

## **Estimating the returns on attaining university education in Hong Kong**

### ***Executive Summary***

- Hong Kong's real social return on attaining university education, at 9.8% in 2016, was generally in line with international norms as proxied by the OECD average for tertiary education.
- The real private return on attaining university education in Hong Kong remained attractive at 17.4% and was significantly ahead of our peers, thereby providing a strong incentive for individuals to pursue university education.
- Hong Kong's generally favourable returns on university education were mainly underpinned by high earnings premium enjoyed by university graduates, as employers reward productivity gains from higher education in Hong Kong's knowledge-based economy. Meanwhile, the notably higher private return reflects the Government's high subsidisation rate to the cost of university education and favourable tax environment in Hong Kong.
- Hong Kong also has a relatively small gender gap in returns on university education. The gender gap has narrowed visibly over the years, as female university graduates' earnings were increasingly catching up with men's and as the earnings premium from university education was more notable for young women than for young men. These developments may have to do with the demographic trend of later marriage and child-bearing for women in Hong Kong.
- Over a longer period, returns on university education saw fast growth in the 1990s and early 2000s, plateaued in the mid-2000s, and then embarked on a mild downtrend in recent years.
- The dip in returns on university education in the past ten years or so was mainly attributable to such cyclical factors as the 2008-09 Global Financial Crisis (GFC), which has hit the demand for and real earnings of university graduates. It was also to a lesser extent dragged by higher opportunity costs in terms of earnings foregone during the years of university study. Nonetheless, the earnings differential between university and matriculation graduates widened over the same period which partly offset the drag to returns on education.

- Looking ahead, returns on university education would hinge on whether economic growth can bring about real increase in income for university graduates. Meanwhile, persistently keen demand for talents amid Hong Kong's development as a high value-added economy should help sustain the earnings advantage of university graduates over those without university education, thereby boding well for returns on education.
- All in all, Hong Kong's generally favourable returns on university education vis-à-vis other advanced economies indicate significant benefits in investing in education. The notable private return continues to provide strong incentives for individuals to pursue higher education to the benefit of the overall quality of our workforce.
- In view of the many aspirants for higher education, the Government has opened up more avenues to pursue tertiary education. At the same time, with the envisaged increase in supply of better-educated labour, it is important for the economy to continue to move up the value chain with new growth engines to provide more opportunities for our youths to realise their aspirations.
- For future estimation of returns on education, consideration may be given to account for the changing mix of 3-year and 4-year undergraduates after the implementation of the "3+3+4" New Academic Structure, which will likely suppress the returns given an extra year of upfront study costs, though its effects would also depend on how employers will reprice the premium of university graduates over upper secondary graduates. Other issues such as how to account for the notable presence of expatriate workers in Hong Kong and local students pursuing self-financed or overseas studies are also discussed.

# Estimating the returns on attaining university education in Hong Kong<sup>1</sup>

## Introduction

This paper provides an update to a 2006 paper published by the Office of the Government Economist<sup>2</sup> to estimate the real internal rate of return (IRR) on attaining university education for the society and for private individuals<sup>3</sup>. A comparison with other advanced economies, the longer term trend in IRR, and implications of the findings will be discussed.

## Estimating the IRR

2. The methodology deployed in this paper made reference to the OECD's annual "Education at a Glance" publication and largely followed the 2006 paper, with the following exceptions. First, to better align the costs of tuition with the benefits in earnings, this paper compares the full-time employment earnings of *undergraduates* rather than *undergraduates and postgraduates* as in the 2006 paper against matriculation graduates. As the methodology of estimating the IRR has been refined, the results herein are not directly comparable to those in the 2006 paper.

3. Second, the "3+3+4" New Academic Structure (NAS) implemented in the 2009/10 academic year could potentially affect the IRR calculation. The first batch of NAS students entered university in 2012/13 to undertake 4 years of undergraduate study. On the one hand, using 4 years of costs in estimating the IRR may better depict the returns on attaining university education for undergraduate students graduating in 2016 onwards. On the other hand, the first cohort of 4-year university graduates only entered the

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<sup>1</sup> In this paper, "university education" covers publicly-funded first degree education for Hong Kong, and all levels of tertiary education for OECD economies. Full-time earnings data were used to calculate the returns on education. Both full-time and overall employment earnings data were analysed and it was found that the resulting IRRs were broadly similar (overall employment earnings would yield a lower rate of return due to the lower earnings of part-time employees).

<sup>2</sup> "Estimating the social rate of return of university education in Hong Kong", December 2006, [http://www.hkeconomy.gov.hk/en/pdf/Rate\\_ReturnU\(2006\).pdf](http://www.hkeconomy.gov.hk/en/pdf/Rate_ReturnU(2006).pdf).

<sup>3</sup> IRR is the break-even rate of return that equates the future stream of benefits over the working life span up to age 64 with the upfront costs invested in university education after discounting for time. The IRR figures estimated in this paper capture *financial* returns only.

In estimating the IRR, private costs comprise tuition fees and employment earnings foregone during university study, whereas private benefits are the full-time after-tax earnings differential of university graduates over matriculation graduates (excluding foreign domestic helpers); social costs include private costs as well as public resources from the University Grants Committee (UGC)'s funding and foregone rental value of campus premises, and social benefits include individuals' higher earnings.

labour force in 2016 and the workforce up to 2016 enjoyed an earnings premium from university education mostly based on 3 years of university study. On balance, it is considered that the IRR calculated using 3 years of costs, with adjustments made to the public costs to exclude costs associated with the 4<sup>th</sup> year of study<sup>4</sup>, could be adopted for estimating the returns on university education up to 2016 in this paper. The implications of estimating returns on education with the entry of workers completing 4-year undergraduate studies in Hong Kong starting from 2016 is also considered, as set out in the “Technical Discussion on Selected Issues” in the **Annex**.

4. Using the above-said refined method, the social and private IRRs in 2016 were estimated at 9.8% and 17.4% respectively.

5. The high degree of openness in Hong Kong, in terms of a notable presence of expatriate workers (many of whom enjoy a higher salary as suggested by the data) and a significant number of local youths pursuing higher education outside Hong Kong, may have implications for estimating the returns on education. As the returns on education mainly aim to gauge the costs and benefits of local university education, adjustments could be made to exclude expatriate workers from earnings of the local workforce and account for the social and private costs of local students pursuing overseas studies. A broad-brush attempt to account for these salient features of the workforce can be found in the **Annex**. In the ensuing discussion, the “headline” figures quoted in paragraph 4 without these adjustments will be adopted.

## **International comparison**

6. Hong Kong’s real social return on university education, at 9.8% in 2016, was largely in line with international norms as proxied by the OECD average for tertiary education (at 10.5% in 2013<sup>5</sup>). When compared with

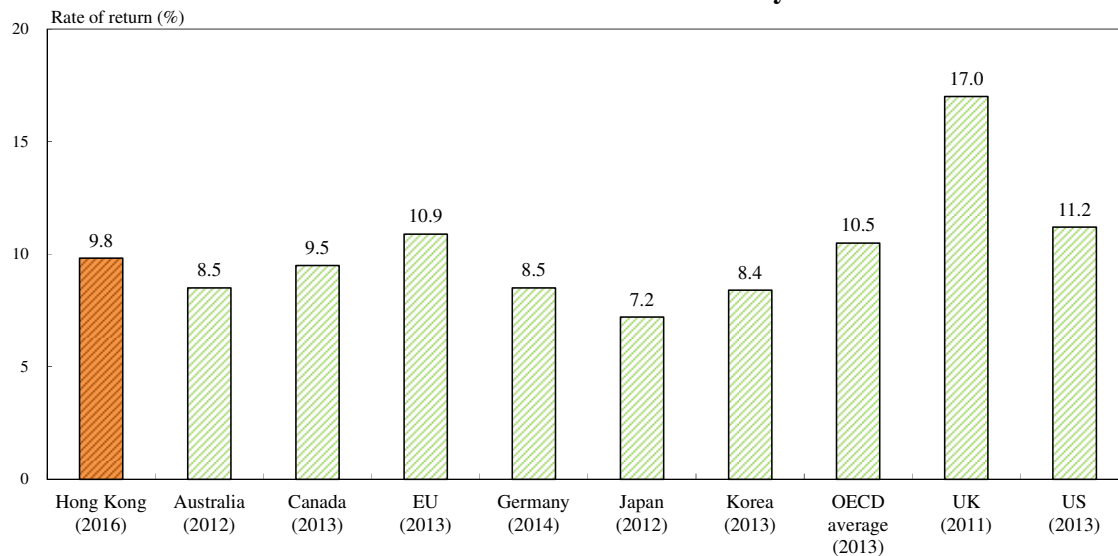
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<sup>4</sup> The adjustments comprise: (1) adjusting the average cost per student to exclude the funding for an additional year of university education under the NAS from the numerator and removing first-year students who would have been still in Form 7 under the old system from the denominator; and (2) adjusting the implicit rental cost by excluding the rental values of buildings with year of completion since 2012 that were taken as campus expansion to prepare for the NAS in the numerator and multiplying the number of undergraduate students in the denominator by 75% to exclude the extra (i.e. 4<sup>th</sup> year) students.

<sup>5</sup> The OECD no longer published the social return figures after 2005. The social rates of return on tertiary education for the OECD average and individual economies are roughly calculated as the average of private and public rates of return weighted by the respective private and public costs of education as published by the OECD.

individual economies, Hong Kong's figure was somewhat lower than those of the US and the EU (at 10.9% to 11.2%), while notably ahead of those of Japan, Korea, Australia and Germany (at 7.2% to 8.5%) (*Chart 1*).

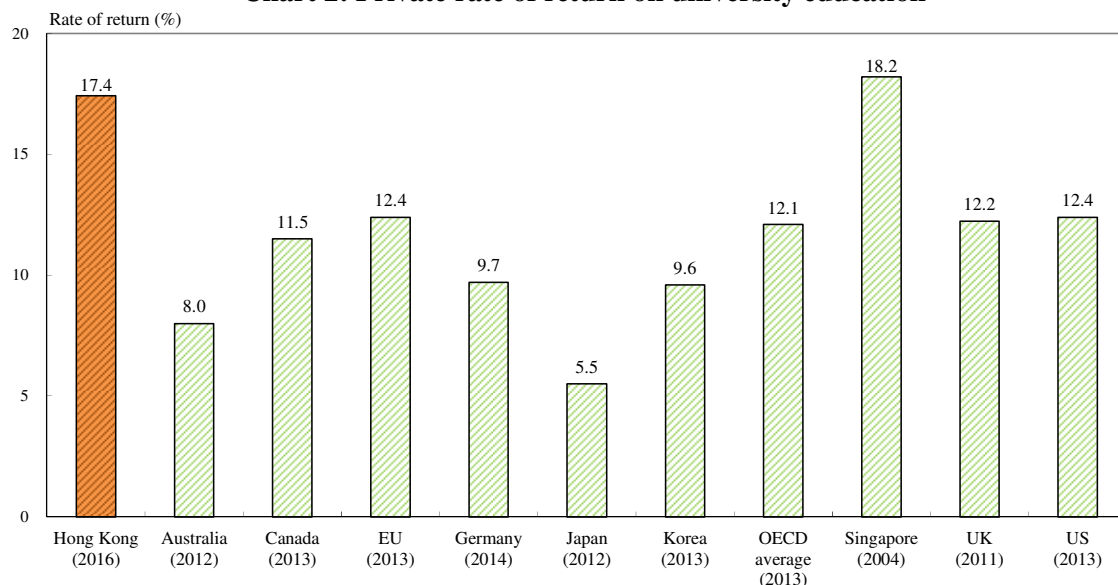
**Chart 1: Social rate of return on university education**



Notes: As the estimated returns from OECD (2017) are by sex, the above return for each selected economy and the OECD average is the simple average of the respective estimated returns for males and females. For Australia and Japan, the returns differ in the EAG 2017 and EAG 2016 reports for the reference year 2012 (latest available). For the UK, the returns are sourced from the EAG 2015 report which is the latest report with data available for the UK. Singapore's returns to tertiary education are not available from OECD; only the private rate of return is available from Singapore's Ministry of Manpower (see Chart 2). Sources: OECD: Education at a Glance (EAG) 2017; Hong Kong: General Household Survey (GHS), Census and Statistics Department (C&SD), internal staff estimates.

7. From private individuals' perspective, the real private return on university education in Hong Kong, at 17.4%, remained very attractive and was significantly ahead of the OECD average of 12.1% and most of the selected advanced economies (*Chart 2*).

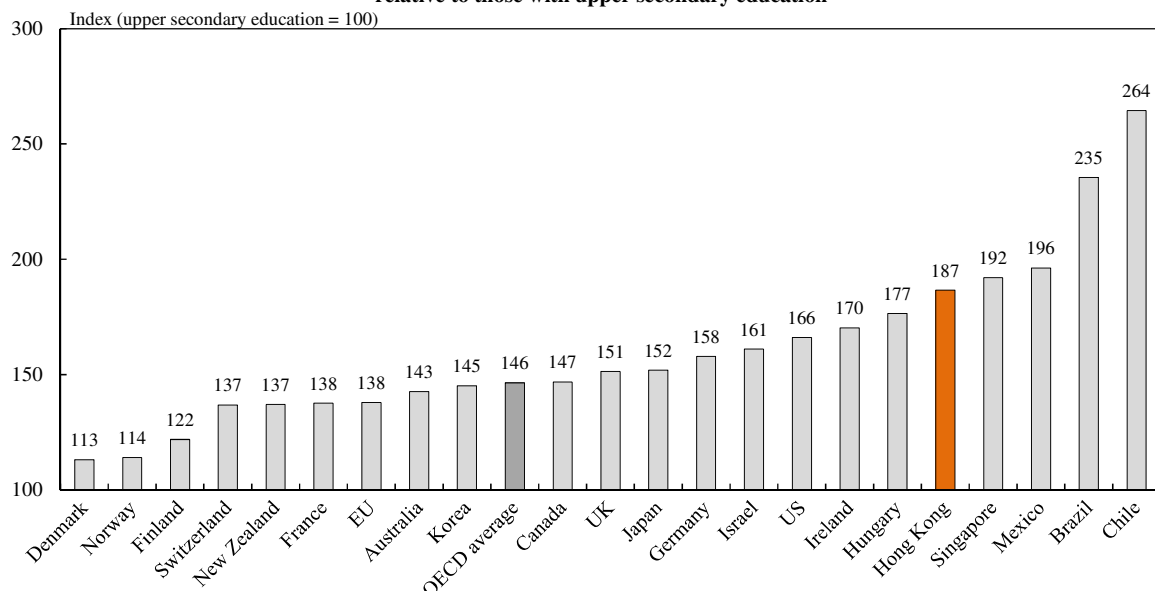
**Chart 2: Private rate of return on university education**



Notes: As the estimated returns from OECD (2017) are by sex, the above return for each selected economy and the OECD average is the simple average of the respective estimated returns to males and females. For Australia and Japan, the returns differ in the EAG 2017 and EAG 2016 reports for the reference year 2012 (latest available). For the UK, the returns are sourced from the EAG 2015 report which is the latest report with data available for the UK. Singapore's figure is the simple average of the respective returns to Polytechnic diploma and University first degree levels to males and females. Sources: OECD: EAG 2017; Singapore: Ministry of Manpower, "Premium on Fields of Study: The Returns to Higher Education in Singapore", January 2007; Hong Kong: GHS, C&SD, internal staff estimates.

8. The generally favourable social and private returns on university education mainly reflected the appreciable earnings advantage of university graduates in Hong Kong, whose average income was some 87% higher than that of workers with secondary education at the sixth form or above, far exceeding the earnings differentials in many advanced economies and the OECD average of 46% (*Chart 3*). Conceivably, Hong Kong's continued development as a high value-added and knowledge-based economy could be a key motivation for employers to put a higher value on enhanced productivity from workers with degree education. Interestingly, some developing economies showed even more sizable earnings premium from university education, but these cases probably reflected the relatively scarce supply of university-educated labour in the countries concerned.

**Chart 3: Full-time employment earnings of workers aged 25-64 with university first degree education relative to those with upper secondary education**



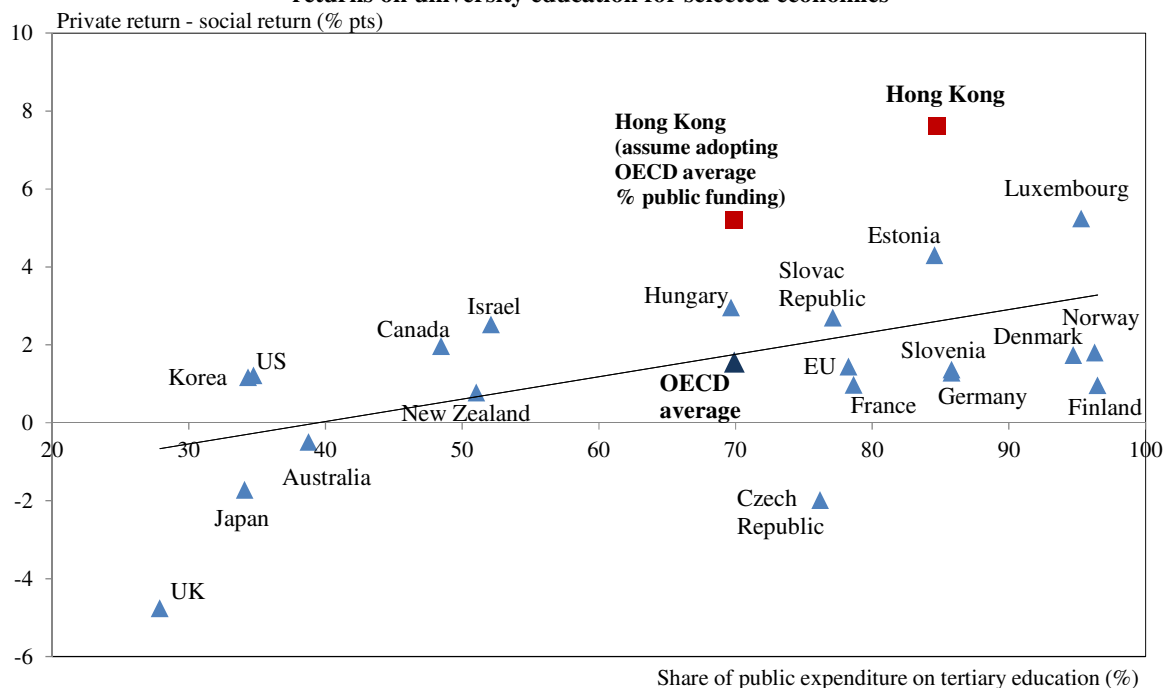
Notes: For the reference year of 2015, except Japan (2012); France (2013); Canada, Denmark and Finland (2014); Singapore (2000). Japan's data refer to all tertiary earners, and Ireland and Mexico's data refer to earnings net of income tax. In line with the estimation of IRR for Hong Kong in other parts of this paper, Hong Kong's figure compares the full-time employment earnings of university graduates against matriculation graduates. OECD does not cover Singapore, and no earnings data by educational attainment could be readily sourced from official websites, Datastream or CEIC. The dated figure (as of 2000) is sourced from the Monetary Authority of Singapore (MAS)'s 2004 paper titled "Education for Growth: The Premium on Education and Work Experience in Singapore", with the ratio being for all workers and roughly calculated as the simple average of the figures by years of work experience. [http://www.mas.gov.sg/~media/resource/publications/staff\\_papers/StaffPaper26.pdf](http://www.mas.gov.sg/~media/resource/publications/staff_papers/StaffPaper26.pdf).

Sources: OECD: EAG 2017; Singapore: MAS; Hong Kong: GHS, C&SD.

9. The much higher private return than social return also reflected the relatively high subsidisation rate of publicly-funded degree education in Hong Kong as well as a favourable tax regime for workers. As seen from *Chart 4*, the larger the public share of university funding, the wider the margin of private return over social return. Even after taking into account the subsidisation rate factor by comparing with other OECD countries with

similar subsidisation rates or reducing Hong Kong’s subsidisation rate to the OECD average, Hong Kong’s private return on university education was still “above the curve”.

**Chart 4: Share of public expenditure on tertiary education and difference between private and social returns on university education for selected economies**



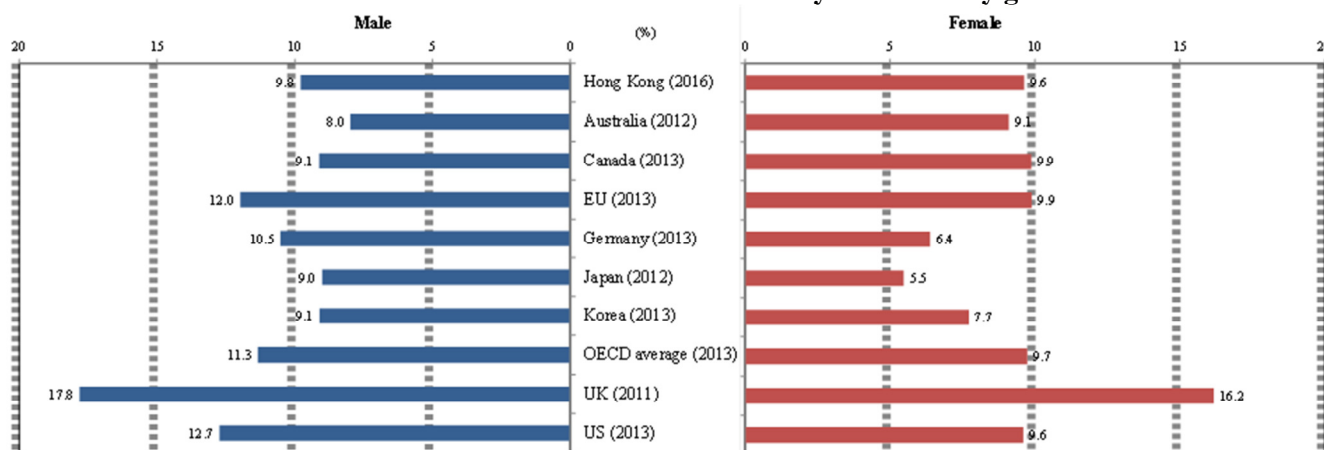
Notes: Share of public expenditure figures are in 2014. Differences between private and social returns are in 2013, except Germany (2014), Australia, Japan (2012) and the UK (2011). Hong Kong’s figures are in 2016. Hong Kong’s share of public expenditure on tertiary education is proxied by  $(1 - \text{UGC's cost recovery rate})$ .

Sources: OECD: EAG 2017; Hong Kong: UGC, C&SD.

## Gender gap

10. Compared to other advanced economies, Hong Kong has a relatively narrow gender gap in its social return on university education, with male workers enjoying a social return on average just 0.2 percentage point higher than their female counterparts. The corresponding figure for the OECD was 1.6 percentage points. Nevertheless, the situation varied across individual economies: whereas the social return on tertiary education for male workers in Germany, Japan and the US was more than 3 percentage points higher than that of their female peers, in Australia and Canada, the rate of return for women was even higher than that for men (*Chart 5*).

**Chart 5: Social rate of return on university education by gender**



Sources: OECD: EAG 2017; Hong Kong: GHS, C&SD, internal staff estimates.

11. In Hong Kong, the gender gap in returns on university education has narrowed visibly over time, with women enjoying a higher private return on university education than men in recent years (*Table 1*). This mainly reflected the narrowed gender wage gap, with university-educated women’s earnings at 79% of their male counterparts in 2016, compared to 67% in 1990. Those aged 20-34 even earned over 90% of (i.e. nearly on par with) men’s earnings in 2016, versus just 76% in 1990. To a certain extent, university education also tended to boost the earnings versus those with matriculation education more for young women than men these days. For example in 2016, the earnings premium of university graduates for women aged 20-34 was 70%, compared to 67% for men.

**Table 1: Gender differential in returns on university education (male over female in percentage points)**

	<u>1990</u>	<u>2000</u>	<u>2010</u>	<u>2016</u>	<u>Change (1990 to 2016)</u>
Social	2.91	1.47	0.66	0.16	-2.75
Private	3.27	1.53	-0.18	-0.74	-4.01

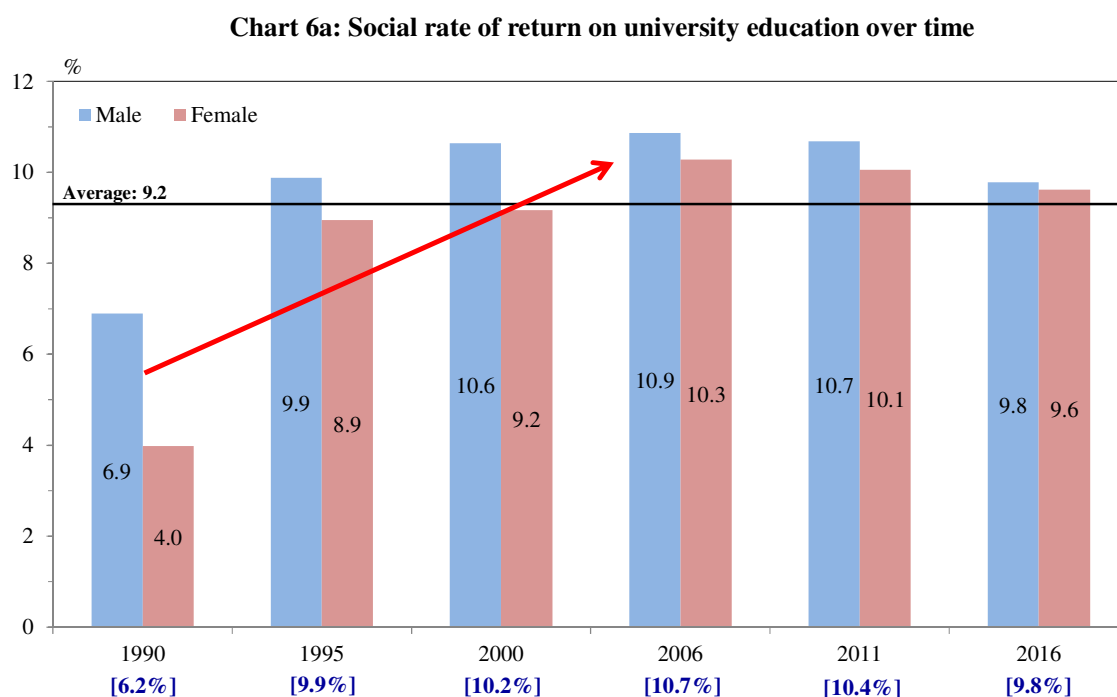
12. The narrower earnings gap for university-educated young workers of the two genders may have to do with demographic trend. First, the share of never married women rose from 18.3% in 1991 to 28.0% in 2016 (standardised proportion based on the age-sex structure of the population in the 2016 Population By-census). Second, alongside the tendency of later marriage and child-bearing, the median age at first marriage for women rose from 26.2 in 1991 to 29.4 in 2016, while the median age of women at first



childbirth rose from 28.1 to 31.4<sup>6</sup>. These demographic trends suggest that women nowadays tend to focus on their work lives for longer and have great aspirations in developing their careers, which allows them to reap the benefits of higher education on their earnings more.

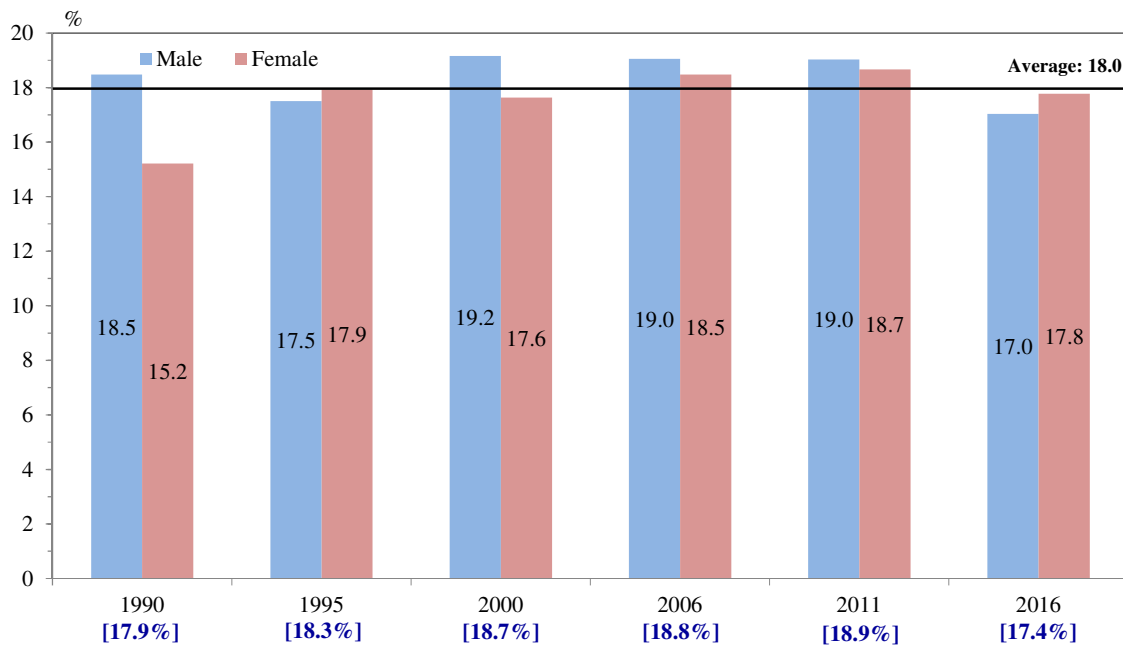
### Longer term trend in IRR

13. The social return on university education increased notably from 1990 to the mid-2000s, riding on Hong Kong’s transformation to a high value-added, knowledge-based economy amid the Mainland’s economic reform and the tide of globalisation. It then plateaued and tapered off in recent years (*Chart 6a*). The private return likewise increased in the 1990s and sustained a high level through the 2000s, before tapering off somewhat in recent years (*Chart 6b*).



<sup>6</sup> Source: C&SD, Women and Men in Hong Kong Key Statistics 2017 Edition, July 2017.

**Chart 6b: Private rate of return on university education over time**



Note: Figures in brackets refer to the private rate of return on university education for both sexes.

14. The mild decline in returns on university education in the past ten years mainly reflected the decline in real earnings of university graduates over that period, which in turn was partly attributable to cyclical factors. The Global Financial Crisis (GFC) in 2008-09 by its nature has hit the demand for the better-educated segment more, as financial services were at the epicentre of this downturn. While degree holders did see real earnings increase over a longer period from 1990 to 2016, and overall real earnings grew between 2006 and 2016 as the workforce became better educated, real earnings of university-educated workers fell by a cumulative 6.3% between 2006 and 2016.

15. Within the university-educated segment, the pattern of earnings change across age groups also has implications on the returns on education, as both the earlier part (say, when the workers are aged 20-34) and later part (say, after 55 years old) of the career earnings path have less impact on returns. Specifically, university graduates in their twenties or early thirties tend to have lower income than their senior peers, as many of them have yet to accumulate adequate experience to justify a higher pay. As for workers aged 55 or above, their earnings streams are deeply discounted under the IRR calculation, even though earnings of degree holders often reach their peaks by such age. In other words, earnings of the 35-54 age cohort would have a greater impact on the estimated returns on education. But earnings of this cohort took a harder

hit from the GFC, and recorded a steeper fall of 16.0% in real earnings than the overall decline of 6.3% for all university graduates during 2007-2016. The underperformance resulted in an additional drag on returns on education.

16. Nonetheless, between 2006 and 2016, real earnings actually fell less for university graduates than for matriculation graduates, leading to a larger earnings premium from university education. This was more visible among the older age groups (with the earnings ratio of university graduates over matriculation graduates for those aged 35-54 rising by 0.19 to 2.12 times in 2016, and the ratio for those aged 55-64 rising by 0.56 to 3.22 times), which more than offset the slight decline in earnings premium among those aged 20-34 (-0.07 in the ratio, to 1.68). Consequently, this bolstered the IRR and helped offset the drag from decline in real earnings of university graduates.

17. Besides earnings, the decline in returns on university education between 2006 and 2016 was also contributed by rising opportunity costs of university education, mainly due to earnings foregone during the years in university study, as young matriculation graduates aged 19-21 saw real earnings growth over the period. As for other tangible costs that mainly comprise student unit cost and implicit rental value of university campuses, while the latter increased notably along with property prices, it was relatively small compared to student unit cost (about 15% of the total in 2016), and overall tangible costs largely rose on par with inflation and had little impact on the returns on university education.

18. To put the above into perspective, the social IRR fell by 0.9 percentage point from 10.7% in 2006 to 9.8% in 2016, which may roughly be attributed as follows<sup>7</sup>. This shows that the decline in returns on university education over the past ten years was mainly attributable to the decline in real earnings of university graduates and to a lesser extent rising opportunity costs of university education:

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<sup>7</sup> Only the social return is shown for illustration since the state of the economy would mainly affect the pre-tax earnings and barring abrupt or anti-cyclical tax policy changes, the effect on the social and private returns should be largely similar. Also, individuals' earnings pre-tax are more relevant to gauge the benefits of university education.

	Methodology	Impact	Social IRR
<b>2006 social return on education</b>	Converted to 2016 prices	--	<b>10.7%</b>
<b>Decline in degree holders' real income during 2007-2016*</b>	Applying the actual overall earnings growth (which has a negative impact on returns on education as it was slower than the concurrent cumulative inflation) to degree holders while maintaining their earnings gap over matriculation graduates at 2006 levels	-0.4% point	10.3%
<b>Difference in earnings growth across individual age groups of degree holders</b>	Applying the actual earnings growth by age group to degree holders while maintaining the 2006 earnings gap over matriculation graduates, <i>i.e. to gauge the additional impact arising from the differences in changes in earnings of university graduates across age groups</i>	-0.3% point	9.9%
<i>Of which :</i>			
20-34		+0.0% point	
35-54		-0.4% point	
55-64		+0.0% point	
<b>Change in earnings premium of degree holders across individual age groups</b>	Applying the actual 2016 earnings gap across age groups <i>i.e. to gauge the impact arising from the change in earnings differentials between university graduates and those with matriculation education</i>	+0.1% point	10.0%
<i>Of which :</i>			
20-34		-0.2% point	
35-54		+0.2% point	
55-64		+0.1% point	
<b>Change in earnings foregone</b>	Applying the respective growth rates of actual costs (which has a negative impact on returns on education as it was faster than the concurrent cumulative inflation) to the relevant terms	-0.2% point	9.8%
<b>Change in social costs of university education</b>		+0.0% point	9.8%
<b>2016 social return on education</b>			<b>9.8%</b>

Note: (\*) The larger share of older (i.e. more experienced) workers among degree holders added 9.3% points to the overall earnings growth during 2007-2016 on top of the earnings growth of each individual age group, thus somewhat buffering the decline in real earnings for degree holders as a whole.

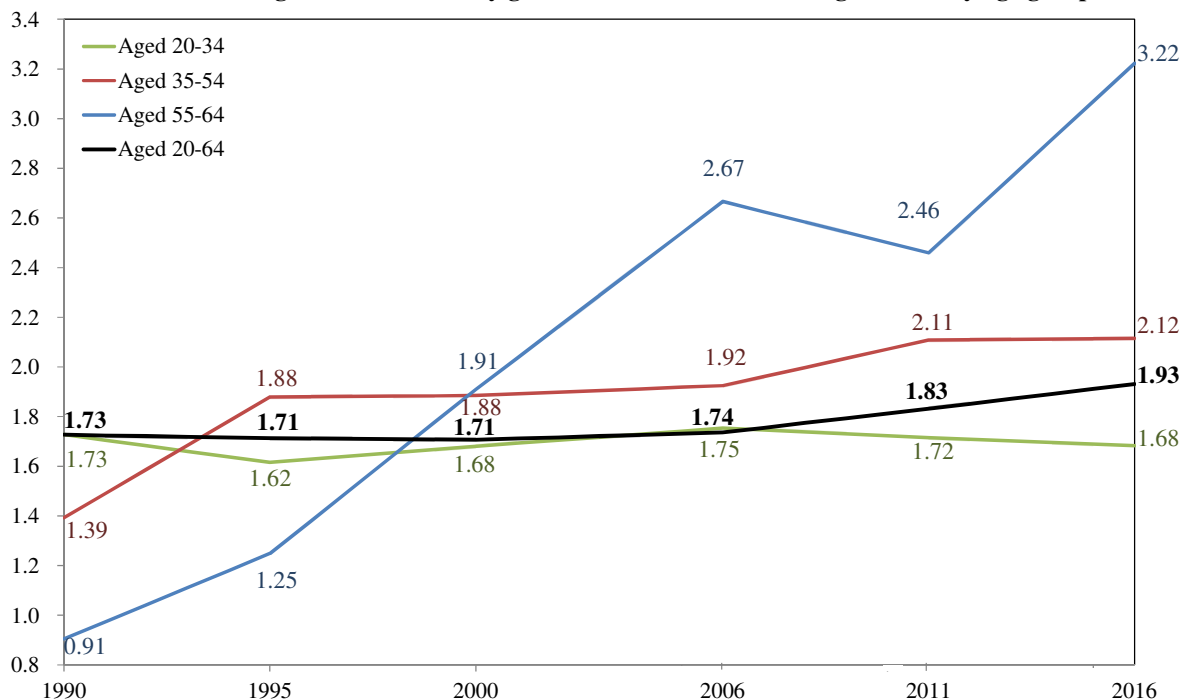
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## Looking ahead

19. While the decline in real earnings was more affected by such cyclical factors as the GFC, it may call into question whether the downtrend in returns on education may continue. From a longer term perspective (from 1990 to 2016) to gauge the trend through economic cycles, the earnings premium from university education was largely range-bound for the younger age groups (with earnings of university graduates at 1.62-1.75 times of those with matriculation education), while that for the older age groups was generally higher in 2016 (with the ratio rising by 0.72 and 2.32 for the 35-54 and 55-64 age groups respectively over 1990-2016) (*Chart 7*). This suggests that university education, when coupled with the accumulation of work experience (as manifested in the older age groups), could enable an individual to earn substantially more than those without, and the premium appears to be more apparent in the past decade compared to the 1990s. It may also reflect that university education is more important nowadays for experienced workers to climb to the better paid, higher rank positions in today's increasingly knowledge-based economy. The keen demand for talents amid Hong Kong's

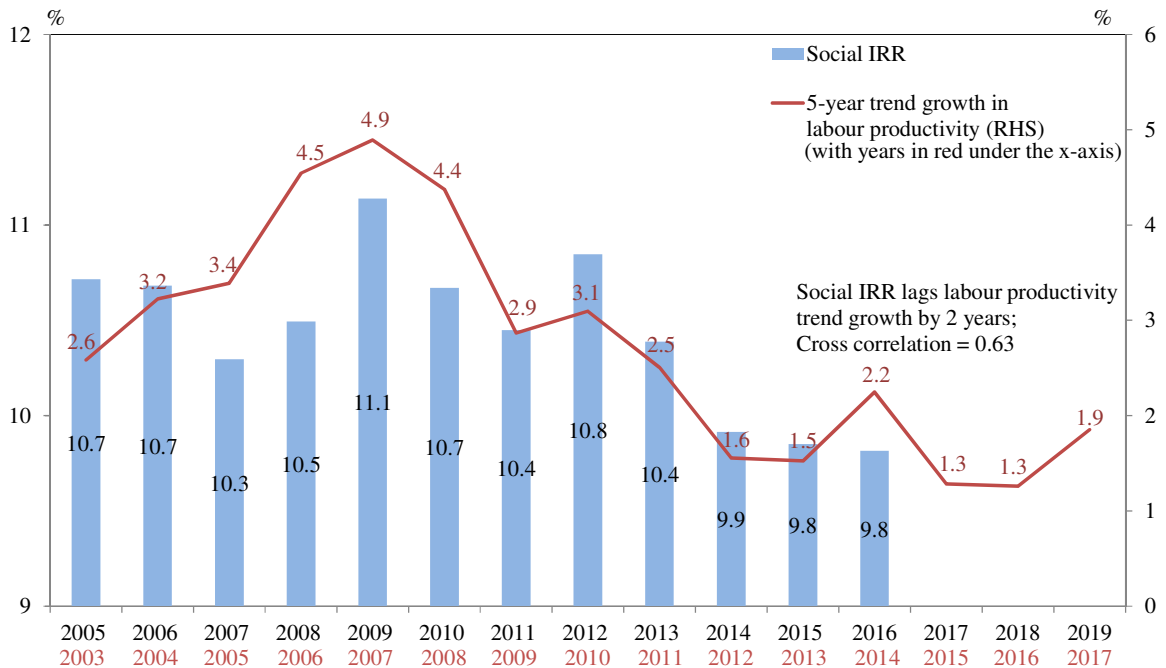
development as a high value-added economy should thus sustain the earnings advantage from university education and lend support to the returns on university education. Nonetheless, the strong pipeline of university-educated entrants to the labour market may affect the demand-supply balance and hence the potential earnings premium of the next generation of talents.

**Chart 7: Earnings ratio of university graduates over matriculation graduates by age group**



20. It is also observed empirically that IRR is positively correlated with labour productivity growth (*Chart 8*; using the 5-year trend growth to even out the cyclical ups and downs) with a lag of two years. While further analysis is warranted to establish a firmer understanding of the relationship between the trends in productivity and returns on education, the period of slower productivity growth post-GFC that corresponds to somewhat lower IRR in recent years may continue to restrain to some extent employers' willingness to offer more generous pay packages to young university graduates in case they do not expect notable productivity advantage from such workers, but the latest pick-up in productivity growth amid strong economic expansion may bode well for returns on education further ahead.

**Chart 8: Return on university education and labour productivity**



**Implications and concluding remarks**

21. Talent is the most important element in driving Hong Kong’s development as a high value-added and diversified economy. Quality human capital is also a vital element for Hong Kong to weather the challenges brought about by population ageing. Hong Kong’s generally favourable returns on university education vis-à-vis other advanced economies indicate significant benefits of investing in education both for society as a whole and for individuals in pursuit of higher education.

22. The particularly high private return provides strong incentives for private individuals to pursue higher education, which is conducive to raising the quality of our labour force. An extra year of education cost upfront in terms of tuition and foregone earnings under the 4-year regime may, however, undermine the private IRR. As more and more 4-year university graduates enter the job market, how employers may reprice the earnings premium of university graduates over upper secondary rather than matriculation graduates, which is a key driver of both social and private IRRs, remains to be seen.

23. From a macro perspective, the demand for skilled labour alongside the upgrading of the Hong Kong economy should bode well for the earnings premium of university graduates, although it would also depend on whether

the next generation of talents are equipped to satisfy the evolving demand of the future work place and offer productivity advantage over their less-educated counterparts to justify a healthy earnings premium.

24. From a cyclical perspective, economic growth was shown to be an important determinant of real income of degree holders during the last episode of economic slowdown. Future economic cycles and their nature may affect the earnings premium from and hence returns on university education differently (e.g. financial crises may tend to adversely affect the better-educated segment more). In addition, the future trend of earnings premium of degree holders would also hinge on the anticipated further increase in supply of well-educated labour and hence the demand-supply balance of manpower across different education levels of the workforce.

25. That said, in view of the many aspirants for higher education and the increasing need for talents in the economy, the Government has continued to invest heavily in education, especially in terms of opening up more diversified pathways to tertiary education for our youths. At the same time, given the rapid increase in the number of youths with higher educational attainment, it is of utmost importance that the Hong Kong economy continues to move up the value chain with new growth areas, in order to provide more opportunities for our younger generation to realise their potential and aspirations.

### Technical discussion on selected issues in estimating the returns on attaining university education

#### *The “3+3+4” New Academic Structure (NAS)*

The “3+3+4” NAS was implemented in the 2009/10 academic year, with the first batch of NAS students entering university in 2012/13 and graduating in 2016 after undertaking 4 years of undergraduate study. Thus using 4 years of costs in estimating the IRR can better depict what current students might expect in the future. In this case, their earnings premium should be benchmarked against upper secondary graduates who completed the Hong Kong Diploma of Secondary Education (DSE) examinations.

2. Using 4 years of costs and the earnings differential between degree holders and workers with upper secondary education, the social and private IRRs would be reduced by 0.7 percentage point and 2.1 percentage points to 9.1% and 15.3% respectively (*Table A1*). Nevertheless, it should be noted that the majority of workforce up to now still enjoyed an earnings premium from university education based on 3 years of university study (with only the most recent entrants to the workforce since 2016 graduating from 4-year university programmes), it is not unreasonable to estimate the IRR based on 3-year university education in the current exercise.

**Table A1: Estimated social and private IRRs with adjustment on the number of years of undergraduate study**

	Social IRR	Private IRR
3 years of study	9.8%	17.4%
4 years of study	9.1%	15.3%
<i>Difference</i>	<i>-0.7% point</i>	<i>-2.1% points</i>

3. For future estimation of the IRRs, due consideration should be given to review the methodology when the proportion of 4-year university graduates in the workforce increases over time, i.e. how to account for the earnings differential between degree holders and upper secondary graduates when there is a changing mix of degree holders graduating from 3-year and 4-year programmes.



## *Accounting for Hong Kong's openness*

4. Attempts were also made to take into account Hong Kong's openness, namely to account for the impact arising from expatriate workers and non-local students (although some local university graduates may likewise work overseas, it is more difficult to track their earnings to adjust the IRR given their diverse locations and occupations).

5. According to C&SD's Census data, among workers with degree or above education, the share of expatriates dropped from 30% in 1996 to 10% in 2001, 2006, 2011 and 2016, and their earnings were generally around 1.5-2 times those of local workers. In terms of age profile, the share of expatriates was larger among workers aged 35 or above, and the earnings premium over local workers tended to be higher among prime-age workers aged 35-54, suggesting the expatriate workers were mostly experienced staff in upper ranks. Adjusting the earnings by age bracket to exclude expatriate workers would reduce the social return on university education in 2016 by 0.7 percentage point to 9.2% and the private return by 1.1 percentage points to 16.3% (*Table A2*).

**Table A2: Estimated social and private IRRs after excluding expatriate workers\***

	Social IRR	Private IRR
Baseline (3 years of study)	9.8%	17.4%
Excluding expatriate workers	9.2%	16.3%
<i>Difference</i>	<i>-0.7% point</i>	<i>-1.1% points</i>

Note: (\*) Figures may not add up due to rounding.

6. According to UGC statistics, the share of non-local student enrolment in UGC-funded undergraduate programmes rose progressively from virtually zero in 1996 to 6% in 2006 and 12% in 2016. This compares with the OECD average of 4% and the corresponding shares of 13%, 14%, 6% and 4% in Australia, the UK, the EU and the US in 2015. But since the student unit cost in Hong Kong is calculated based on the actual expenditure reported by institutions, which in turn was funded by income including both UGC funding and tuition from local and non-local students in UGC-funded programmes, the tuition fees paid by non-local students, to the extent that they result in additional expenditures by institutions, are already reflected in the social cost of university education. Moreover, the share of non-local graduates staying

to work in Hong Kong accounted for only 1% of all workers with degree education in 2016 (*Table A3*). Hence, no adjustment was made to the data, but the future trend of whether non-local graduates will become a more prominent source of new manpower warrants further monitoring.

**Table A3: Share of non-local university graduates staying to work in Hong Kong**

	2008	2009	2010	2011	2012	2013	2014	2015	2016
(a) Visas issued under "Immigration Arrangements for Non-local Graduates"	2 758	3 367	3 976	5 258	6 756	8 704	10 375	10 269	9 289
(b) No. of full-time employees with degree education	642 584	666 917	703 711	771 205	809 602	827 445	873 363	927 397	958 593
% share of (a) in (b)	0.4	0.5	0.6	0.7	0.8	1.1	1.2	1.1	1.0

Sources: Immigration Department Annual Report 2016 Appendix 5; GHS.

### *Students pursuing self-financing degree programmes or studying overseas*

7. While the subsidisation rate is high for publicly-funded university education, Hong Kong's entry rate to UGC-funded bachelor's degree programmes, at 25% in 2016, was low compared to the OECD average of 57% in 2015. This suggests that a considerable proportion of students may need to pursue higher education either through local self-financing programmes or overseas.

8. The number of students enrolled in full-time self-financing degree programmes (including top-up degrees) increased rapidly from 5 127 in 2006/07 to 37 608 in 2016/17, with their share among all local undergraduate students rising from 9% to 31% over the period. These programmes charged annual tuition costs ranging from \$42,000 to \$281,000 in the 2016/17 academic year<sup>8</sup>, with a weighted average of around \$87,500. Adjusting for the higher private costs of self-financing studies would reduce the private return on university education by 0.9 percentage point to 16.5% in 2016. But since the higher tuition fees borne by the students were more than offset by the saved public subsidy costs for non-UGC students, the social return would actually go up by 1.1 percentage points to 10.9% after adjustment. Yet given the returns on education above only take into account financial returns while failing to capture the positive externality arising from the robust academic

<sup>8</sup> Source: EDB, <http://www.edb.gov.hk/attachment/en/about-edb/press/legco/others/edb-e.pdf>.

environment fostered by UGC-funded universities, it should be cautioned against comparing the cost-effectiveness of providing university education solely on these metrics.

9. As for study-abroad students, two Thematic Household Surveys carried out by C&SD<sup>9</sup> reveal that there were 46 100 and 51 300 students attending post-secondary study (no breakdown of non-degree, undergraduate or postgraduate numbers) overseas in 2002 and 2010 respectively, accounting for some 40% of all those engaged in tertiary studies (locally or overseas). The ratios were much higher than the OECD average of 6% for total tertiary education. Among those, about 78% studied in the UK, Australia, the US and Canada combined, while another 9% students studied in the Mainland in 2010. Based on information on international students' tuition fees from national and private websites<sup>10</sup>, the average annual tuition cost for the four key Western locations was around HK\$177,100 in 2016/17<sup>11</sup> and that for the Mainland fell mostly in the range of RMB5,000-6,000 except for selected specialised disciplines.

10. Adjusting further for overseas studies and taking both local (including UGC and self-financing students) and study-abroad students together, the private return on university education in 2016 would be further reduced by 1.5 percentage points to 15.0%, while the social return (from Hong Kong's perspective) would be raised further by 0.7 percentage point to 11.7% (*Table A4*).

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<sup>9</sup> C&SD: Thematic Household Survey Report Nos. 9 (November 2002) and 46 (January 2011), titled "Hong Kong Students Studying Outside Hong Kong".

<sup>10</sup> Reference websites:

Australia: <https://www.studyinaustralia.gov.au/global/australian-education/education-costs/>;

Canada: <http://www.universitystudy.ca/plan-for-university/what-does-it-cost-to-study-in-canada/>;

UK:

<https://www.thecompleteuniversityguide.co.uk/university-tuition-fees/reddin-survey-of-university-tuition-fees/foundation-undergraduate-tuition-fees-2016%E2%80%9317,-overseas/>;

US: <https://www.topuniversities.com/student-info/student-finance/how-much-does-it-cost-study-us>.

Mainland:

[http://www.edb.gov.hk/attachment/tc/edu-system/postsecondary/policy-doc/pilot-scheme/Pilot\\_scheme\\_2016/catalog\\_tc.pdf](http://www.edb.gov.hk/attachment/tc/edu-system/postsecondary/policy-doc/pilot-scheme/Pilot_scheme_2016/catalog_tc.pdf).

<sup>11</sup> The quoted tuition fees in the reference websites are for year 2016/17. These tuition fees were converted to HKD and averaged weighted by the respective shares of Hong Kong students studying in those countries in 2010 (latest available figure from THS No.46).

**Table A4: Estimated social and private IRRs after adjusting for self-financed and overseas studies\***

	Social IRR	Private IRR
(1) Baseline (3 years of study)	9.8%	17.4%
(2) Adjusting for self-financing students	10.9%	16.5%
<i>Difference</i>	<i>+1.1% points</i>	<i>-0.9% point</i>
(3) Adjusting further for study-abroad students	11.7%	15.0%
<i>Difference from (2)</i>	<i>+0.7% point</i>	<i>-1.5% points</i>
<i>Difference from (1)</i>	<i>+1.8% points</i>	<i>-2.4% points</i>

Note: (\*) Figures may not add up due to rounding.

11. The social return figure may however include the implicit subsidies by the overseas countries, and hence may over-estimate the social return to Hong Kong. Moreover, it should be cautioned against leveraging such figures on returns on education to build the case for steering Hong Kong students to study outside Hong Kong, given that the returns on education estimated under the IRR framework can only capture financial returns while ignoring the positive spillover of quality university education on the broader society.