

Income differences of post-secondary degree graduates across different generations

Kelvin Wong
Senior Economist

May 2020

Abstract

This article analyses the employment income of young degree graduates across generations based on population census and by-census data from 1991 to 2016. The results indicate that the median starting income and subsequent incomes of degree graduates in more recent generations (from 2006 onward), having discounted for inflation, were generally less favourable than those of cohorts from the 1990s. This could be partly related to the more notable increase in the supply, relative to demand, of young higher-educated persons in the labour market over the past two decades or so. Notwithstanding this, in general, the employment income of post-secondary degree holders consistently outperformed their lower-educated counterparts across all generations, likely due to a larger proportion of them taking up higher-skilled occupations.

不同世代大學畢業生的收入差異

摘要

本文根據 1991 至 2016 年間人口普查及中期人口統計數據，分析不同世代年輕大學畢業生的就業收入。結果顯示較近世代（2006 年起）大學畢業生的起薪和後續收入中位數，扣除通脹後，一般較 1990 年世代遜色。這部分源於過去二十多年來勞工市場中，相對於需求而言，受過高等教育青年的供給更顯著增加有關。儘管如此，一般而言，不同世代具大學教育程度人士的就業收入一直優於教育程度較低人士，這可能是由於他們有較大比例從事較高技術職業。

The views and analysis expressed in this article are those of the author and do not necessarily represent the views of the Office of the Government Economist.

I. INTRODUCTION

The ability of the younger generation of degree graduates to get a foothold in the labour market and climb the earnings ladder is a matter of increasing concern in society¹. To shed more light on this issue, this article examines the median starting and subsequent incomes of young degree graduates across generations, based on census and by-census data collected by the Census and Statistics Department from 1991 to 2016.

2. Different from recent analyses which often adopted data from the General Household Survey and targeted persons aged 20-24, this study makes use of population census / by-census data from 1991 to 2016 (the latest available) for analysis. Using census data allows adjusting the age range of fresh degree graduates to those aged 23-27, among whom the majority should have completed their education. Another advantage is that population census / by-census surveys collect information on field of study for persons with post-secondary education. While this study examines the income performance of young degree graduates as a whole across generations, a follow-up article will extend the current analysis on degree graduates further by field of study.

3. This article is organised as follows. Section II describes the data set and the study cohorts. Section III analyses the median starting and subsequent incomes of young degree graduates as a whole across the generations in question. Section IV examines major factors for the less favourable income performance of more recent cohorts. Section V discusses the income premium of degree graduates relative to their lower-educated counterparts across generations. The last section concludes.

¹ New Century Forum. (2018, December 17). *香港各世代大學生收入比較研究 (1987-2017 年)* [Research report comparing the income of university graduates of different generations in Hong Kong, 1987-2017]. Retrieved from http://www.ncforum.org.hk/file/upload/file_934_Alu.pdf
Economic Analysis and Business Facilitation Unit, the Government of the Hong Kong Special Administrative Region (2016, August). *Box 5.1 Earnings of youths in Hong Kong*. Retrieved from <https://www.hkeconomy.gov.hk/en/pdf/box-16q2-5-1.pdf>
Research Office, Information Services Division, Legislative Council Secretariat. (2016, June). *Challenges of manpower adjustment in Hong Kong. Research Brief Issue No. 4 2015-2016*. Retrieved from <https://www.legco.gov.hk/research-publications/english/1516rb04-challenges-of-manpower-adjustment-in-hong-kong-20160607-e.pdf>

II. DATA

4. This study uses multiple rounds of census and by-census data (from 1991 to 2016) from the Census and Statistics Department. The key outcome variable is monthly income from main employment. The baseline group in the analysis is working persons aged 23-27 who have attended first-degree programmes or above². Their median employment income is used as a proxy for the starting income of fresh university graduates when entering the labour market. The median incomes for those aged 28-32 5 years later and 33-37 10 years later are proxies for graduates' incomes after gaining 5 and 10 years of work experience, respectively.

5. In all, the study focuses on six cohorts, ranging from those born in 1964-68 to those born in 1989-93. For more recent cohorts, however, statistics on graduates' income after 5 or 10 years of work experience are not available as the data have not yet been collected. The cohorts and data sources for each cohort are detailed in **Table 1**.

Table: 1 Age range of each cohort by year of census or by-census

Years of Birth	Year of Census or By-census					
	1991	1996	2001	2006	2011	2016
1964 - 1968 (1991 cohort)	23-27	28-32	33-37			
1969 - 1973 (1996 cohort)		23-27	28-32	33-37		
1974 - 1978 (2001 cohort)			23-27	28-32	33-37	
1979 - 1983 (2006 cohort)				23-27	28-32	33-37
1984 - 1988 (2011 cohort)					23-27	28-32
1989 - 1993 (2016 cohort)						23-27

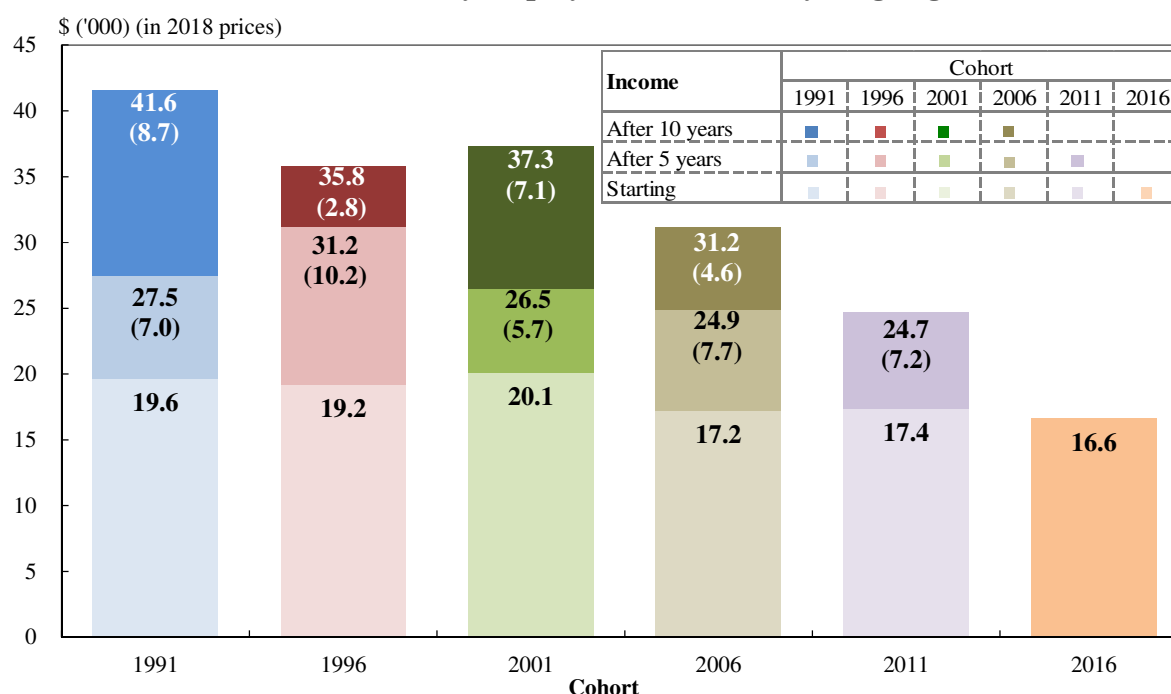
Note: Figures in yellow / light blue / blue cells (23-27, 28-32 and 33-37) refer to the age range of each cohort in the respective census or by-census year.

² In this study, degree graduates / degree-educated persons are those who have attended education at the first-degree level or above. Given that information on highest educational level completed is available only from the 2001 Population Census onwards, "the highest educational level attended" is used.

III. STARTING AND SUBSEQUENT INCOMES OF DEGREE GRADUATES ACROSS GENERATIONS

6. To begin, **Chart 1** plots the study cohorts' median monthly employment incomes over time³. It shows that the real median starting employment income for the 2006 cohort was \$17,200 (in constant 2018 prices)⁴, visibly lower than those of earlier cohorts (around \$19,000 to \$20,000). Similar observations of lower starting incomes prevail for the 2011 and 2016 cohorts. Moreover, the subsequent real income growth enjoyed by the 2006 and 2011 cohorts in the first 5 years in the labour force was lower than that of the 1996 cohort (+10.2% per annum).

Chart 1: Median monthly employment income of young degree holders



Notes: Figures in parentheses refer to the average annual rate of change (%) of the respective median income as compared to 5 years earlier. Calculated based on unrounded figures. Excluding foreign domestic helpers and unpaid family workers.

Source: Population Census / By-census data, Census and Statistics Department, various years.

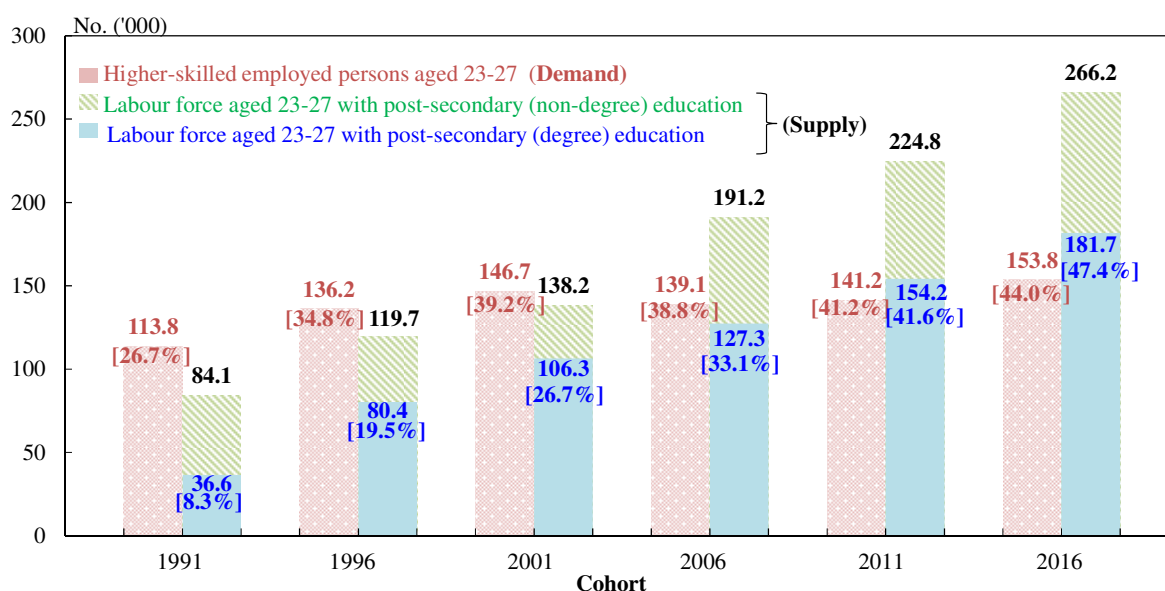
³ Unless otherwise specified, all figures related to income, the labour force and employment exclude foreign domestic helpers and unpaid family workers.

⁴ Unless otherwise specified, all income figures are in constant 2018 prices, which are calculated using the Composite Consumer Price Index.

IV. MAJOR FACTORS FOR LESS FAVOURABLE INCOME PERFORMANCE OF DEGREE GRADUATES IN RECENT COHORTS

7. As seen in prior studies⁵, one key factor for the aforementioned less favourable performance of degree holders in more recent cohorts in terms of their starting and subsequent incomes is the evolving balance between the supply and demand of young higher-educated workers in the labour force in the past two decades or so. Amid the popularisation of higher education, the supply of young degree graduates entering the labour force has increased significantly, with the degree-holding labour force aged 23-27 increasing almost fivefold from 36 600 persons in 1991 to 181 700 persons in 2016. During this period, the proportion of the labour force aged 23-27 with degrees also rose substantially from 8.3% in 1991 to 26.7% in 2001 (up by 18.4 percentage points) and further to 47.4% in 2016 (up further by 20.7 percentage points) (see the blue bar in **Chart 2**).

Chart 2: Number of higher-skilled young employed persons and young post-secondary graduates



	1991 over 1986	1996 over 1991	2001 over 1996	2006 over 2001	2011 over 2006	2016 over 2011
Average 5-year real GDP growth rate	6.7%	5.0%	1.9%	5.5%	3.5%	2.4%

Notes: Figures in red brackets refer to the proportion of employed persons aged 23-27 engaged in higher-skilled occupations.

Figures in blue brackets refer to the proportion of the labour force aged 23-27 with post-secondary degree education.

Source: Population Census / By-census, Census and Statistics Department, various years.

⁵ Katz, L. F., & Murphy, K. M. (1992). Changes in relative wages, 1963-1987: Supply and demand factors. *The Quarterly Journal of Economics*, 107(1), 35-78.

Economic Analysis and Business Facilitation Unit, the Government of the Hong Kong Special Administrative Region (2016, August). *Box 5.1 Earnings of youths in Hong Kong*. Retrieved from <https://www.hkeconomy.gov.hk/en/pdf/box-16q2-5-1.pdf>

8. On the other hand, as Hong Kong's economy experienced a rapid structural transformation and economic expansion in the 1980s and the first half of the 1990s, the demand for higher-skilled young workers (as proxied by total higher-skilled employment) also registered a visible increase, causing the share of young workers in higher-skilled employment to rise from 26.7% in 1991 to 34.8% in 1996 (see the red bar in **Chart 2**). But after that, the economy was affected successively by the Asian financial crisis in 1998-1999; the bursting of the IT bubble in 2001; the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003; and the global financial crisis in 2008-2009. Economic growth since then has generally not been as rapid as before. The slowdown in trend growth since the global financial crisis also happened to other advanced economies (the so-called "new normal")⁶. Consequently, while the creation of higher-skilled jobs available for young persons still increased, its growth unavoidably fell behind the supply of degree-educated young workers, with the nearly 1.4-fold increase on the demand side during 1991-2016 being far below the nearly fivefold increase on the supply side.

9. To summarise, **Chart 2** shows that, during the 1990s, the number of young persons aged 23-27 in higher-skilled employment exceeded the number of youths with post-secondary education. By 2006, however, the number of post-secondary graduates in this age group exceeded the number of higher-skilled jobs available, and by 2011, even the number of young degree graduates exceeded the number of higher-skilled jobs available. This interplay of supply and demand could be a key factor leading to the decline in median monthly employment incomes seen in **Chart 1**. Another consequence of this evolving balance is that the number and share of degree-educated graduates engaging in lower-skilled jobs has increased over time. This also puts downward pressure on the starting and subsequent incomes of university graduates.

10. Apart from this structural change in the demand for and supply of higher-educated labour, economic cyclical factors also played some role in the income performance of young degree graduates in the short term⁷. As shown in **Chart 1**, the 2001 cohort's real income growth of +5.7% per annum from 2001 to 2006 was much lower than that of adjacent cohorts (e.g. +10.2% of the 1996 cohort and +7.7% of the 2006 cohort) after about 5 years in the labour force. This was partly because the

⁶ For instance, the real GDP growth rates of the US, the UK, the euro area, Canada and Australia in 2012-2016 (2.2%, 2.1%, 0.9%, 1.7% and 2.5% respectively) were visibly lower than in 2002-2006 (3.0%, 2.8%, 1.8%, 2.7% and 3.4% respectively).

⁷ For instance, the *2015 Study on Earnings Mobility* found that the real starting earnings of post-secondary (degree and non-degree) graduates who joined the workforce in 2001/02, after the Asian financial crisis, were lower than those of graduates who entered the market after several years of economic recovery.

corresponding career period of the 2001 cohort was affected by the economic slowdown in the early 2000s.

11. Against this backdrop, it is not surprising to find that the proportion of the degree-educated workforce aged 23-27 engaged in higher-skilled occupations saw a dramatic decline from 82.7% in 1991 to 69.6% in 2006 (down by 13.1 percentage points) and further to 66.0% in 2016 (**Table 2**). Yet, the increasing proportion of working persons with post-secondary degree education ending up in higher-skilled jobs after accumulating more work experience was generally seen in all cohorts. Albeit with a lower chance to take up higher-skilled occupation at the beginning, the proportion engaged in higher-skilled employment registered a more visible increase in more recent cohorts (the 2006 and 2011 cohorts) after gaining more work experience, which partly reduced the gap in the respective proportions between older and younger cohorts.

Table 2: Proportion of degree graduates engaged in higher-skilled occupations of different cohorts

Cohort aged 23-27 in respective year	Starting (aged 23-27)	5 years later (aged 28-32)	10 years later (aged 33-37)
1991	82.7%	88.2%	89.8%
1996	82.5%	86.6%	81.8%
2001	79.3%	78.4%	87.9%
2006	69.6%	81.9%	82.9%
2011	69.2%	76.1%	-
2016	66.0%	-	-
2006 cohort vs 1991 cohort	-13.1%-pts	-6.3%-pts	-6.9%-pts

Source: Population Census / By-census, Census and Statistics Department, various years.

V. INCOME PREMIUM OF DEGREE GRADUATES RELATIVE TO LOWER-EDUCATED COUNTERPARTS IN ALL GENERATIONS

12. It is worthwhile to point out that the overall real median income of all young employed persons aged 23-27, regardless of educational level, rose from \$11,400 in 1991 to \$14,500 in 2016, with an average annual growth rate of 1.0% during the period (**Table 3**). This may suggest that young persons who generally possess higher educational attainment also tend to have higher productivity, and hence receive a higher wage.

Table 3: Income premium of degree graduates relative to their lower-educated counterparts in different cohorts

	Educational level			Income premium*	
	Post-secondary degree	Post-secondary non-degree	Overall	Post-secondary: degree over non-degree	Degree over overall
Cohort	Starting income				
	(\$, 000)			Ratio	
1991	19.6	15.5	11.4	1.27	1.73
2006	17.2	12.9	13.6	1.33	1.26
2016	16.6	13.5	14.5	1.23	1.14
Cohort	Income 5 years later				
	(\$, 000)			Ratio	
1991	27.5	22.0	15.8	1.25	1.74
2006	24.9	16.2	17.4	1.54	1.43
2016	-	-	-	-	-
Cohort	Income 10 years later				
	(\$, 000)			Ratio	
1991	41.6	30.5	20.1	1.36	2.07
2006	31.2	19.7	20.8	1.58	1.50
2016	-	-	-	-	-

Note: (*) Calculated based on unrounded figures.

Source: Population Census / By-census, Census and Statistics Department, various years.

13. On the other hand, the results in **Table 3** also indicate that there is still a considerable income premium for degree holders relative to their lower-educated counterparts, though the premium appeared to be less significant for more recent cohorts. More specifically, the real median starting income of young degree holders for the 1991 cohort was visibly higher than that of their counterparts with post-secondary non-degree education as well as that of all persons in the same age group by 27% and 73% respectively. Yet the corresponding premiums narrowed to 23% and 14% respectively for the 2016 cohort. In addition, the income premium for degree graduates not only appeared at the start of career but also widened with an increase in work experience. Taking the 1991 cohort as an example, the real median incomes of degree holders 5 and 10 years after graduation continued to be visibly higher than all workers of the same age group by 74% and 107% respectively, while the corresponding income premiums fell to 43% and 50% for the 2006 cohort.

14. The continuous better income performance of degree graduates relative to their lower-educated counterparts and all same-age employed persons is probably attributable to the sustained higher propensity of the former to engage in higher-skilled occupations⁸. Moreover, persons with post-secondary degree education largely enjoyed faster income growth after 5 and 10 years in the labour market than those in the latter two groups (Table 4).

Table 4: Proportions taking up higher-skilled occupations and growth rates of subsequent median incomes in different cohorts

	Proportion taking up higher-skilled occupations			Average annual growth of real median income*		
	Educational level			Educational level		
	Post-secondary degree	Post-secondary non-degree	Overall	Post-secondary degree	Post-secondary non-degree	Overall
Cohort	Starting					
1991	82.7%	62.9%	26.7%	-		
2006	69.6%	43.0%	38.8%			
2016	66.0%	36.7%	44.0%			
Cohort	5 years later			5 years later over starting		
1991	88.2%	75.1%	39.1%	7.0%	7.2%	6.8%
2006	81.9%	51.2%	50.2%	7.7%	4.6%	5.0%
2016	-	-	-	-	-	-
Cohort	10 years later			10 years later over 5 years later		
1991	89.8%	79.8%	42.6%	8.7%	6.8%	5.0%
2006	82.9%	52.7%	52.9%	4.6%	4.1%	3.6%
2016	-	-	-	-	-	-

Note: (*) Calculated based on unrounded figures.

Source: Population Census / By-census, Census and Statistics Department, various years.

VI. CONCLUDING REMARKS

15. This study found that the income trajectory of more recent degree-educated cohorts (2006, 2011 and 2016) was generally less favourable than that of graduates from the 1990s. One major factor is related to the rapid increase in the supply of young degree-educated workers, which outpaced the number of higher-skilled jobs available for them. As a consequence, the proportion of young degree graduates engaged in higher-skilled occupations was lower for more recent cohorts as compared with those from the 1990s.

⁸ For the sake of simplicity and space, only figures of 1991, 2006 and 2016 cohorts are quoted.

16. Nonetheless, in general, persons with post-secondary degree education could still enjoy higher starting and subsequent employment incomes than their lower-educated counterparts across all cohorts, likely due to a larger proportion of them taking up higher-skilled occupations, though the income premiums became less visible in more recent cohorts. This income premium appeared to be more pronounced after university graduates accumulated more work experience.

17. On the other hand, it is worthwhile to point out that, regardless of educational attainment, the overall number and share of young workers engaged in higher-skilled occupations, indeed, were generally on the rise in the past two to three decades, and the overall median starting and subsequent incomes of young persons were even better in the 2006 cohort and thereafter as compared to cohorts from the 1990s.

18. In view of the above, continuing to promote diversified economic development will help to provide more quality employment opportunities and enhance the upward mobility of the younger generation. In this connection, the Government has established the Youth Development Commission in 2018 with a view to promoting cross-sector collaboration in youth work and engaging other advisory and statutory bodies on youth development. As Hong Kong now actively participates in the development of the Greater Bay Area and the Belt and Road Initiative, this also could provide new opportunities for young people to realise their full potential.