Household Income and Gini Coefficient
Information Note

Statistical data used to measure the level and disparity of household income include, *inter alia*, (i) distribution of monthly household income; (ii) distribution of monthly household income by decile groups of households; (iii) Lorenz curve; and (iv) Gini coefficient (GC).

Distribution of monthly household income

2. Between 1991 and 2001, the median household income at current prices increased by 88% from $9,964 to $18,705. (Table 1)

Table 1 Distribution of households by monthly household income (at **current** prices), 1991, 1996 and 2001

Monthly household income (HK$)	1991		1996		2001	
	Number	%	Number	%	Number	%
Under 2,000	75 552	4.8	55 597	3.0	65 855	3.2
2,000 - 3,999	115 236	7.3	68 272	3.7	97 568	4.8
4,000 - 5,999	202 511	12.8	75 595	4.1	93 018	4.5
6,000 - 7,999	218 388	13.8	105 639	5.7	116 340	5.7
8,000 - 9,999	181 846	11.5	136 577	7.4	120 721	5.9
10,000 - 14,999	314 379	19.9	324 001	17.5	318 623	15.5
15,000 - 19,999	176 406	11.1	269 694	14.5	262 086	12.8
20,000 - 24,999	99 649	6.3	210 926	11.4	223 708	10.9
25,000 - 29,999	56 851	3.6	147 295	7.9	159 470	7.8
30,000 - 39,999	60 169	3.8	183 254	9.9	219 229	10.7
40,000 - 59,999	44 794	2.8	150 440	8.1	197 311	9.6
60,000 and over	36 434	2.3	128 263	6.9	179 483	8.7
Total	1 582 215	100.0	1 855 553	100.0	2 053 412	100.0
Median household income (HK$)	9,964		17,500		18,705	

3. The factor of inflation should be taken into account when analysing changes in the level of household income over time. Between 1991 and 2001, the price increase, as measured by the Composite Consumer Price Index (Composite CPI), was 53%. (The corresponding figure for 1996-2001 was 1%.) In other words, there was a 22 % growth in the median household income in real terms over the past decade, netting out the effect of changes in the Composite CPI. Table 2 shows the number and percentage of domestic households falling into different income brackets which have been adjusted for inflation using the Composite CPI.

Table 2 Distribution of households by monthly household income (at **constant** (Feb 2001) prices), 1991, 1996 and 2001

Monthly household income (HK$)	1991		1996		2001	
	Number	%	Number	%	Number	%
Under 2,000	54 189	3.4	55 425	3.0	65 855	3.2
2,000 - 3,999	52 067	3.3	68 174	3.7	97 568	4.8
4,000 - 5,999	81 665	5.2	75 398	4.1	93 018	4.5
6,000 - 7,999	145 820	9.2	104 823	5.6	116 340	5.7
8,000 - 9,999	125 062	7.9	136 526	7.4	120 721	5.9
10,000 - 14,999	322 336	20.4	321 786	17.3	318 623	15.5
15,000 - 19,999	231 044	14.6	268 976	14.5	262 086	12.8
20,000 - 24,999	161 832	10.2	211 090	11.4	223 708	10.9
25,000 - 29,999	101 115	6.4	146 980	7.9	159 470	7.8
30,000 - 39,999	125 903	8.0	183 423	9.9	219 229	10.7
40,000 - 59,999	7 174	6.1	152 891	8.2	197 311	9.6
60,000 and over	84 008	5.3	130 061	7.0	179 483	8.7
Total	1 582 215	100.0	1 855 553	100.0	2 053 412	100.0
Median monthly household income (HK$)	15,364		17,745		18,705	

Distribution of monthly household income by decile groups of domestic households

4. The changes in household income can also be studied by referring to the rates of income growth for different income groups. All households are first ranked by income and then divided into 10 decile groups, with the first decile group being the 10% of households earning the least, the second decile group

being the next 10% and so on. The median household income for each decile group is then estimated. Over the past ten years, median income has increased for all decile groups except for the first decile group (i.e. the lowest one). Table 3 shows the median monthly household income (at current and constant (Feb 2001) prices) by decile groups of households for 1991, 1996 and 2001.

Table 3 Median monthly household income by decile groups of households (at current and constant (Feb 2001) prices), 1991, 1996 and 2001

Decile group	Median monthly household income (HK$)			Ratio		
	1991	1996	2001	1996:91	2001:96	2001:91
			(At current prices)			
1st (lowest)	2,000	3,000	2,977	1.50	0.99	1.49
2nd	4,300	7,395	6,750	1.72	0.91	1.57
3rd	6,000	10,000	10,000	1.67	1.00	1.67
4th	7,200	12,500	13,000	1.74	1.04	1.81
5th	8,933	15,900	16,500	1.78	1.04	1.85
6th	10,700	19,500	20,500	1.82	1.05	1.92
7th	13,000	23,500	25,705	1.81	1.09	1.98
8th	16,623	29,758	32,560	1.79	1.09	1.96
9th	22,465	40,000	44,650	1.78	1.12	1.99
10th (highest)	40,000	70,000	80,000	1.75	1.14	2.00
			(At constant (Feb 2001) prices)			
1st (lowest)	3,084	3,042	2,977	0.99	0.98	0.97
2nd	6,631	7,499	6,750	1.13	0.90	1.02
3rd	9,252	10,140	10,000	1.10	0.99	1.08
4th	11,102	12,675	13,000	1.14	1.03	1.17
5th	13,775	16,123	16,500	1.17	1.02	1.20
6th	16,499	19,773	20,500	1.20	1.04	1.24
7th	20,046	23,829	25,705	1.19	1.08	1.28
8th	25,633	30,175	32,560	1.18	1.08	1.27
9th	34,641	40,560	44,650	1.17	1.10	1.29
10th (highest)	61,680	70,980	80,000	1.15	1.13	1.30

5. For households in the first (i.e. the lowest) decile group, the median monthly income in real terms decreased slightly by 3% from 1991 to 2001. Meanwhile, the median monthly income in real terms for households in the second to tenth decile groups went up between 1991 to 2001, with the percentage of increase being greater for households in the higher decile groups.

6. The extent of disparity in household income distribution can be measured by the relative share of the total income of households that is received by each decile group. This is done first by dividing them into 10 decile groups in ascending order of their household income, and tabulating the relative income share for households in each decile group against the total income of all households in Hong Kong. Table 4 shows the changes in the percentage distribution of monthly household income by decile groups of domestic households since 1991. Over the past ten years, the relative share of the total household income for the decile groups has fallen except for the tenth decile group.

Table 4 Percentage distribution of monthly household income by decile groups of households, 1991, 1996 and 2001

Decile group	1991 %	1996 %	2001 %
1st (lowest)	1.3	1.1	0.9
2nd	3.0	2.6	2.3
3rd	4.0	3.6	3.4
4th	5.0	4.6	4.4
5th	6.1	5.7	5.6
6th	7.4	7.0	7.0
7th	9.0	8.5	8.8
8th	11.4	10.6	11.1
9th	15.5	14.5	15.3
10th (highest)	37.3	41.8	41.2
Total	100.0	100.0	100.0

7. The household income ranges for the decile groups are presented in Table 5. As shown in the table, boundary of two consecutive decile groups may overlap. This is because each decile group is to cover exactly 10% of the households. Thus in forming the decile groups, households of the same income

may be separately placed in two consecutive groups.

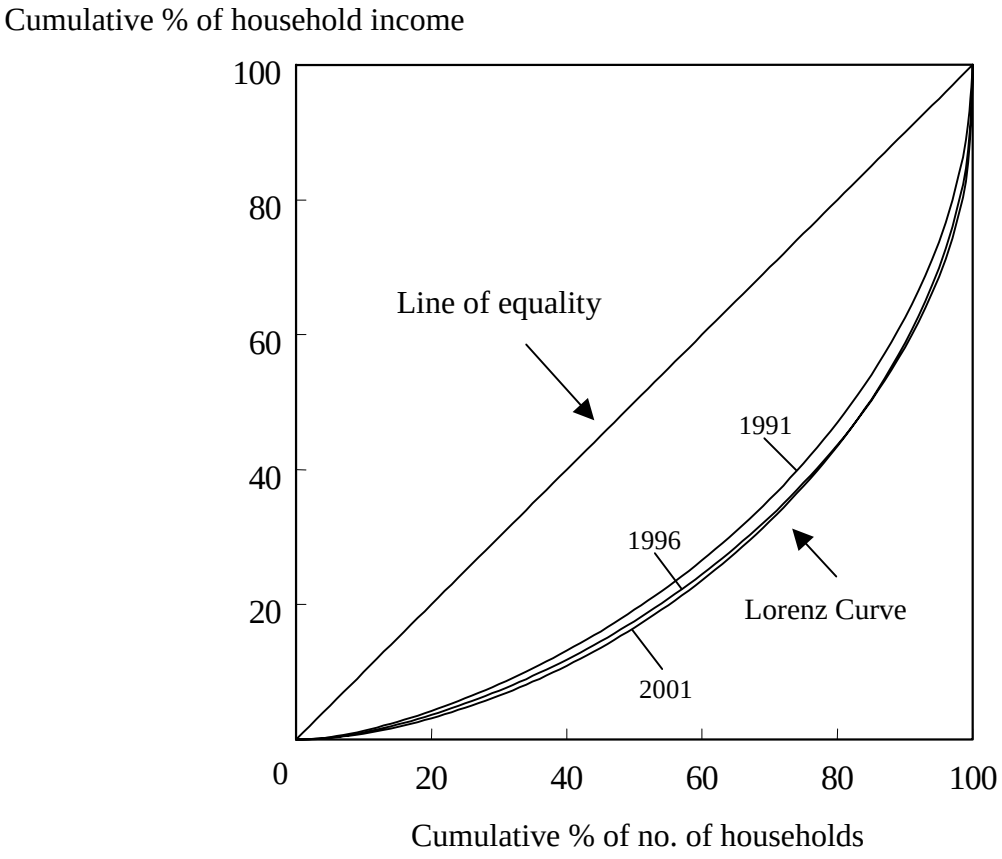
Table 5 Monthly household income range by decile groups of households at current and constant (Feb 2001) prices), 1991, 1996 and 2001

Decile group	Monthly household income range (HK$)		
	1991	1996	2001
	(At current prices)		
1st (lowest)	0 - 3,393	0 - 5,500	0 - 5,000
2nd	3,393 - 5,000	5,500 - 8,595	5,000 - 8,460
3rd	5,000 - 6,500	8,595 - 11,250	8,460 - 11,300
4th	6,500 - 8,000	11,250 - 14,115	11,300 - 15,000
5th	8,000 - 9,900	14,115 - 17,500	15,000 - 18,705
6th	9,900 - 12,000	17,500 - 21,000	18,705 - 23,000
7th	12,000 - 14,950	21,000 - 26,000	23,000 - 29,000
8th	14,950 - 19,000	26,000 - 33,690	29,000 - 37,670
9th	19,000 - 27,890	33,690 - 49,250	37,670 - 55,000
10th (highest)	≥ 27,890	≥ 49,250	≥ 55,000
	(At constant (Feb 2001) prices)		
1st (lowest)	0 - 5,232	0 - 5,577	0 - 5,000
2nd	5,232 - 7,710	5,577 - 8,715	5,000 - 8,460
3rd	7,710 - 10,023	8,715 - 11,408	8,460 - 11,300
4th	10,023 - 12,336	11,408 - 14,313	11,300 - 15,000
5th	12,336 - 15,266	14,313 - 17,745	15,000 - 18,705
6th	15,266 - 18,504	17,745 - 21,294	18,705 - 23,000
7th	18,504 - 23,053	21,294 - 26,364	23,000 - 29,000
8th	23,053 - 29,298	26,364 - 34,162	29,000 - 37,670
9th	29,298 - 43,006	34,162 - 49,940	37,670 - 55,000
10th (highest)	≥ 43,006	≥ 49,940	≥ 55,000

Lorenz Curve and Gini Coefficient

8. The Lorenz Curve and the Gini coefficient (GC) are often used to indicate the extent of disparity in the household income. The Lorenz curve is obtained by plotting the cumulative percentages of household income against the cumulative percentages of the number of households, starting from households with the lowest income. The Gini coefficient is calculated by taking the area between the Lorenz curve and the line of equality and dividing it by the total area below the line of equality. [Please refer to the technical note on Lorenz Curve and Gini Coefficient in Annex.] The degree of income disparity is reflected by the extent to which the Lorenz curve is concave against the line of equality : the more concave is the Lorenz curve away from the line of equality, the greater is the degree of income disparity. The Lorenz Curves for 1991, 1996 and 2001 are drawn in Chart 1.

Chart 1 : Lorenz Curve



9. According to the results of the 2001 Population Census, the GC based on household income in Hong Kong is estimated at 0.525. The corresponding figures for 1996 and 1991 were 0.518 and 0.476 respectively. These figures suggest that there has been an increase in the extent of income disparity. (Table 6)

Table 6 Gini coefficient, 1971-2001

Population census or by-census	Gini coefficient
1971	0.430
1976	0.429
1981	0.451
1986	0.453
1991	0.476
1996	0.518
2001	0.525

10. GCs of various economies in the world may often be compiled using somewhat different methods in such aspects as the concept of income adopted and the unit of study. Also, the effects of variations in household structure such as household size and household composition in different economies are normally not accounted for in the compilation of GCs. Hence, the GCs may not be directly comparable. Generally speaking, it is observed that increases in the GC have been experienced in many economies. The possible reason for such a trend is the restructuring of the economies. As the economies change gradually, people with better knowledge and skills will get relatively faster increases in income.

11. It should be noted that in studying income distribution, account should be taken of the effect of social mobility of individual persons in the population. For example, some households falling in the low income decile groups in 1996 might have moved up the social ladder to higher income decile groups in 2001. Their positions in the low income decile groups might have been replaced by households newly formed by members who have just entered the labour force.

12. GCs compiled on the basis of income of all households do not take into account changes in the household distribution by household size. To eliminate the effect of changes in household size over time, GCs by household size can be

compiled. It is observed that the distribution of households by household size has changed a lot in the past ten years and the increases in GCs of different extent have been observed for households of different size. (Table 7)

Table 7 Distribution of households and Gini coefficients by household size, 1991, 1996 and 2001

Household size	Number of households (thousands)			Percentage of households			Gini coefficient		
(persons)	1991	1996	2001	1991	1996	2001	1991	1996	2001
1	226	277	321	14.3	14.9	15.6	0.577	0.615	0.620
2	291	357	448	18.4	19.2	21.8	0.523	0.547	0.550
3	307	373	438	19.4	20.1	21.3	0.453	0.487	0.452
4	360	446	482	22.8	24.0	23.5	0.441	0.457	0.457
5	226	251	245	14.3	13.5	11.9	0.449	0.468	0.487
6	105	100	84	6.6	5.4	4.1	0.429	0.483	0.530
7 and over	67	52	35	4.2	2.8	1.7	0.410	0.505	0.579
Total	1 582	1 856	2 053	100.0	100.0	100.0			

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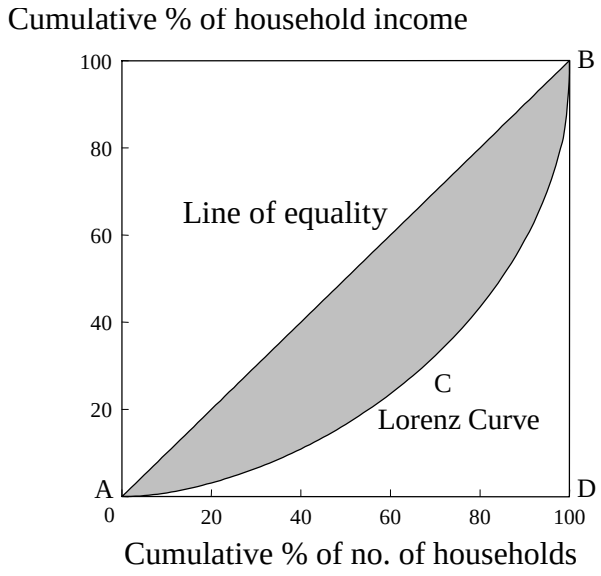
Annex

Lorenz Curve and Gini Coefficient

The Lorenz curve and the Gini coefficient are often used to indicate disparity in the household income.

2. The Lorenz curve is obtained by plotting the cumulative percentages of household income against the cumulative percentages of the number of households, starting from households with the lowest income. A specimen of the Lorenz curve is shown in Chart 1. For an absolutely equal distribution of income, the Lorenz Curve would have been a line of equality. The degree of income disparity is reflected by the extent to which the Lorenz curve is concave against the line of equality. In other words, the closer the Lorenz curve is to the line of equality, the smaller is the degree of income disparity.

Chart 1 : Lorenz Curve



3. The Gini coefficient, which takes a value between zero and one, is calculated by taking the area "ABC" between the Lorenz curve and the line of equality and dividing it by the total area "ABD" below the line of equality. A value of "zero" indicates absolute equality in the household income distribution, or every household has an equal share of the total household income. A value of "one" means complete disparity when one household earns the total household income and the remaining households earn nothing. The Gini coefficient of the household income distribution in 2001 was 0.525, which was slightly higher than that of 0.518 in 1996.

4. Study of income distribution have to be performed with great care, so as not to overlook some relevant factors, including the effect of social mobility of individual persons in the population over time. For example, some households falling in the low income decile groups in 1996 might have moved up the social ladder to a higher income decile group in 2001. Their positions in the low income decile groups might have been replaced by households newly formed by persons who have just entered the labour force.

5. Furthermore, care should be taken to note the structural changes in an economy and the consequential transformation to occupational patterns. Over the past decade, rapid structural transformation in the Hong Kong economy has led to a

strong and increasing demand for managers, administrators, professionals and associate professionals, and hence faster increases in salaries and wages for people working in these jobs than those working in other jobs which require lower level of knowledge and skill. Income disparity thus widens as a consequence of such variations in salary increases. It should be noted that a certain degree of income disparity is rather common in the more economically advanced countries or territories.

6. The use of the Gini coefficient only serves to indicate different trends in the disparity of income distribution among households. The effects of taxation and social benefits on the distribution of household income, which tend to reduce the disparity of income, have not been considered. No account is taken of the intangible income received by the lower income households in the form of Government spending in housing, health and education. The economic benefits of such welfare services in alleviating the apparent disparity in household income distribution should not be underestimated.

7. Finally, it should be noted that there is no direct relationship between the extent of poverty and the Gini coefficient. An increase in the Gini coefficient implies rising income disparity which does not necessarily indicate worsening of the poverty situation. For example, when the rich become richer while the poor also become richer, the Gini coefficient may still increase as there may be differential degree of improvement in income for different groups of people. Hence, reference should also be made to other income statistics in addition to the Gini coefficient (e.g. median monthly household income, monthly household income per capita and percentage distribution of monthly household income by decile groups of domestic households) in order to get a clear understanding of the poverty situation of an economy.