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Insights from Census Data on Income Distribution in Hong Kong

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Abstract

Hong Kong has undergone significant changes in its social and economic structure in the past decade. To maintain social balance and harmony, the Government seeks to enable individuals to develop themselves and free themselves from poverty through economic development, employment, education and training. Census data provides a wealth of information on demographic and socio-economic characteristics that supports extensive analyses of the population and detailed studies on its sub-groups. This paper presents how census data support a detailed and comprehensive analysis of income distribution in Hong Kong at both individual and household levels. The statistical methods adopted in the study, the redistributive effects of government intervention on income through taxation and social benefits, and the impacts of Hong Kong's economic restructuring on the distribution of employment income will be discussed.

Introduction

Hong Kong has undergone significant changes in its social and economic structure in the past decade. Among others, there has been much discussion in the community in recent years on the issue of rising income disparity. According to the results of the past population censuses and by-censuses conducted by the Census and Statistics Department (C&SD) of Hong Kong, China, an increase in the dispersion in the distribution of employment income of the working population[1] from 1996 to 2006 was observed. The Gini Coefficient (GC) compiled based on monthly income from main employment increased from 0.483 in 1996 to 0.488 in 2001 and further to 0.500 in 2006.

2. In terms of household income, households at both ends of the income distribution also witnessed an increase in share over the period. The percentage share of households with monthly household income at current prices below $4,000 increased from 6.7% in 1996 to 9.2% in 2006, while those with monthly household income at $40,000 or above grew from 15.0% to 17.0%. The GC compiled based on monthly household income increased from 0.518 in 1996 to 0.533 in 2006.

3. The increase in income dispersion (either measured at individual employment income or household income level) is frequently over-simplified by many people to interpret it as the worsening of the income gap problem where the rich become richer and the poor become poorer. In fact, Hong Kong is one of the most open and dynamic economies in the world with increasing complexity in terms of demographic, social and economic structure. The subject on changes in income distribution has become highly complex that requires careful interpretation. The superficial use of one single indicator such as the GC without an in-depth study may sometimes lead to misunderstanding of the actual situation. This calls for the need of conducting a detailed and comprehensive analysis on household income distribution.

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[1] The working population referred to in this paper excludes unpaid family workers.

The role of Census data in analyzing income distribution

4. To maintain social balance and harmony, the Government seeks to enable individuals to develop themselves and free themselves from poverty through economic development, employment, education and training. Census data provides a wealth of information on demographic and socio-economic characteristics that supports extensive analyses of the population and detailed studies on its sub-groups.

5. The study of income distribution is a highly complex subject which demands the formulation of appropriate framework and compilation methodology as well as the support of comprehensive data to conduct the necessary analysis. By making use of the rich information collected from the 1996, 2001 and 2006 Population Census / By-census, the C&SD made its first attempt in 2007 to conduct an in-depth income study with a view to :

(a) analysing the overall income distribution (both individual and household) in Hong Kong and the factors underpinning the changes from 1996 to 2006; and

(b) assessing the redistributive effects of government intervention on income through public policies.

Individual income distribution

6. The distribution of employment income by decile group indicated that there was a general fall in the share of income attributed to the lower decile groups, and a rise in the share to the higher decile groups (see Table 1). Employed persons in the higher decile groups fared better than those in the lower groups in terms of income growth. The median monthly employment income for employed persons in the highest decile group increased by 20% from $37,500 in 1996 to $45,000 in 2006. There was, however, no change for those in the lowest decile group during the same period (see Table 2).

Table 1 Percentage Distribution of Monthly Income from Main Employment by Decile Group of Working Population

Decile Group	1996	% 2001	2006
1st (lowest)	1.9	1.7	1.6
2nd	3.3	3.0	2.8
3rd	4.3	4.1	3.9
4th	5.1	5.0	4.8
5th	5.9	5.9	5.7
6th	6.7	6.8	6.6
7th	8.1	8.4	8.3
8th	9.9	10.7	10.6
9th	13.6	14.5	14.8
10th (highest)	41.3	40.1	40.9
Overall	100.0	100.0	100.0

Table 2 Median Monthly Income from Main Employment by Decile Group of Working Population

	Median (At Current Prices) (HK$)			Ratio		
Decile Group	1996	2001	2006	2001:1996	2006:2001	2006:1996
1st (lowest)	3,200	3,500	3,200	1.09	0.91	1.00
2nd	5,000	5,000	4,500	1.00	0.90	0.90
3rd	6,500	7,000	6,300	1.08	0.90	0.97
4th	7,500	8,000	7,700	1.07	0.96	1.03
5th	8,500	10,000	9,000	1.18	0.90	1.06
6th	10,000	11,250	10,500	1.13	0.93	1.05
7th	12,000	14,000	13,000	1.17	0.93	1.08
8th	15,000	18,000	17,000	1.20	0.94	1.13
9th	20,000	23,750	23,750	1.19	1.00	1.19
10th (highest)	37,500	45,000	45,000	1.20	1.00	1.20
Overall	9,500	10,000	10,000	1.05	1.00	1.05

7. The increased dispersion in the distribution of employment income from 1996 to 2006 was however related to the changes of the demographics of the Hong Kong population and the structural development of the economy over the period.

8. On the demographic front, the improvement in educational attainment of the working population is the most important contributor to the increased employment income dispersion trend. Analysing the GC by educational attainment, the GC for workers possessing degree or above education was distinctly higher than other groups with lower educational attainment. As the proportion of people with degree or above education in the working population increased notably from 13% to 21% over the past decade, it was not surprising at all that the overall GC would increase amid the overall upgrading of education in the population (see Table 3).

Table 3 Gini Coefficient (Based on Monthly Income from Main Employment of Working Population) by Educational Attainment (Highest Level Attended)

Educational Attainment (highest level attended)	Gini Coefficient			Share in Working Population		
	1996	2001	2006	1996	2001	2006
No schooling / Pre-primary	0.370	0.349	0.418	2.8	2.0	1.6
Primary	0.345	0.341	0.379	18.0	15.2	12.2
Lower secondary	0.329	0.336	0.357	20.4	19.8	19.0
Upper secondary and Sixth form	0.393	0.397	0.416	39.2	41.2	37.2
Post-secondary : Diploma / Certificate / Sub-degree course	0.430	0.424	0.439	6.2	5.0	9.4
Post-secondary : Degree course	0.562	0.529	0.528	13.4	16.8	20.7
Total	0.483	0.488	0.500	100.0	100.0	100.0

9. On the economic front, the shift in labour demand towards workers with better knowledge and skills has led to faster increases in income for high-skilled workers. Amongst the various broad job categories, the median monthly employment income of managers and administrators registered the highest increase of 30% from $20,000 in 1996 to $26,000 in 2006 (see Table 4).

Table 4 Median Monthly Income from Main Employment of Working Population by Occupation

Occupation	Median (At Current Prices) (HK$) 1996	2001	2006	% Change over 2006-1996
1. Managers and administrators	20,000	26,000	26,000	30.0
2. Professionals	24,000	30,000	25,000	4.2
3. Associate professionals	14,000	16,000	15,000	7.1
4. Service workers and shop sales workers	8,500	9,110	8,500	0.0
Sub-total (1-4)	*13,700*	*16,000*	*15,000*	*9.5*
5. Clerks	9,000	10,000	9,500	5.6
6. Craft and related workers	8,500	10,000	10,000	17.6
7. Plant and machine operators and assemblers	8,500	10,000	9,500	11.8
8. Elementary occupations	5,500	5,300	4,900	-10.9
9. Skilled agricultural and fishery workers; and occupations not classifiable	7,000	7,000	6,500	-7.1
Sub-total (5-9)	*8,000*	*8,500*	*7,800*	*-2.5*
Overall	9,500	10,000	10,000	5.3

Table 5 Gini Coefficient (Based on Monthly Income from Main Employment of Working Population) by Occupation

Occupation	Gini Coefficient			Share in Working Population		
	1996	2001	2006	1996	2001	2006
1. Managers and administrators	0.556	0.521	0.528	12.2	10.8	10.8
2. Professionals	0.476	0.454	0.466	5.0	5.6	6.1
3. Associate professionals	0.366	0.340	0.357	12.2	15.4	16.2
4. Service workers and shop sales workers	0.340	0.332	0.346	13.7	14.9	16.3
Sub-total (1-4)	-	-	-	*43.1*	*46.7*	*49.4*
5. Clerks	0.234	0.256	0.272	16.8	16.3	16.8
6. Craft and related workers	0.272	0.268	0.264	12.3	9.9	8.5
7. Plant and machine operators and assemblers	0.264	0.260	0.251	8.6	7.4	6.2
8. Elementary occupations	0.273	0.288	0.283	18.4	19.5	18.8
9. Skilled agricultural and fishery workers; and occupations not classifiable	-	-	-	0.7	0.3	0.3
Sub-total (5-9)	-	-	-	*56.9*	*53.3*	*50.6*
Overall	0.483	0.488	0.500	100.0	100.0	100.0

10. Hong Kong is a small, open and service-oriented economy. During the transformation and upgrading process, many high-income jobs which require high educational attainment and/or working experience are being created along with the enhancement of the quality of the local workforce as well as higher expectation of quality service in the community. As a result, the proportion of the higher-skilled occupations [2] and the service-related occupations[3] in the working population increased substantially from 43.1% to 49.4% over the past decade. On the other hand, the proportion of the lower-skilled occupations[4] shrank from 56.9% to 50.6% (see Table 5).

11. This shift in occupation of workers is an important factor contributing to the increase in income dispersion in the ten year period. Looking at GC by occupation (Table 5), the GC within each of these high-skilled occupations and service-related occupations, i.e. items 1 to 4, is high (ranging from 0.346 to 0.528 in 2006) as compared to the other occupations, i.e. items 5 to 9 (with GC ranging from 0.251 to 0.283). These high GC occupations increased from a total share of 43% in 1996 to 49% in 2006. Their median income also increased by 9.5% in the period, compared to a decrease of 2.5% for the remaining occupations (see Table 4). The growth in these high-skilled and service-related occupations is thus an important factor leading to the increase in overall income dispersion. In comparison, it is interesting to note that most occupation groups did not see any increase in GC over the ten year period. In fact, 5 out of 8 of the groups registered a decline.

Table 6 Gini Coefficient (Based on Monthly Income from Main Employment of Working Population) by Industry

Industry	Gini Coefficient			Share in Working Population		
	1996	2001	2006	1996	2001	2006
1. Construction	0.389	0.346	0.362	8.1	7.6	6.9
2. Transport, storage and communications	0.397	0.405	0.404	10.9	11.3	11.7
3. Wholesale, retail and import/export trades, restaurants and hotels	0.447	0.440	0.456	24.6	26.0	27.0
4. Manufacturing	0.461	0.447	0.481	18.9	12.3	9.6
Sub-total (1-4)	-	-	-	*62.6*	*57.3*	*55.2*
5. Community, social and personal services	0.501	0.529	0.532	22.5	25.6	27.0

[2] Including "Managers and administrators"; "Professionals"; and "Associate professionals".
[3] Referring to "Service workers and shop sales workers".
[4] Including "Clerks"; "Craft and related workers"; "Plant and machine operators and assemblers"; "Elementary occupations"; and "Skilled agricultural and fishery workers; and occupations not classifiable".

6. Financing, insurance, real estate and business services	0.552	0.532	0.544	13.5	16.2	17.0
7. Others	0.519	0.518	0.576	1.4	0.9	0.7
Sub-total (5-7)	-	-	-	*37.4*	*42.7*	*44.8*
Overall	0.483	0.488	0.500	100.0	100.0	100.0

12. The impact of the economic restructuring can also be visualised from the GC for industry groups (see Table 6). As reflected by the higher GC, the income distribution tended to be more uneven among working persons in the financing, insurance, real estate and business services as well as those in community, social and personal services. As an international financial city and a service-oriented economy, Hong Kong has an increasing number of workers engaged in these two industry sectors over the past decade. Income dispersion has thus widened partly as a consequence of the changing industry mix of the working population.

Household income distribution

13. As regards the analysis of household income, households at both ends of the income distribution witnessed an increase in share over the period. The percentage share of households with monthly household income at current prices below $4,000 increased from 6.7% in 1996 to 9.2% in 2006, while those with monthly household income at $40,000 or above also grew from 15.0% to 17.0% (see Table 7).

Table 7 Domestic Households by Monthly Domestic Household Income

Monthly Income (At Current Prices) (HK$)	1996 Number	1996 %	2001 Number	2001 %	2006 Number	2006 %
< 2,000	55 597	3.0	65 855	3.2	86 736	3.9
2,000 – 3,999	68 272	3.7	97 568	4.8	118 779	5.3
4,000 – 5,999	75 595	4.1	93 018	4.5	121 605	5.5
6,000 – 7,999	105 639	5.7	116 340	5.7	146 010	6.6
8,000 – 9,999	136 577	7.4	120 721	5.9	147 081	6.6
10,000 – 14,999	324 001	17.5	318 623	15.5	339 469	15.2
15,000 – 19,999	269 694	14.5	262 086	12.8	279 217	12.5
20,000 – 24,999	210 926	11.4	223 708	10.9	225 292	10.1
25,000 – 29,999	147 295	7.9	159 470	7.8	162 783	7.3
30,000 – 39,999	183 254	9.9	219 229	10.7	221 101	9.9
40,000 – 59,999	150 440	8.1	197 311	9.6	194 723	8.7
≥ 60,000	128 263	6.9	179 483	8.7	183 750	8.3
Total	1 855 553	100.0	2 053 412	100.0	2 226 546	100.0
Median Monthly Domestic Household Income (HK$)						

	17,500	18,705	17,250

14. The most important factor affecting the trend of household income distribution is of course the trend of personal income distribution, which has been discussed in detail in paragraphs 6-12. Besides this, the household income distribution has also been affected by how individual households are formed. In Hong Kong, the average household size of domestic households has undergone a significant reduction from 3.3 in 1996 to 3.0 in 2006. The income distribution tended to be more uneven for smaller households. More specifically, the GC for 1-person households is seen to have exceeded the overall average by a wide margin. The notable growth in the number of small households with high income dispersion was a key factor for the widening income dispersion in Hong Kong during 1996–2006, as revealed from the figures in Table 8.

Table 8 Gini Coefficient (Based on the Original Monthly Household Income) by Household Size

	Gini Coefficient			Share (%)		
Household Size	1996	2001	2006	1996	2001	2006
1	0.615	0.620	0.614	14.9	15.7	16.5
2	0.547	0.550	0.559	19.2	21.8	24.1
Subtotal (1-2)	-	-	-	*34.2*	*37.5*	*40.6*
3	0.487	0.452	0.470	20.1	21.3	23.2
4	0.457	0.457	0.455	24.0	23.4	22.7
5+	0.482	0.512	0.514	21.7	17.8	13.5
Subtotal (3+)	-	-	-	*65.8*	*62.5*	*59.4*
Overall	0.518	0.525	0.533	100.0	100.0	100.0

15. The reduction in the average size of households in Hong Kong is characterised by the following changes in household composition (Table 9):

(a) Increase in older-person households – The population in Hong Kong grew older during the last ten years. The median age rose from 34 in 1996 to 39 in 2006. An increasing number of older persons tended to live alone or with their spouses only. The proportion of older-persons households (i.e. households comprising all members aged 65 and over) expanded from 6.0% in 1996 to 7.5% in 2006. Many of these older

persons were retirees and did not have employment income. The increasing proportion of such zero (or low) income households has contributed to a wider dispersion of household income.

(b) Increase in the number of persons living alone – The proportion of never married males and females in the prime marriageable ages increased substantially, probably associated with the trend of late marriage and the tendency to remain single. As a result, the proportion of households with one adult member only aged below 65 increased from 11% in 1996 to 12% in 2006.

Table 9 Domestic Households by Household Members Composition

	1996		2001		2006	
Household Members Composition	Number	%	Number	%	Number	%
Older-person households	111 275	6.0	151 665	7.4	166 911	7.5
One adult member only aged < 65	204 045	11.0	225 748	11.0	268 124	12.0
Never married	*112 593*	*6.1*	*135 063*	*6.6*	*167 151*	*7.5*
Ever married	*91 452*	*4.9*	*90 685*	*4.4*	*100 973*	*4.5*
Others	1 540 233	83.0	1 675 999	81.6	1 791 511	80.5
Total	1 855 553	100.0	2 053 412	100.0	2 226 546	100.0

Table 10 Median Monthly Domestic Households Income by Household Members Composition

Household Members Composition	1996 Median	2001 Median	2006 Median
Older-person households	3,024	3,500	3,400
One adult member only aged < 65	11,000	12,800	11,500
Never married	*12,500*	*15,000*	*13,000*
Ever married	*10,000*	*10,000*	*9,000*
Others	19,495	21,000	20,000
Total	17,500	18,705	17,250

Redistributive effects of government intervention

16. Government intervention through taxation and benefits helps bring

about income redistribution. The effect of taxation on income distribution can be examined through the post-tax household income. It is derived by taking away tax payments (specifically salaries tax, property tax, rates and Government rent) from the original household income.

17. The post-tax household income was, on average, lower than the original household income by 6-7% during 1996–2006. Taxation had a stronger impact on the income of households in the top and bottom decile groups than in the other groups. In 2006, the average post-tax household income was 10.1% and 11.1% lower than the original household income for the 1st and 10th decile groups respectively, due to increase in payment of rates and Government rent for the former group and increase in payment of salaries tax for the latter.

18. The post-tax post-social transfer household income is estimated by adding the public funded social benefits allocated (specifically, education, housing and medical benefits) to the post-tax household income. The average post-tax post-social transfer household income was higher than the original household income by 3–5% in 1996-2006. Social benefits provided by public funding were more concentrated among lower decile groups. The ratio of average post-tax post-social transfer household income to original household income reduced progressively when moving from the lowest decile group to the highest decile group. In 2006, the ratio for the 1st decile group was 226.1% and for the 10th decile group was 90.8%.

19. Four series of GC based on original household income, post-tax household income, post-tax post-social transfer household income, and per capita post-tax post-social transfer household income for 1996, 2001 and 2006 have been compiled. This is the first time that the latter three series of Gini coefficients are compiled in Hong Kong to assess the effect of taxation and social benefits on the income distribution (see Table 10).

Table 11: Series of Gini coefficients based on different income concepts

	1996	2001	2006
Gini coefficients			
Based on original household income	0.518	0.525	0.533
Based on post-tax household income	0.508	0.515	0.521
Based on post-tax post-social transfer household income	0.466	0.470	0.475
Based on per capita post-tax post-social transfer household income	0.427	0.421	0.427

20. There are basically two observations from the four series of Gini coefficients.

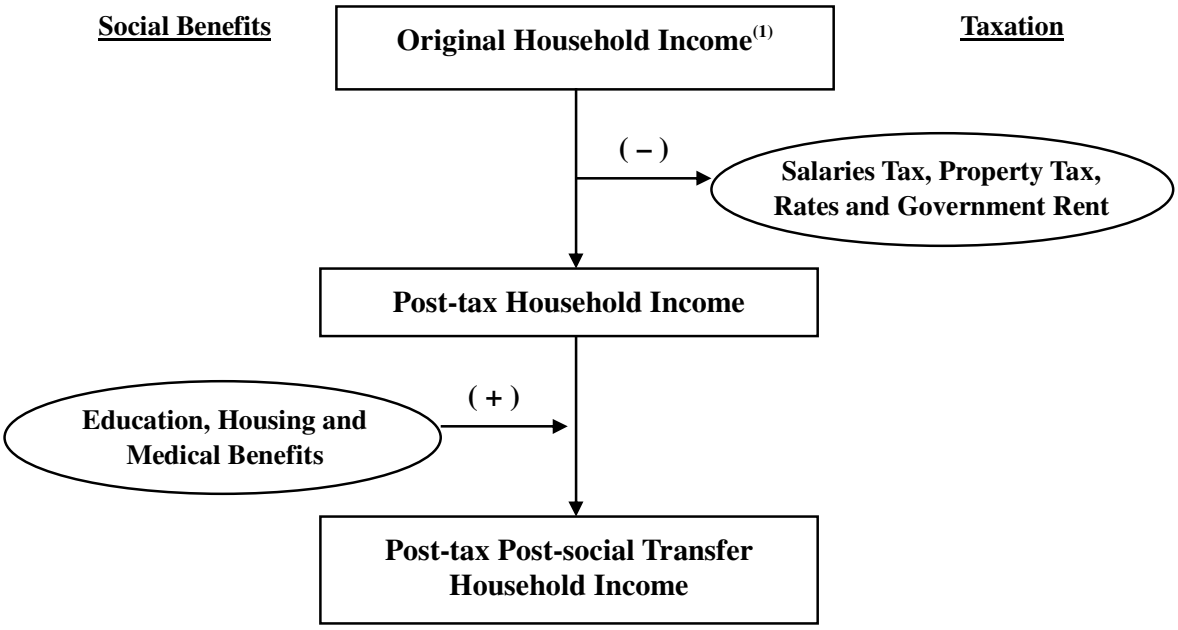
(a) The GC based on per capita post-tax post-social transfer household income were smaller than that on post-tax post-social transfer household income and post-tax household income, which in turn were smaller than that on original household income.

(b) The magnitude of increase in the GC over the past ten years from 1996 to 2006 had narrowed down from the original ones, to the post-tax ones and further to the post-tax post-social transfer ones and the per capita post-tax post-social transfer ones.

Concepts and methods

21. The effects of taxation and social benefits can be ascertained by examining the post-tax household income distribution and the post-tax post-social transfer on household income distribution. Chart 1 illustrates the compilation framework of post-tax household income and post-tax post-social transfer household income.

Chart 1 Concepts of Original Household Income, Post-tax Household Income and Post-tax Post-social Transfer Household Income



Concluding Remarks

22. The study of income distribution, and in particular, the assessment of the income re-distribution effect through taxation and social benefits is conceptually complicated and statistically demanding. There is no easy and direct way to derive the post-tax post-social transfer income. Different approaches are adopted by different economies, depending on the local situation and availability of data.

23. To address this important and sensitive subject, C&SD adopted a two-pronged approach. On one hand, we have conducted an in-depth study by referencing to relevant literature and the practices of other economies having conducted similar studies before coming up with an appropriate statistical framework. On the other hand, the views of academia were consulted and suitably incorporated in the statistical framework. Through all these ground work and buying in the views of major stakeholders, a thematic report providing comprehensive analysis of household income and covering a compendium of statistics was subsequently released in mid-2007. The report has attracted much public attention and received a lot of positive feedback in respect of its methodological soundness and analytical richness.

24. It is anticipated that income disparity will continue be a hot subject in Hong Kong. In light of this, it is contemplated to refine the data collection relating to income data (e.g. more detailed breakdowns on social benefits) so as to facilitate more in-depth analysis. On the methodological front, we will continue to research on this area with a view to enhancing the compilation framework.