of sons and daughters are also very similar to one another. However, daughters are somewhat more likely than sons to complete "post-secondary" education (i.e., S6 or S7, or a tertiary, non-degree programme), and less likely to stop at S5. For instance, where the mother has secondary education, the daughter's chance of attaining post-secondary education is 23%, but the son's chance is only 16%.
- 2.49 Since the 2006 study, these figures have improved. In the 2006 study, it was the case that daughters of highly educated fathers had a much lower chance of attending university than sons of highly educated fathers (54% vs. 76%). These probabilities are now quite close to one another (71% and 74%). In addition, the chance the son of a father with only primary or below education will obtain a degree rose from 17% (2006 study) to 20% (current study). For daughters, this probability rose from 17% to 22% respectively.
- 2.50 One noteworthy difference between the populations examined in the 2006 study and the current study is that, by now, virtually the entire target population (children between the

ages of 30 and 45) grew up under a compulsory education policy, which was first implemented in 1971 (for children between the ages of 6 and 11). Three years ago, those between the ages of 40 and 45 would not have been compelled to attend school at age six. As a consequence, the proportion of children whose education is only "primary or below" fell very rapidly between the two studies, and the differences between sons and daughters vanished.

Industry

- 2.51 Table 9.2 shows that there are also noticeable links between parents' and children's industries. Since parents are important role models for children, one would expect that having a mother or father in that industry makes it considerably more likely that the son or daughter will also be in that industry. While this is true in some cases, it is not true in all cases, for all industries.
- 2.52 The most 'influential' industries for sons appear to be the manufacturing and construction industries. Sons of fathers in these industries are more likely to work in manufacturing or construction than sons of fathers in other industries. For both sons and daughters, the community, social and personal services industry is influential as well (where either parent is concerned, not just fathers).
- 2.53 Interestingly, the sons and daughters of mothers in the financing, insurance, real estate and business services industry were much more likely to work in the same industry themselves, but this was not true for sons and daughters of fathers in this industry.
- 2.54 The results of greatest concern are those for fathers in the construction industry, since both sons and daughters are much less likely to take up positions in the financing, insurance, real estate and business services industry (where compensation is much higher). However, as with education, the parent's status is not destiny; sons of fathers in the construction industry still have a 73% chance of moving to a different kind of position.
- 2.55 The patterns by industry were quite similar to those found in the 2006 study.

Occupation

- 2.56 The results in Table 9.3 show that there are quite strong links between parents' and children's occupations. In particular, there is a very high correlation where managerial

and professional occupations are concerned. For instance, if a father is in a professional occupation, his son is 43% likely to be a professional himself. This is much higher than the rate in the general population. Similarly, if the father is a manager or administrator, his son is 36% likely to be a manager or administrator. Moreover, just as with education, these effects are even stronger if the mother is an administrator (though her being a professional does not seem to confer any additional advantage).

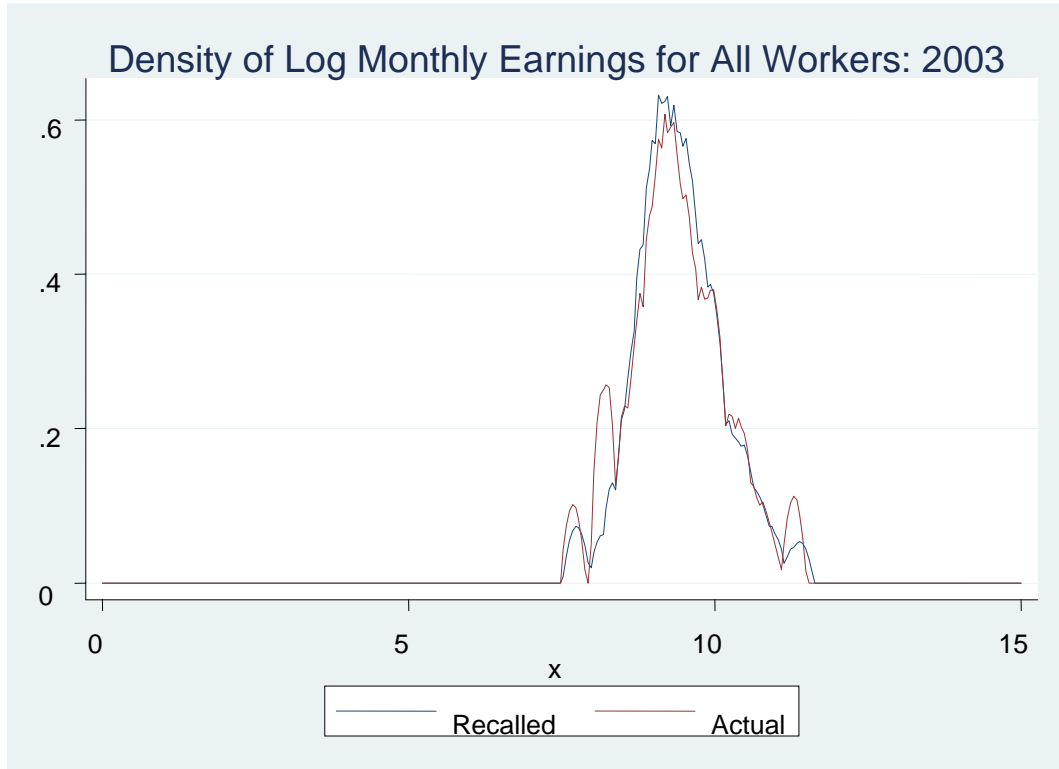
- 2.57 Where mothers are professionals, the implications for sons' and daughters' occupations are very pronounced. In the entire sample, all the sons and daughters of professional mothers were concentrated in higher skilled occupations (managers or administrators, professionals, and associate professionals). Moreover, the sons of professional mothers were 87% likely to be either managers or professionals themselves, which is a very high probability.
- 2.58 Generally speaking, it is the case that no matter what the father's occupation is, the son is more likely to choose that occupation than he otherwise would have been. However, professional mothers are not especially likely to have professional daughters (these daughters do, however, have a 39% chance of becoming managers or administrators and 49% chance of becoming associate professionals). But it is still quite likely that a professional father's daughter will become a professional herself (35%). Therefore, the father's occupation seems to be more influential than the mother's occupation for both sons and daughters, with the caveat that daughters are never particularly likely to become craft workers or plant and machine operators.
- 2.59 Although entering into the top two occupational categories is difficult, the positive news in Table 9.3 is that the door to an associate professional occupation is relatively open. For both sons and daughters (except those whose fathers are in elementary occupations), the chance of taking up this type of occupation is 25-35%, and the chance does not depend much on the father's occupation. Moreover, the children of associate professional parents have a relatively high chance of entering into managerial or fully professional occupations, though the chance is not as good as that of children whose parents are already managers or professionals. This result suggests that 'associate professional' occupations are an important gateway for poorer families to reach the higher levels of the earnings distribution.

Policy Implications

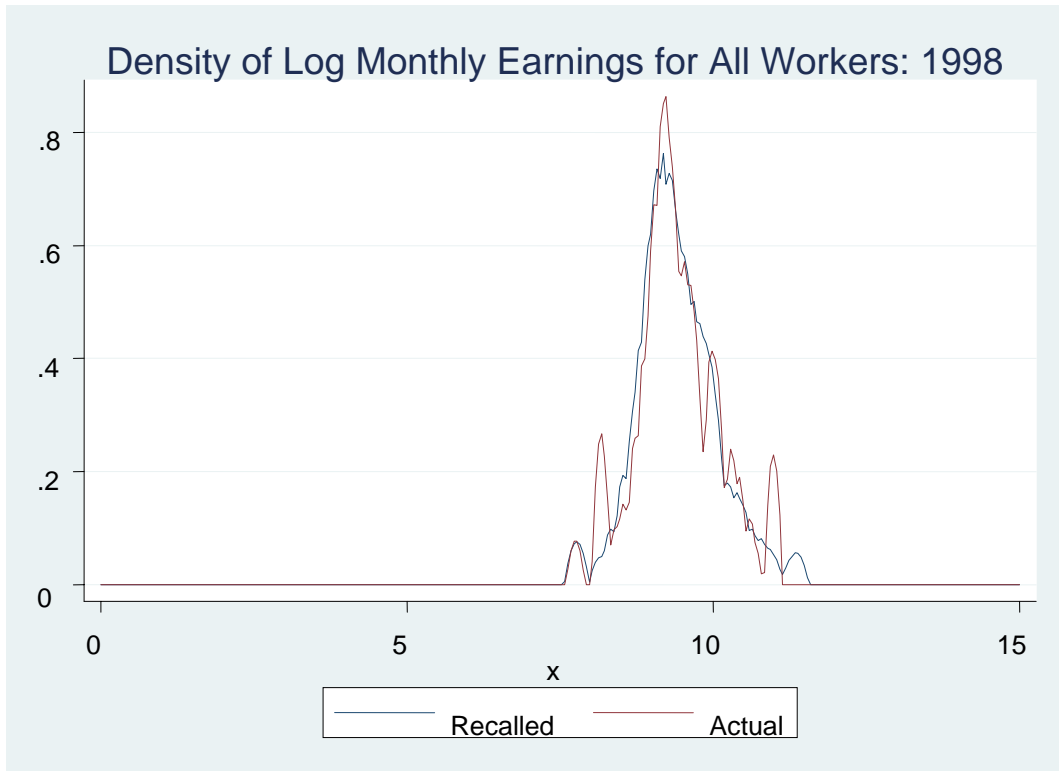
- 3.1 The 2006 Special Topic Enquiry highlighted the importance of the Government's continuing investment in public education. This continues to be the case. For individuals, education remains the primary determinant of upward earnings mobility, and an important defence against downward earnings mobility. For families, education is the primary route by which children can acquire new skills and break out of their parents' occupational mould.
- 3.2 At the same time, it is important not to focus only at the top of the educational ladder. Although degrees are very valuable, it is profitable to increase the number of university places or other tertiary education opportunities only when the secondary school system produces secondary graduates in sufficient number and quality. In the United Kingdom, the tertiary education sector has been very negatively affected by the government's decisions to increase the quantity of university places without adequate regard to the quality of students admitted. Therefore, it is critical to keep in mind that the primary and secondary levels are the foundation on which the tertiary sector rests.
- 3.3 In addition, it is essential to recognize that in a mobile society, education does not stop at the end of one's formal schooling. In a dynamic economy where the mix of skills required by employers is always changing, there is a vital role for training and other continuing education opportunities. A labor force that is flexible and equipped with the latest skills is a key element of Hong Kong's competitiveness and an important consideration for businesses deciding whether or not to expand their operations in the territory.
- 3.4 Finally, though schooling is one of the most important determinants of a child's future, the roles of parents are even more important. In particular, sons are very influenced by their fathers' careers, and daughters are very influenced by their mothers' careers. This means that the effects of equal opportunity legislation are quite consequential. For instance, if sex discrimination is eliminated, the benefits flow not just to women currently in the labour force, but also their daughters. Moreover, education alone cannot solve this problem. No matter what the quality of the daughter's education has been, she is less likely to pursue her career ambitions if her mother's experience suggests that these ambitions are futile or impossible.

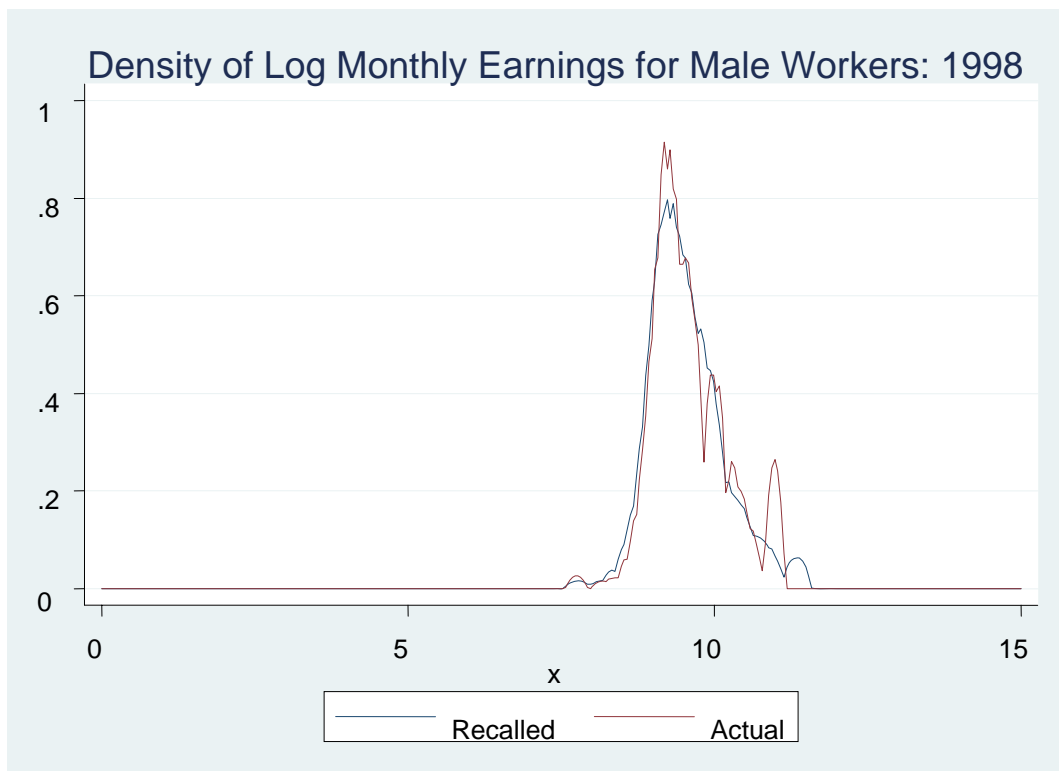
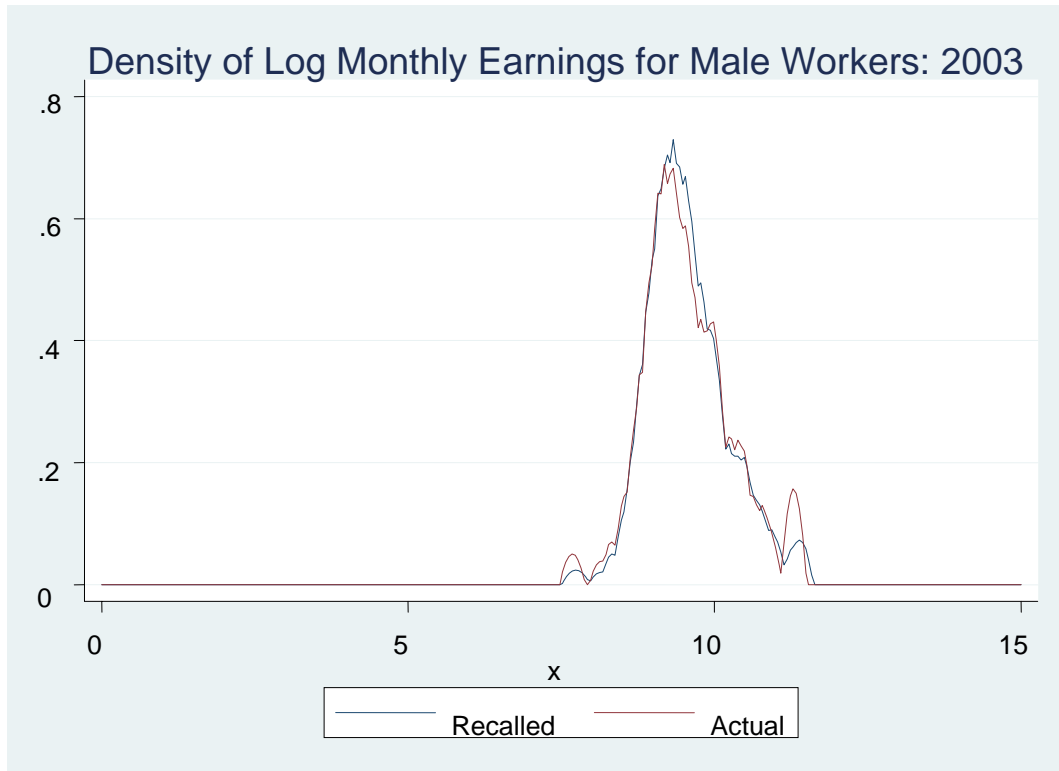
Figures

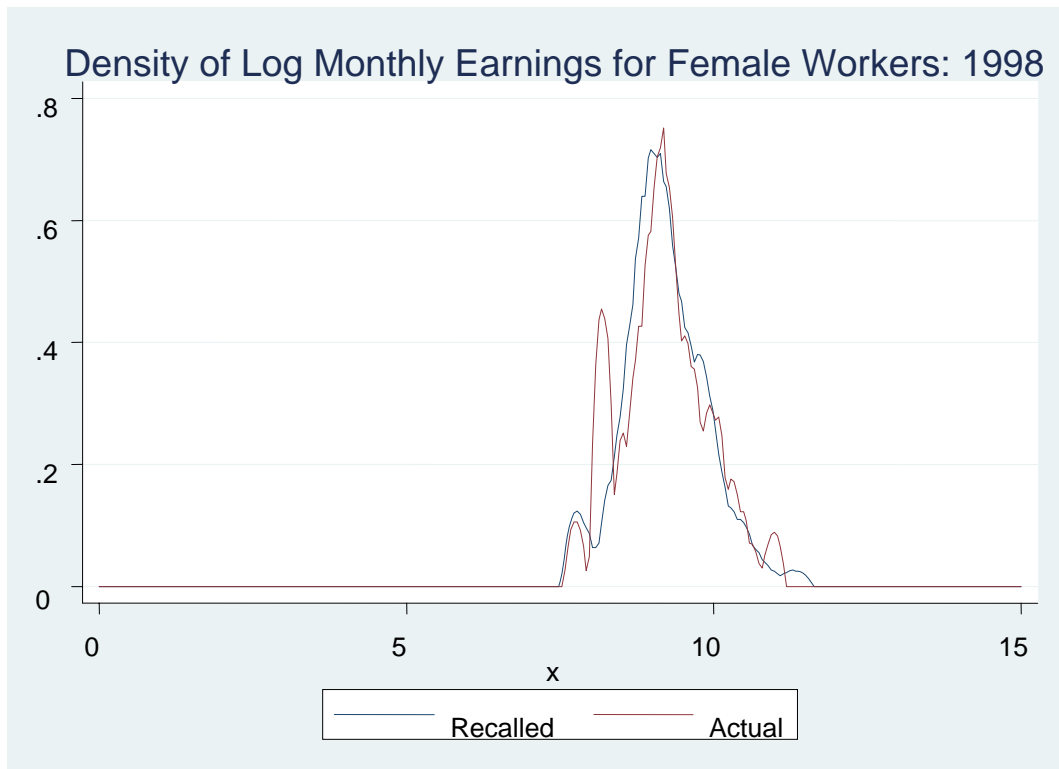
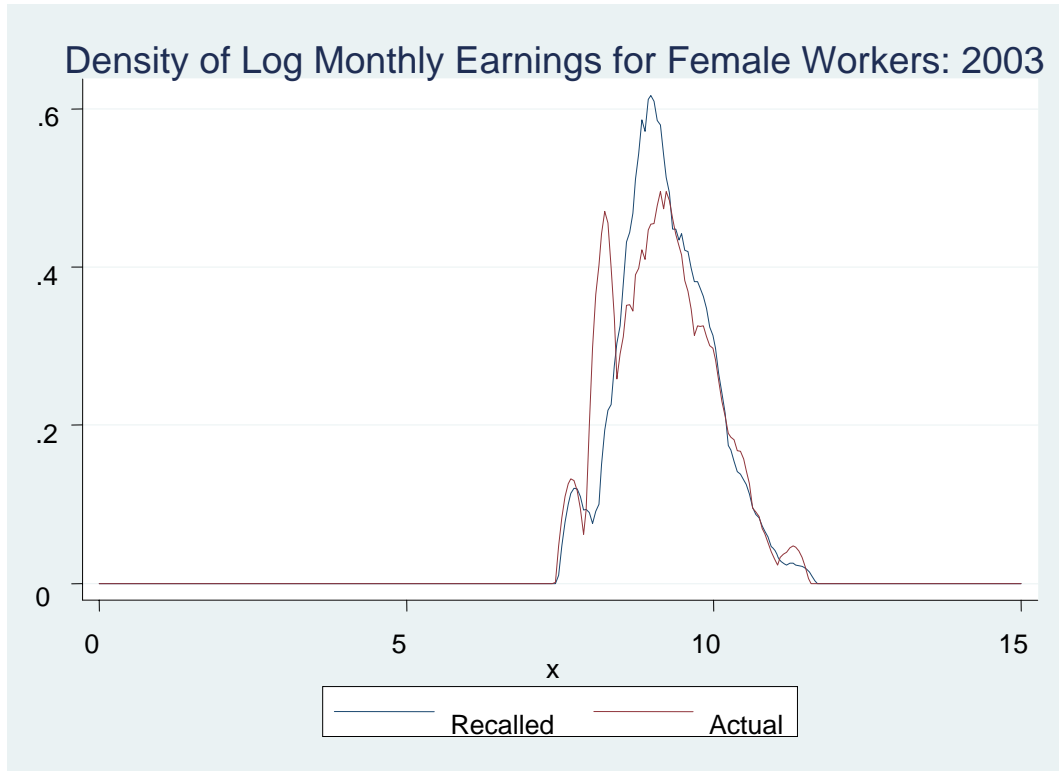
Figure 1: Reliability of Recalled Earnings Data⁸



⁸ Note: since the earnings data were released in categorical form, the figures depict simulated earnings that were generated from a maximum likelihood model. For more details, see paragraph 1.21.







Tables

Table 0.1 Correlation of Estimated Earnings

	98 & 03	03 & 08	98 & 08
All	0.84	0.87	0.75
Male	0.82	0.85	0.72
Female	0.88	0.88	0.79
Age			
30-39	0.80	0.84	0.68
40-49	0.86	0.87	0.78
50-65	0.86	0.88	0.79
Education			
Primary or Below	0.75	0.76	0.62
Secondary	0.79	0.80	0.67
Post-Secondary	0.78	0.81	0.63
Degree or Above	0.82	0.79	0.63
Industry			
Manufacturing	0.79	0.84	0.71
Construction	0.75	0.79	0.67
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	0.82	0.83	0.72
Transport, Storage and Communications	0.77	0.80	0.61
Financing, Insurance, Real Estate and Business Services	0.85	0.89	0.73
Community, Social and Personal Services	0.92	0.91	0.84
Others	0.82	0.94	0.80
Occupation			
Managers and Administrators	0.76	0.76	0.62
Professionals	0.77	0.79	0.62
Associate Professionals	0.74	0.77	0.57
Clerks	0.76	0.81	0.60
Service Workers and Shop Sales Workers	0.84	0.84	0.71
Craft and Related Workers	0.57	0.59	0.39
Plant and Machine Operators and Assemblers	0.67	0.61	0.50
Elementary Occupations	0.75	0.75	0.65
Others	0.51	0.98	0.51

Note: A higher correlation corresponds to lower earnings mobility and vice versa.

Table 0.2 Correlation of Estimated Earnings: Age×Sex and Education×Sex

Age	Sex	Male			Female		
		98 & 03	03 & 08	98 & 08	98 & 03	03 & 08	98 & 08
30-39		0.77	0.84	0.66	0.84	0.85	0.72
40-49		0.83	0.84	0.75	0.90	0.90	0.81
50-65		0.84	0.88	0.77	0.87	0.87	0.81
Education							
Primary or Below		0.70	0.69	0.51	0.66	0.77	0.63
Secondary		0.75	0.79	0.64	0.83	0.81	0.70
Post-Secondary		0.74	0.81	0.61	0.83	0.82	0.65
Degree or Above		0.81	0.79	0.60	0.84	0.79	0.66

Table 0.3 Correlation of Estimated Earnings: Education×Age

Education	Age	30-39			40-49			50-65		
		98 & 03	03 & 08	98 & 08	98 & 03	03 & 08	98 & 08	98 & 03	03 & 08	98 & 08
Primary or Below		0.92	0.79	0.79	0.78	0.79	0.59	0.73	0.74	0.63
Secondary		0.74	0.77	0.59	0.79	0.79	0.68	0.82	0.82	0.74
Post-Secondary		0.75	0.80	0.59	0.77	0.76	0.64	0.77	0.87	0.66
Degree or Above		0.67	0.70	0.47	0.87	0.82	0.75	0.83	0.84	0.67

Table 1.1 Mobility Rates by Quintile Group for All Workers

Quintile Group in 2003		Bottom	2 nd	3 rd	4 th	Top
Quintile Group in 1998						
Bottom		71.70%	22.57%	4.22%	1.10%	0.41%
2 nd		15.99%	50.29%	24.59%	7.89%	1.23%
3 rd		8.49%	16.06%	47.18%	25.62%	2.64%
4 th		3.23%	6.29%	10.32%	53.98%	26.18%
Top		0.88%	2.63%	2.21%	10.01%	84.27%

Quintile Group in 2008		Bottom	2 nd	3 rd	4 th	Top
Quintile Group in 2003						
Bottom		62.78%	27.79%	7.45%	1.88%	0.10%
2 nd		14.36%	49.30%	30.69%	5.12%	0.53%
3 rd		7.00%	10.27%	59.63%	21.76%	1.34%
4 th		3.57%	3.42%	19.18%	61.33%	12.51%
Top		0.92%	2.12%	1.94%	13.11%	81.90%

Quintile Group in 2008		Bottom	2 nd	3 rd	4 th	Top
Quintile Group in 1998						
Bottom		54.10%	29.77%	12.17%	3.38%	0.57%
2 nd		16.54%	32.92%	34.97%	12.58%	2.99%
3 rd		10.73%	16.75%	39.86%	27.46%	5.20%
4 th		4.11%	7.68%	19.46%	43.04%	25.71%
Top		3.27%	3.62%	4.18%	14.39%	74.54%

Overall Movement	98-03	03-08	98-08
Up	24.60%	22.04%	32.83%
No	60.12%	62.86%	47.21%
Down	15.27%	15.10%	19.96%

Overall Movement	Government Funded Training			Employer Funded Training			Increased Educational Attainment		
	98-03	03-08	98-08	98-03	03-08	98-08	98-03	03-08	98-08
Up	40.29%	28.55%	53.91%	39.93%	21.67%	45.45%	37.12%	27.65%	45.48%
No	50.37%	61.20%	34.62%	53.40%	67.63%	44.33%	54.08%	63.25%	41.60%
Down	9.33%	10.25%	11.47%	6.67%	10.70%	10.22%	8.80%	9.10%	12.92%

Table 1.2 Mobility Rates by Quintile Group for Male Workers

Quintile Group in 2003		Bottom	2 nd	3 rd	4 th	Top
Quintile Group in 1998						
Bottom		62.52%	29.17%	6.12%	1.92%	0.27%
2 nd		15.97%	48.86%	25.26%	8.30%	1.61%
3 rd		9.26%	18.00%	47.99%	22.31%	2.44%
4 th		4.00%	7.20%	11.50%	54.47%	22.82%
Top		0.70%	3.16%	2.62%	10.20%	83.33%
Quintile Group in 2008						
Quintile Group in 2003		Bottom	2 nd	3 rd	4 th	Top
Bottom		55.42%	30.28%	11.45%	2.85%	0.00%
2 nd		15.38%	45.78%	32.49%	5.70%	0.65%
3 rd		7.75%	11.52%	59.32%	19.82%	1.58%
4 th		3.73%	3.87%	20.89%	59.86%	11.64%
Top		0.48%	2.46%	1.65%	13.66%	81.75%
Quintile Group in 2008						
Quintile Group in 1998		Bottom	2 nd	3 rd	4 th	Top
Bottom		45.25%	31.54%	16.81%	5.30%	1.10%
2 nd		16.71%	30.70%	36.66%	12.30%	3.63%
3 rd		13.13%	17.76%	41.19%	23.58%	4.33%
4 th		3.94%	8.95%	21.70%	42.58%	22.82%
Top		2.72%	4.34%	4.26%	16.21%	72.48%
Overall Movement			98-03	03-08	98-08	
Up			23.98%	22.04%	31.22%	
No			58.13%	60.71%	45.23%	
Down			17.90%	17.25%	23.55%	

Table 1.3 Mobility Rates by Quintile Group for Female Workers

Quintile Group in 2003		Bottom	2 nd	3 rd	4 th	Top
Quintile Group in 1998						
Bottom		78.76%	17.49%	2.75%	0.48%	0.52%
2 nd		16.05%	53.18%	23.25%	7.05%	0.47%
3 rd		6.54%	11.12%	45.12%	34.05%	3.16%
4 th		1.53%	4.28%	7.73%	52.88%	33.58%
Top		1.45%	1.03%	0.98%	9.44%	87.10%
Quintile Group in 2008						
Quintile Group in 2003		Bottom	2 nd	3 rd	4 th	Top
Bottom		69.68%	25.46%	3.70%	0.96%	0.20%
2 nd		12.30%	56.35%	27.09%	3.97%	0.30%
3 rd		5.06%	7.06%	60.43%	26.70%	0.74%
4 th		3.22%	2.43%	15.45%	64.52%	14.38%
Top		1.94%	1.33%	2.62%	11.84%	82.27%
Quintile Group in 2008						
Quintile Group in 1998		Bottom	2 nd	3 rd	4 th	Top
Bottom		60.90%	28.42%	8.60%	1.91%	0.17%
2 nd		16.21%	37.39%	31.56%	13.16%	1.68%
3 rd		4.61%	14.17%	36.46%	37.35%	7.40%
4 th		4.48%	4.88%	14.52%	44.05%	32.08%
Top		4.91%	1.47%	3.97%	8.93%	80.71%
Overall Movement			98-03	03-08	98-08	
Up			25.77%	22.05%	35.83%	
No			63.83%	66.84%	50.87%	
Down			10.41%	11.11%	13.31%	

Table 2 Mobility Rates by Quintile Group and Age**Table 2.1 Male Workers****Age: 30-39**

Overall Movement	98-03	03-08	98-08
Up	41.71%	32.36%	55.00%
No	48.85%	55.54%	33.51%
Down	9.43%	12.00%	11.49%

Age: 40-49

Overall Movement	98-03	03-08	98-08
Up	21.57%	20.42%	27.90%
No	60.15%	61.02%	48.05%
Down	18.28%	18.56%	24.06%

Age: 50-65

Overall Movement	98-03	03-08	98-08
Up	13.31%	16.02%	17.02%
No	62.85%	64.25%	50.92%
Down	23.84%	19.73%	32.06%

Table 2.2 Female Workers

Age: 30-39

Overall Movement	98-03	03-08	98-08
Up	41.27%	34.22%	58.54%
No	50.79%	55.84%	33.06%
Down	7.94%	9.94%	8.40%

Age: 40-49

Overall Movement	98-03	03-08	98-08
Up	22.48%	17.60%	29.39%
No	65.38%	68.00%	53.52%
Down	12.15%	14.40%	17.09%

Age: 50-65

Overall Movement	98-03	03-08	98-08
Up	13.67%	15.09%	20.31%
No	75.67%	77.03%	66.31%
Down	10.66%	7.88%	13.38%

Table 2.3 By Age×Education

Age 30-39: Primary or Below

Overall Movement	98-03	03-08	98-08
Up	19.46%	24.43%	34.99%
No	68.28%	64.53%	46.45%
Down	12.26%	11.04%	18.56%

Age 30-39: Secondary

Overall Movement	98-03	03-08	98-08
Up	34.36%	34.35%	49.06%
No	54.21%	53.51%	38.60%
Down	11.42%	12.13%	12.34%

Age 30-39: Post-Secondary

Overall Movement	98-03	03-08	98-08
Up	47.21%	37.68%	68.17%
No	45.90%	49.80%	24.23%
Down	6.89%	12.52%	7.61%

Age 30-39: Degree or Above

Overall Movement	98-03	03-08	98-08
Up	57.70%	26.95%	66.81%
No	38.82%	65.29%	26.77%
Down	3.48%	7.76%	6.42%

Age 40-49: Primary or Below

Overall Movement	98-03	03-08	98-08
Up	12.46%	24.46%	25.50%
No	64.67%	58.56%	48.68%
Down	22.88%	16.98%	25.82%

Age 40-49: Secondary

Overall Movement	98-03	03-08	98-08
Up	22.14%	22.07%	29.25%
No	59.24%	58.30%	45.99%
Down	18.62%	19.63%	24.76%

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Age 40-49: Post-Secondary

Overall Movement	98-03	03-08	98-08
Up	28.39%	18.21%	32.43%
No	57.62%	65.09%	48.77%
Down	13.99%	16.70%	18.80%

Age 40-49: Degree or Above

Overall Movement	98-03	03-08	98-08
Up	18.74%	8.53%	22.12%
No	76.58%	83.05%	67.93%
Down	4.68%	8.42%	9.96%

Age 50-65: Primary or Below

Overall Movement	98-03	03-08	98-08
Up	8.75%	13.18%	12.39%
No	68.28%	69.87%	58.57%
Down	22.97%	16.95%	29.03%

Age 50-65: Secondary

Overall Movement	98-03	03-08	98-08
Up	16.76%	19.39%	23.08%
No	61.79%	64.06%	48.22%
Down	21.45%	16.55%	28.70%

Age 50-65: Post-Secondary

Overall Movement	98-03	03-08	98-08
Up	16.79%	14.05%	18.62%
No	67.82%	70.09%	62.32%
Down	15.39%	15.86%	19.05%

Age 50-65: Degree or Above

Overall Movement	98-03	03-08	98-08
Up	8.70%	8.33%	11.39%
No	85.51%	80.51%	75.15%
Down	5.79%	11.16%	13.47%

Table 3 Mobility Rates by Quintile Group and Educational Attainment**Table 3.1 Male Workers****Education: Primary or Below**

Overall Movement	98-03	03-08	98-08
Up	23.98%	22.04%	31.22%
No	58.13%	60.71%	45.23%
Down	17.90%	17.25%	23.55%

Education: Secondary

Overall Movement	98-03	03-08	98-08
Up	24.18%	24.23%	31.56%
No	56.10%	56.95%	42.78%
Down	19.71%	18.82%	25.66%

Education: Post-Secondary

Overall Movement	98-03	03-08	98-08
Up	31.09%	24.83%	40.38%
No	55.32%	59.60%	43.01%
Down	13.58%	15.58%	16.61%

Education: Degree or Above

Overall Movement	98-03	03-08	98-08
Up	27.98%	15.19%	34.38%
No	67.86%	76.13%	56.00%
Down	4.17%	8.67%	9.62%

Table 3.2 Female Workers

Education: Primary or Below

Overall Movement	98-03	03-08	98-08
Up	25.77%	22.05%	35.83%
No	63.83%	66.84%	50.87%
Down	10.41%	11.11%	13.31%

Education: Secondary

Overall Movement	98-03	03-08	98-08
Up	24.06%	25.89%	36.67%
No	63.34%	61.97%	47.90%
Down	12.60%	12.14%	15.53%

Education: Post-Secondary

Overall Movement	98-03	03-08	98-08
Up	34.37%	23.25%	44.14%
No	56.36%	62.51%	43.33%
Down	9.27%	14.24%	12.53%

Education: Degree or Above

Overall Movement	98-03	03-08	98-08
Up	39.33%	16.98%	42.98%
No	55.68%	74.18%	48.25%
Down	4.99%	8.84%	8.76%

Table 4 Mobility Rates by Industry and Occupation

Industry	Overall Movement	98-03			03-08			98-08		
		Up	No	Down	Up	No	Down	Up	No	Down
Manufacturing		22.30%	56.28%	21.42%	19.51%	60.47%	20.02%	28.54%	46.55%	24.91%
Construction		16.64%	50.89%	32.47%	26.71%	52.68%	20.60%	27.40%	39.11%	33.48%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels		24.00%	61.94%	14.07%	23.36%	61.76%	14.88%	34.07%	46.27%	19.66%
Transport, Storage and Communications		23.64%	57.19%	19.17%	25.90%	55.36%	18.74%	32.48%	41.67%	25.85%
Financing, Insurance, Real Estate and Business Services		32.95%	59.34%	7.71%	21.34%	66.95%	11.70%	40.98%	46.19%	12.83%
Community, Social and Personal Services		25.86%	66.97%	7.18%	16.41%	72.43%	11.16%	30.29%	58.38%	11.33%
Others		19.38%	65.79%	14.83%	21.66%	68.72%	9.62%	26.76%	52.08%	21.16%
Occupation										
Managers and Administrators		17.89%	68.30%	13.80%	14.81%	68.48%	16.70%	21.95%	55.11%	22.94%
Professionals		27.48%	66.77%	5.75%	12.60%	80.66%	6.74%	32.60%	58.64%	8.76%
Associate Professionals		35.69%	50.78%	13.52%	21.28%	60.67%	18.06%	37.47%	42.22%	20.31%
Clerks		29.82%	59.72%	10.46%	32.27%	57.82%	9.91%	48.51%	40.22%	11.26%
Service Workers and Shop Sales Workers		22.80%	63.57%	13.63%	21.92%	64.39%	13.68%	31.26%	50.31%	18.43%
Craft & Related Workers		21.59%	50.51%	27.89%	31.65%	49.91%	18.44%	35.29%	36.54%	28.17%
Plant and Machine Operators and Assemblers		16.03%	56.83%	27.14%	18.17%	54.94%	26.89%	18.47%	44.41%	37.13%
Elementary Occupations		11.89%	77.04%	11.07%	17.63%	72.91%	9.46%	21.75%	63.89%	14.36%
Others		14.97%	63.63%	21.39%	6.55%	81.25%	12.20%	9.56%	59.30%	31.14%
			(17)			(14)			(17)	

Note: Figures in brackets represent the number of observations.

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

Table 5.1 by Sex

	1998	2003	2008
All	19.51%	20.29%	17.99%
Male	13.06%	15.10%	14.21%
Female	31.47%	29.91%	24.99%
Government Funded Training	7.21%	2.67%	3.18%
Employer Funded Training	8.05%	3.35%	4.61%

Table 5.2 By Age and Education

	1998	2003	2008
Age			
30-39	22.21%	16.04%	10.09%
40-49	13.92%	15.48%	13.45%
50-65	23.87%	29.65%	30.10%
Education			
Primary or Below	39.53%	47.98%	47.73%
Secondary	22.18%	22.22%	19.07%
Post-Secondary	8.93%	8.28%	6.39%
Degree or Above	1.69%	1.31%	2.40%

Table 5.3 By Industry

	1998	2003	2008
Manufacturing	26.07%	20.17%	16.63%
Construction	14.03%	20.67%	16.32%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	24.44%	21.98%	17.39%
Transport, Storage & Communications	16.20%	21.03%	19.67%
Financing, Insurance, Real Estate and Business Services	12.85%	16.62%	17.99%
Community, Social & Personal Services	18.41%	19.83%	19.02%
Others	15.39%	22.44%	23.87%

Table 5.4 by Occupation

	1998	2003	2008
Managers and Administrators	2.39%	3.01%	0.86%
Professionals	0.54%	0.92%	0.65%
Associate Professionals	4.22%	5.04%	4.76%
Clerks	26.24%	22.02%	14.92%
Service Workers & Shop Sales Workers	28.17%	27.16%	23.10%
Craft & Related Workers	18.40%	20.44%	14.53%
Plant and Machine Operators & Assemblers	21.65%	25.12%	23.13%
Elementary Occupations	61.44%	64.12%	65.22%
Others	29.86%	48.86%	61.97%

Table 5.5 by Education×Age

Education	Age			30-39			40-49			50-65		
	1998	2003	2008	1998	2003	2008	1998	2003	2008	1998	2003	2008
Primary or Below	55.14%	60.51%	53.97%	35.45%	42.77%	35.99 %	39.89%	48.97%	51.24 %			
Secondary	31.12%	23.33%	16.18%	16.31%	18.26%	15.78%	21.72%	26.84%	26.36%			
Post-Secondary	15.06%	9.15%	3.08%	5.33%	6.17%	6.34%	6.21%	10.97%	11.97%			
Degree or Above	1.45%	0.75 %	1.10%	2.11%	1.31%	2.55%	1.35%	2.39%	4.76%			

Table 5.6 by Age× Sex and Education×Sex

	Male			Female		
	1998	2003	2008	1998	2003	2008
Age						
30-39	20.96%	13.89%	10.02%	24.18%	19.40%	10.21%
40-49	8.32%	11.06%	9.17%	24.06%	23.48%	21.20%
50-65	12.38%	20.51%	22.95%	49.42%	49.96%	46.00%
Education						
Primary or Below	19.96%	31.59%	34.01 %	75.25%	78.37%	72.66%
Secondary	16.22%	17.11%	15.71%	34.10%	32.44%	25.85%
Post-Secondary	6.64%	7.24%	5.33%	12.21%	9.80%	8.04%
Degree or Above	1.19%	1.07%	1.75%	2.66%	1.76 %	3.53%

Table 6 Probability of Remaining in the Lowest Earnings Quintile Group, by Workers' Characteristics⁹

Table 6.1 By Age, Sex and Education

	Male			Female		
	98-03	03-08	98-08	98-03	03-08	98-08
All	62.52%	55.42%	45.25%	78.76%	69.68%	60.90%
Age						
30-39	51.42%	45.53%	30.55%	66.19%	39.95%	31.41%
40-49	66.20%	42.57%	42.09%	77.89%	68.66%	59.10%
50-65	73.91%	68.16%	66.34%	85.92%	82.69%	77.55%
Education						
Primary or Below	82.20%	67.32%	70.66%	92.13%	86.41%	82.10%
Secondary	58.62%	52.27%	40.26%	73.71%	62.11%	52.69%
Post-Secondary	42.76%	33.33%	20.97%	57.59%	37.31%	26.93%
Degree or Above	39.43%	56.90%	19.76%	44.33%	42.60%	15.75%
	(5)	(5)	(5)	(7)	(5)	(7)

Note: Figures in brackets represent the number of observations.

Table 6.2 Funded Training

	98-03	03-08	98-08
Government Funded Training	16.54%	0.00%	0.00%
Employer Funded Training	22.67%	75.61%	18.91%

Table 6.3 By Education×Age

Education \ Age	30-39			40-49			50-65		
	98-03	03-08	98-08	98-03	03-08	98-08	98-03	03-08	98-08
Primary or Below	84.48%	65.83%	52.04%	87.13%	69.44%	68.55%	90.10%	81.66%	83.72%
Secondary	58.10%	45.97%	34.15%	72.22%	54.44%	50.53%	71.82%	69.01%	60.35%
Post-Secondary	46.72%	10.70%	6.59%	47.24%	35.81%	30.65%	74.62%	67.68%	82.43%
Degree or Above	27.12%	0.00%	0.00%	49.85%	53.42%	18.65%	48.91%	76.93%	48.91%

⁹ Percentage of workers in the lowest quintile group at the beginning of the reference period who continue to be in the lowest quintile group at the end of the reference period.

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Table 6.4 By Industry and Occupation

	98-03	03-08	98-08
Industry			
Manufacturing	73.93%	69.43%	60.62%
Construction	64.99%	46.44%	46.60%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	71.55%	61.17%	51.55%
Transport, Storage & Communications	73.78%	54.56%	51.68%
Financing, Insurance, Real Estate and Business Services	68.59%	71.84%	49.80%
Community, Social & Personal Services	74.22%	70.79%	60.44%
Others	67.25%	75.19%	76.37%
Occupation			
Managers and Administrators	40.39%	17.22%	23.51%
	(12)	(12)	(12)
Professionals	52.25%	0.00%	0.00%
	(2)	(3)	(2)
Associate Professionals	42.27%	43.22%	28.02%
Clerks	59.24%	44.17%	31.67%
Service Workers & Shop Sales Workers	75.69%	66.98%	60.01%
Craft & Related Workers	53.36%	40.53%	32.76%
Plant and Machine Operators & Assemblers	83.70%	63.19%	71.93%
Elementary Occupations	87.34%	80.79%	74.07%
Others	68.59%	86.59%	86.71%
	(6)	(8)	(6)

Note: Figures in brackets represent the number of observations.

Table 7.1 Elasticity of Lifetime Earnings Between Parents and Children

	Fathers	Fathers (c.m.i.*)	Mothers	Mothers (c.f.i.*)
All Children	0.40	0.31	0.26	0.11**
Sons	0.42	0.39	0.25	0.03**
Daughters	0.40	0.17**	0.28	0.24
By Education of Parent				
Primary or Below	0.33	0.26	0.21	0.10**
Secondary	0.41	0.26	0.30	0.11**
Post-Secondary	0.44	0.24	0.34	0.25**
Degree or Above	0.49	0.46	0.46	0.20**
By Industry of Parent				
Manufacturing	0.37	0.29	0.27	0.15
Construction	0.18	0.15**	-0.12**	-0.42**
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	0.39	0.31	0.30	0.16**
Transport, Storage and Communications	0.35	0.35	0.34	0.22**
Financing, Insurance, Real Estate and Business Services	0.37	0.28	0.24	0.08**
Community, Social and Personal Services	0.40	0.35	0.44	0.26
By Occupation of Parent				
Managers and Administrators	0.53	0.43	0.81	0.48**
Professionals	0.68	0.51	0.86	0.68**
Associate Professionals	0.68	0.57	0.87	0.49**
Clerks	0.73	0.69	1.24	0.73**
Service Workers and Shop Sales Workers	0.73	0.62	1.38	0.81**
Craft and Related Workers	0.66	0.51	1.27	0.62**
Plant and Machine Operators and Assemblers	0.71	0.61	1.47	0.88**
Elementary Occupations	0.75	0.63	1.70	1.03**
Children of Special Interest				
Children living with both parents until age 15	0.39	0.33	0.24	0.08**
Children whose parents were both married until age 15	0.41	0.33	0.26	0.11**
Children whose mothers were working (part-time or full-time) at age 15	0.39	0.35	0.26	0.11**

* c.m.i. = controlling for mother's income; c.f.i. = controlling for father's income

** These estimates are not statistically significant ($p > 0.05$).

Table 7.2 Elasticity of Lifetime Earnings Between Parents and Sons

	Fathers	Fathers (c.m.i.*)	Mothers	Mothers (c.f.i.*)
Sons	0.42	0.39	0.25	0.03**
By Education of Parent				
Primary or Below	0.37	0.41	0.21	0.01**
Secondary	0.37	0.29	0.18	-0.13**
Post-Secondary	0.37	0.26	0.41	0.22**
Degree or Above	0.51	0.55	0.47	0.02**
By Industry of Parent				
Manufacturing	0.39	0.40	0.28	0.06**
Construction	0.35	0.43	-0.07**	-0.44**
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	0.47	0.43	0.26	0.03**
Transport, Storage and Communications	0.44	0.50	0.28**	0.02**
Financing, Insurance, Real Estate and Business Services	0.45	0.45	0.23**	-0.02**
Community, Social and Personal Services	0.47	0.51	0.40	0.15**
By Occupation of Parent				
Managers and Administrators	0.52	0.46	0.92	0.07**
Professionals	0.59	0.83	0.84	1.09**
Associate Professionals	0.67	0.60	1.17	0.22**
Clerks	0.61	0.57**	1.42	0.05**
Service Workers and Shop Sales Workers	0.72	0.63**	1.65	-0.01**
Craft and Related Workers	0.67	0.56**	1.55	-0.42**
Plant and Machine Operators and Assemblers	0.68	0.65**	1.80	0.05**
Elementary Occupations	0.70	0.61**	2.03	0.17**
Children of Special Interest				
Children living with both parents until age 15	0.39	0.36	0.24	0.01**
Children whose parents were both married until age 15	0.41	0.36	0.25	0.02**
Children whose mothers were working (part-time or full-time) at age 15	0.41	0.39	0.25	0.03**

* c.m.i. = controlling for mother's income; c.f.i. = controlling for father's income

** These estimates are not statistically significant ($p > 0.05$).

Table 7.3 Elasticity of Lifetime Earnings Between Parents and Daughters

	Fathers	Fathers (c.m.i.*)	Mothers	Mothers (c.f.i.*)
Daughters	0.40	0.17**	0.28	0.24
By Education of Parent				
Primary or Below	0.27	0.05**	0.21	0.20**
Secondary	0.48	0.23**	0.44	0.43
Post-Secondary	0.52	0.20**	0.31	0.37**
Degree or Above	0.47	0.31**	0.44	0.47**
By Industry of Parent				
Manufacturing	0.35	-0.17**	0.26	0.24
Construction	-0.01**	0.18**	-0.27**	-0.58**
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	0.31	0.19**	0.33	0.28**
Transport, Storage and Communications	0.25	0.08**	0.49	0.54**
Financing, Insurance, Real Estate and Business Services	0.29	0.19**	0.25	0.17**
Community, Social and Personal Services	0.35	0.16**	0.49	0.38
By Occupation of Parent				
Managers and Administrators	0.59	0.44**	0.65**	1.15
Professionals	0.80	0.05**	0.88**	0.90**
Associate Professionals	0.77	0.59**	0.56*	1.04**
Clerks	0.98	0.94**	0.97**	1.80**
Service Workers and Shop Sales Workers	0.84	0.73**	0.97**	2.14**
Craft and Related Workers	0.74**	0.55**	0.87**	2.02**
Plant and Machine Operators and Assemblers	0.84	0.68**	1.03**	2.24**
Elementary Occupations	0.91	0.77**	1.22**	2.44**
Children of Special Interest				
Children living with both parents until age 15	0.39	0.27	0.26	0.20**
Children whose parents were both married until age 15	0.42	0.26	0.30	0.27
Children whose mothers were working (part-time or full-time) at age 15	0.33	0.25**	0.28	0.24

* c.m.i. = controlling for mother's income; c.f.i. = controlling for father's income

** These estimates are not statistically significant ($p > 0.05$).

Table 8 Transitional Probabilities for Parents' and Children's Lifetime Earnings Quintiles (LEQs)

		Son's LEQ				
		Bottom	2 nd	3 rd	4 th	Top
Father's LEQ						
Bottom		18.09%	26.90%	22.36%	19.75%	12.90%
2 nd		17.10%	23.69%	22.95%	21.19%	15.07%
3 rd		15.58%	21.37%	22.91%	22.66%	17.49%
4 th		12.89%	18.87%	22.26%	24.18%	21.80%
Top		8.54%	14.88%	19.82%	25.80%	30.96%
		Daughter's LEQ				
		Bottom	2 nd	3 rd	4 th	Top
Father's LEQ						
Bottom		25.89%	21.26%	17.49%	17.28%	18.09%
2 nd		24.36%	20.11%	17.78%	18.58%	19.18%
3 rd		21.97%	18.65%	17.96%	20.39%	21.03%
4 th		18.27%	15.92%	17.69%	23.23%	24.89%
Top		13.90%	10.53%	15.59%	25.66%	34.32%
		Son's LEQ				
		Bottom	2 nd	3 rd	4 th	Top
Mother's LEQ						
Bottom		16.56%	22.71%	21.27%	21.72%	17.74%
2 nd		15.90%	18.90%	21.00%	22.63%	21.57%
3 rd		14.76%	16.08%	20.98%	23.21%	24.97%
4 th		11.23%	13.37%	20.03%	24.19%	31.17%
Top		4.86%	10.66%	14.90%	28.19%	41.39%
		Daughter's LEQ				
		Bottom	2 nd	3 rd	4 th	Top
Mother's LEQ						
Bottom		22.63%	21.30%	20.61%	16.58%	18.89%
2 nd		22.54%	18.93%	21.46%	16.68%	20.39%
3 rd		21.37%	16.64%	20.98%	18.49%	22.52%
4 th		16.28%	14.06%	18.03%	23.30%	28.34%
Top		6.44%	11.06%	12.67%	30.05%	39.78%

Table 9 Educational Attainment, Industries and Occupations of Parents and Children

Table 9.1 Educational Attainment of Parents and Children

Son's Education		Primary or Below	Secondary	Post-Secondary	Degree or Above
Father's Education					
Primary or Below		4.33%	58.50%	16.87%	20.30%
Secondary		0.45%	41.82%	18.99%	38.73%
Post-Secondary		1.33%	23.73%	23.43%	51.41%
Degree or Above	(No. of records: 1836)	0.00%	15.98%	10.44%	73.58%

Daughter's Education		Primary or Below	Secondary	Post-Secondary	Degree or Above
Father's Education					
Primary or Below		4.60%	54.27%	19.36%	21.77%
Secondary		1.09%	33.93%	24.83%	40.15%
Post-Secondary		0.00%	31.06%	18.53%	50.42%
Degree or Above	(No. of records: 1508)	0.00%	11.57%	17.81%	70.62%

Son's Education		Primary or Below	Secondary	Post-Secondary	Degree or Above
Mother's Education					
Primary or Below		3.92%	55.17%	17.99%	22.92%
Secondary		0.84%	41.63%	15.72%	41.81%
Post-Secondary		0.00%	19.15%	23.21%	57.64%
Degree or Above	(No. of records: 1875)	0.00%	14.38%	6.82%	78.80%

Daughter's Education		Primary or Below	Secondary	Post-Secondary	Degree or Above
Mother's Education					
Primary or Below		3.79%	53.28%	19.31%	23.61%
Secondary		0.68%	32.74%	22.85%	43.73%
Post-Secondary		0.00%	14.82%	25.79%	59.39%
Degree or Above	(No. of records: 1574)	0.00%	14.23%	6.99%	78.77%

Table 9.2 Industries of Parents and Children

	Industry of Child						
	Manufacturing	Construction	Trade, Restaurants, Hotels	Transport, Storage, Communications	Finance, Insurance, Real Estate	Community, Social, Personal Services	Others
Industry of Father \ Industry of Son							
Manufacturing	9.88%	11.31%	30.79%	16.61%	15.21%	15.80%	0.39%
Construction	5.20%	27.18%	28.02%	13.25%	10.75%	15.59%	0.00%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	7.95%	8.68%	33.35%	15.43%	18.88%	15.17%	0.53%
Transport, Storage and Communications	5.38%	11.89%	25.37%	19.24%	22.28%	15.39%	0.46%
Financing, Insurance, Real Estate and Business Services	3.82%	14.72%	29.05%	21.14%	19.43%	11.28%	0.56%
Community, Social and Personal Services	10.89%	6.82%	28.61%	11.76%	20.46%	20.05%	1.41%
Industry of Mother \ Industry of Son							
Manufacturing	9.48%	11.38%	31.07%	15.29%	15.83%	16.65%	0.31%
Construction	4.99%	21.24%	25.76%	15.28%	16.29%	10.80%	5.64%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	4.12%	12.75%	37.19%	13.61%	21.21%	10.86%	0.26%
Transport, Storage and Communication	8.02%	7.65%	17.15%	30.86%	14.37%	21.96%	0.00%
Financing, Insurance, Real Estate and Business Services	4.36%	2.21%	30.91%	16.93%	32.42%	10.97%	2.21%
Community, Social and Personal Services	7.07%	12.71%	20.20%	13.16%	23.71%	22.75%	0.40%
Industry of Father \ Industry of Daughter							
Manufacturing	4.81%	1.39%	42.25%	5.73%	19.60%	25.69%	0.52%
Construction	5.86%	1.45%	46.30%	6.66%	13.12%	26.61%	0.00%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	4.58%	1.46%	41.88%	4.18%	21.75%	25.86%	0.29%
Transport, Storage and Communications	1.70%	0.00%	36.24%	10.74%	22.35%	28.97%	0.00%
Financing, Insurance, Real Estate and Business Services	5.14%	0.00%	29.25%	9.26%	24.50%	31.86%	0.00%
Community, Social and Personal Services	2.25%	2.12%	34.31%	7.96%	22.07%	31.29%	0.00%
Industry of Mother \ Industry of Daughter							
Manufacturing	3.58%	0.44%	39.14%	8.48%	19.66%	28.25%	0.44%
Construction	0.00%	0.00%	26.65%	30.69%	0.00%	42.66%	0.00%
Wholesale, Retail and Import/Export Trades, Restaurants and Hotels	8.01%	1.75%	37.68%	5.78%	23.11%	23.32%	0.37%
Transport, Storage and Communications	6.10%	0.00%	29.20%	13.01%	14.32%	37.38%	0.00%
Financing, Insurance, Real Estate and Business Services	0.00%	0.00%	33.77%	7.16%	35.26%	23.81%	0.00%
Community, Social and Personal Services	2.39%	1.50%	40.28%	2.95%	15.25%	37.63%	0.00%

Table 9.3 Occupations of Parents and Children

Occupation of Father \ Occ. of Son	Occupation of Child							
	Managers and Administrators	Professionals	Associate Professionals	Clerks	Service and Shop Sales Workers	Craft and Related Workers	Plant and Machine Operators	Elementary Occupations
Managers and Administrators	35.99%	12.94%	29.74%	5.45%	7.62%	2.09%	2.67%	3.50%
Professionals	24.11%	42.77%	19.13%	0.00%	4.55%	4.44%	0.00%	5.02%
Associate Professionals	17.73%	20.98%	29.54%	3.86%	6.88%	11.76%	6.66%	2.59%
Clerks	21.93%	13.03%	26.19%	13.70%	7.22%	6.46%	7.40%	4.06%
Service and Shop Sales Workers	14.05%	17.84%	25.98%	4.73%	14.37%	11.41%	6.65%	4.97%
Craft and Related Workers	15.30%	9.31%	31.61%	5.48%	6.63%	16.66%	8.05%	6.95%
Plant and Machine Operators and Assemblers	11.78%	11.91%	29.03%	6.11%	8.91%	12.56%	12.12%	7.57%
Elementary Occupations	9.88%	8.00%	18.83%	8.71%	13.44%	20.51%	13.62%	7.02%
Occupation of Mother \ Occ. of Son								
Managers and Administrators	49.69%	18.79%	21.29%	2.79%	2.53%	0.00%	2.46%	2.46%
Professionals	45.24%	41.54%	13.22%	0.00%	0.00%	0.00%	0.00%	0.00%
Associate Professionals	24.06%	28.65%	19.29%	1.79%	5.44%	11.71%	5.26%	3.80%
Clerks	13.84%	18.57%	37.25%	3.60%	14.01%	5.60%	3.69%	3.45%
Service and Shop Sales Workers	15.89%	11.10%	22.95%	10.95%	13.37%	12.74%	7.98%	5.01%
Craft and Related Workers	32.57%	14.74%	12.30%	13.14%	8.58%	5.25%	5.53%	7.88%
Plant and Machine Operators and Assemblers	18.42%	13.94%	30.43%	2.30%	10.06%	10.50%	11.12%	3.23%
Elementary Occupations	10.46%	11.54%	24.65%	8.34%	10.07%	15.45%	10.87%	8.61%
Occupation of Father \ Occ. of Daughter								
Managers and Administrators	21.18%	12.08%	39.57%	20.16%	6.25%	0.77%	0.00%	0.00%
Professionals	23.93%	35.15%	22.59%	5.60%	12.34%	0.00%	0.00%	0.00%
Associate Professionals	16.20%	16.10%	25.78%	37.32%	2.39%	1.10%	0.00%	1.11%
Clerks	12.87%	18.53%	32.49%	18.02%	16.07%	0.00%	0.00%	2.03%
Service and Shop Sales Workers	12.21%	8.40%	25.63%	39.93%	10.88%	0.00%	0.55%	2.39%
Craft and Related Workers	15.36%	7.59%	27.64%	31.29%	14.20%	0.00%	0.87%	3.04%
Plant and Machine Operators and Assemblers	8.02%	6.39%	33.93%	41.26%	7.42%	0.49%	0.58%	1.91%
Elementary Occupations	5.47%	9.04%	23.26%	47.37%	8.12%	0.37%	0.69%	5.67%
Occupation of Mother \ Occ. of Daughter								
Managers and Administrators	27.80	12.41	40.74	6.72	6.24	6.10	0.00	0.00
Professionals	38.50	12.65	48.85	0.00	0.00	0.00	0.00	0.00
Associate Professionals	21.06	14.49	29.15	26.85	8.45	0.00	0.00	0.00
Clerks	16.73	11.74	36.92	23.86	7.13	0.00	0.00	3.61
Service and Shop Sales Workers	5.74	8.95	28.89	39.55	15.21	0.00	0.00	1.66
Craft and Related Workers	14.78	7.48	29.59	38.02	6.60	0.00	0.00	3.52
Plant and Machine Operators and Assemblers	11.59	8.03	31.91	36.03	8.36	0.00	2.08	2.00
Elementary Occupations	9.65	10.24	25.89	36.89	10.92	0.59	0.83	5.00