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# Trends in labour's share of income in Hong Kong: A shift-share analysis based on sectoral data

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## **Abstract**

This article uses shift-share analysis to decompose the long-term movements of labour's share of income in Hong Kong over nearly four decades on a sectoral basis. The analysis reveals two underlying factors behind the overall trend. One is a positive "within industry" effect, which was more pronounced from the 1980s to the 2000s, mainly due to rising labour income share within the tertiary industry. Another is a negative "compositional change" effect, which reflects economic restructuring from the secondary industry to the tertiary industry. While these two effects almost offset each other most of the time, the positive "within industry" effect dominated the negative "compositional change effect" from the 1990s to the 2000s, leading to a relatively visible increase in the overall labour income share over this interval.

# 香港勞動收入佔比的趨勢:以產業數據作「轉移比例」分析 摘要

本文運用「轉移比例」分析方法,以產業為基礎去解構過去近 40 年間香港勞動 收入佔比的長期變化。分析揭示整體趨勢背後有兩項潛在因素。其中一項為正面的「產業內」效應,其影響在 1980 年代至 2000 年代間較為明顯,主要是由於第三產業內勞動收入佔比增加。另一項為負面的「組成變化」效應,反映第二產業轉為第三產業的經濟轉型。雖然這兩項效應的作用在大部分時段幾乎相互抵銷,不過從 1990 年代到 2000 年代間,正面的「產業內」效應大於負面的「組成變化」效應,故期內整體勞動收入佔比有相對明顯的增加。

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

#### I. INTRODUCTION

- 1. Labour's share of income, measured as the ratio of compensation of employees (CoE) to Gross Domestic Product (GDP), is commonly used as a crude indicator of income distribution among labour and capital in an economy. Many empirical studies have suggested that the labour share of income has seen a secular downtrend in many economies since the 1980s<sup>1</sup>, raising concerns that improvements at the macro level may not translate into commensurate improvements in households' well-being <sup>2</sup>. Nonetheless, in Hong Kong, the labour share of income was actually relatively higher on average since the 2000s (2000-09: 50.6%, 2010-18: 51.0%) as compared to the 1980s and 1990s (1980-89: 48.8%; 1990-99: 49.0%). Beneath the observed increase in labour's share of income, there were some long-term changes within and across industries that had conceivably pushed the labour's share of income up or dampened its upward movement. This note uses shift-share analysis<sup>3</sup> to look into these changes and quantify their contributions to the long-term movements of the overall labour income share during the study period.
- 2. The structure of this article is as follows. **Part II** describes the changes in overall labour's share of income and economic restructuring in Hong Kong over the past nearly four decades. **Part III** applies the shift-share analysis to broad industries

ing%20labor%20share%20of%20income%20in%20the%20United%20States/MGI-A-new-look-at-the-declining-labor-share-of-income-in-the-United-States.pdf

$$LIS_{t+1} - LIS_t = \sum_i LIS_{i,t} \times (VA \ share_{i,t+1} - VA \ share_{i,t}) + \sum_i VA \ share_{i,t+1} \times (LIS_{i,t+1} - LIS_{i,t})$$

where  $LIS_t$  denotes the overall LIS in period t,  $LIS_{i,t}$  denotes the LIS of industry / sector i in period t, and VA share i, denotes the VA share of industry / sector i in the overall economy in period t.

<sup>&</sup>lt;sup>1</sup> For instance, the International Labour Organization (ILO) and the Organisation for Economic Cooperation and Development (OECD) prepared a report in 2015 to analyse the downward trend in the labour income share in G20 economies, and the Mckinsey Global Institute issued a discussion paper in 2019 investigating the declining labour share of income in the United States.

ILO and OECD. (2015). *The labour share in G20 economies*. Report prepared for the G20 Employment Working Group, Antalya, Turkey. Retrieved from <a href="https://www.oecd.org/g20/topics/employment-and-social-policy/The-Labour-Share-in-G20-Economies.pdf">https://www.oecd.org/g20/topics/employment-and-social-policy/The-Labour-Share-in-G20-Economies.pdf</a>

Manyika, J., Mischke, J., Bughin, J., Woetzel, J., Krishnan, M., & Cudre, S. (2019). "A new look at the declining labor share of income in the United States." (McKinsey Global Institute Discussion paper). Retrieved from <a href="https://www.mckinsey.com/~/media/McKinsey/">https://www.mckinsey.com/~/media/McKinsey/</a>
Featured%20Insights/Employment%20and%20Growth/A%20new%20look%20at%20the%20declin

<sup>&</sup>lt;sup>2</sup> Atkinson, A. B. (2009). Factor shares: The principal problem of political economy? *Oxford Review of Economic Policy*, 25(1), 3-16.

Using the formula below, the period-on-period change in the overall labour income share (LIS) is decomposed into (1) the change in the overall LIS due to the change in the value added (VA) shares of individual industries / sectors, holding the individual industries' / sectors' LISs constant (i.e. the first term on the right hand side of the formula, namely the "compositional change" effect) and (2) a residual, which reflects the change in the overall LIS due to changes in LISs within individual industries / sectors, holding VA shares of individual industries / sectors constant (i.e. the second term on the right hand side, namely the "within industry / sector" effect). The formula is

(primary / secondary / tertiary). **Part IV** takes a closer look at developments within the tertiary industry. **Part V** concludes.

# II. TREND IN LABOUR'S SHARE OF INCOME AND ECONOMIC RESTRUCTURING IN HONG KONG

- II.1 Trend in Labour's Share of Income in Hong Kong
- 3. The ratio of CoE to GDP is commonly adopted as a measure of labour's share of income in the overall economy. Over the past several decades, the CoE-to-GDP ratio has experienced ups and downs. In particular, it has tended to increase during economic downswings and vice versa because labour income is typically less sensitive to economic downswings/upswings than capital income.
- 4. Taking a longer-term perspective, as shown in **Chart 1**, the average labour income share was slightly below 50% in the 1980s (1980-89, 10 years) and 1990s (1990-99, 10 years). Then, it registered a **visible increase of 1.5 percentage points** (calculated based on unrounded figures)<sup>4</sup> **to 50.6% from the 1990s to 2000s (2000-09, 10 years)**, and further increased gently by 0.5 percentage point to 51.0% from the 2000s to 2010-18 (9 years). In fact, this change in overall labour income share is not only attributable to the change in labour income shares in each individual industry, but also to the change in industrial composition of the economy.

53 2000-2009: 50.6 2010-2018: 51.0 -12 52 -10 -8 51 -4 50 -2 1990-1999: 49. 49 2 48 47 10 12 14 1985 986 1999 984 886 686 96 <u>1</u> 1992 1993 1997 8661 2001 YoY Change in 2018 Chained Dollars GDP (RHS) (Inverted)

Chart 1: Labour Income Share vs Real GDP Growth

<sup>&</sup>lt;sup>4</sup> Unless otherwise specified, changes in the labour income shares over time are calculated based on unrounded figures throughout the whole article.

# II.2 Economic restructuring from the secondary industry to the tertiary industry

- 5. Since the Mainland adopted its economic reform and open-door policy in 1978, Hong Kong had undergone major economic restructuring in the 1980s and 1990s during which the bulk of highly labour-intensive local manufacturing activities moved across the border to the Mainland (especially the Pearl River Delta region) to take advantage of the lower labour and land costs of production in our hinterland. Meanwhile, the Hong Kong economy has been moving up the value chain and gradually shifted towards higher value-added services and more knowledge-based activities<sup>5</sup>. This was partly attributable to the "front shop, back factory" business model in which these firms retained some staff in Hong Kong to provide backup services for their production base in Guangdong and other Mainland regions, including financial services and financing, procurement and supply chain management, marketing and sales, and product design<sup>6</sup>.
- 6. In light of the structural transformation, the size of the secondary industry fell sharply from 28.7% of the economy to 9.3% from the 1980s to the 2000s, and further to 7.2% in 2010-18. This decline was primarily attributable to the manufacturing sector, in which the value added share plunged from 20.9% in the 1980s to 1.3% in 2010-18. By contrast, the tertiary industry expanded rapidly from 70.7% of the economy to 90.6% from the 1980s to the 2000s, and further to 92.8% in 2010-18 (**Table 1**).

Alongside with the structural change of our economy, the share of higher-skilled employees of our economy rose notably from 20.8% in 1993 to 38.3% in 2018. For instance, the share of higher-skilled employees of the manufacturing sector registered a remarkable increase from 14.8% to 41.1% over the same period, probably reflecting that more manufacturing firms in Hong Kong switched to produce higher value-added products based on more advanced technology, which in turn hired more skilled workers. Meanwhile, the share of higher-skilled employees of the financing and insurance, real estate and professional business services sector also increased from 44.6% to 55.7% over the same period.

<sup>&</sup>lt;sup>6</sup> Sit, V. F. (1998). Hong Kong's "transferred" industrialization and industrial geography. *Asian Survey*, 880-904.

Trade and Industry Department, the Government of Hong Kong Special Administrative Region. (2020, August 27). *Support to Hong Kong industries*. Retrieved from <a href="https://www.tid.gov.hk/english/smes\_industry/industry/industry\_content.html">https://www.tid.gov.hk/english/smes\_industry/industry/industry\_content.html</a>

Table 1: Average Value Added Share by Industry and by Sector<sup>7</sup> in the Overall Economy (%)

	Average value added share in the economy (%)				
	1980s 1990s		2000s 2010-18		
Primary Industry*	0.6	0.2	0.1	0.1	
Secondary Industry	28.7	16.9	9.3	7.2	
Manufacturing	20.9	9.3	3.0	1.3	
Electricity, gas and water supply, and waste management	2.3	2.4	2.9	1.6	
Construction	5.5	5.1	3.5	4.2	
Tertiary Industry^	70.7	82.9	90.6	92.8	
Import and export trade & wholesale	12.9	17.5	21.2	19.8	
Retail trade	3.8	3.0	2.6	3.7	
Food and beverage services & accommodation services	4.1	3.7	2.8	3.4	
Transportation, storage, postal and courier services & information and communications	7.8	9.1	10.9	9.8	
Financing and insurance	7.9	10.3	14.7	17.3	
Real estate	8.2	8.8	4.6	5.1	
Professional and business services	2.7	3.9	4.6	5.8	
Public administration, social and personal services	15.2	17.1	18.6	17.4	
Total	100.0	100.0	100.0	100.0	

Notes: (\*) Refers to the agriculture, fishing, and mining and quarrying sectors.

Source: Census and Statistics Department.

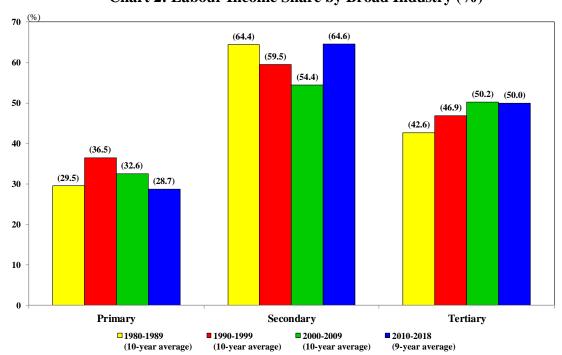
7. Among the tertiary industry, the import and export trade & wholesale sector expanded rapidly and surpassed the public administration, social and personal services sector to become the largest contributor in terms of value added of our economy since the early 1990s<sup>8</sup>. The financing and insurance sector also gained significant economic importance throughout the decades with its economic size almost catching up with the aforementioned two sectors. Meanwhile, the professional and business services sector also saw a notable increase over the whole period.

<sup>(^)</sup> Value added share of the tertiary industry includes that of ownership of premises (not shown in the table).

Due to the switch of Hong Kong Standard Industrial Classification (HSIC) from Version 1.1 to Version 2.0, the sectoral data of this paper are based on HSIC 1.1 before 2000 and HSIC 2.0 in or after 2000. Nevertheless, the sectoral breakdown within the tertiary industry is largely comparable over the whole time horizon of analysis in this article.

<sup>&</sup>lt;sup>8</sup> The VA of the import and export trade & wholesale sector was lower than that of the financing and insurance sector in 2017 and 2018.

8. Because labour's share of income has generally been higher in the labour-intensive manufacturing sector than in the services sectors, the structural transformation of the economy might be expected to reduce labour's share of income in the overall economy, especially from the 1980s to the 1990s amid a large-scale shifting of economic activities to the services sectors (Chart 2). Yet, this was not the case as the overall labour income share saw little change on average from the 1980s to the 1990s (Chart 1). The following sections will try to examine quantitatively the underlying factors behind the change in the labour's share of income in the overall economy.



**Chart 2: Labour Income Share by Broad Industry (%)** 

### III. ANALYSIS BY BROAD INDUSTRY

9. To quantify the factors underlying the apparent small increase in labour's share of income, we first apply the shift-share analysis to decompose these changes by broad industry grouping into two components. One is the "compositional change" effect, or the extent of the change in the labour income shares for the whole economy attributable to changes in industrial composition. Another is the "within industry" effect, which reflects the effect of changes in the labour income shares within individual industries.

Abdih and Danninger (2017) used shift-share analysis to study the labour income share movements of the United States. Their analysis indicated that the compositional shift of U.S. economic activity from manufacturing towards services put downward pressure on the US's labour income share. Abdih, M. Y., & Danninger, M. S. (2017). "What Explains the Decline of the US Labor Share of Income? An Analysis of State and Industry Level Data." (IMF Working Paper No. 17/167). Retrieved from <a href="https://www.imf.org/en/Publications/WP/Issues/2017/07/24/What-Explains-the-Decline-of-the-U-S-45086">https://www.imf.org/en/Publications/WP/Issues/2017/07/24/What-Explains-the-Decline-of-the-U-S-45086</a>

10. The decomposition results (Table 2) indicate that the positive "within industry" effect more than offset the negative "compositional change" effect in all three intervals, especially from the 1990s to the 2000s. The positive "within industry effect" was more pronounced from the 1980s to the 2000s, mainly attributable to the appreciable labour income share advancement within the tertiary industry from 42.6% to 50.2% (Chart 2)<sup>10</sup>. Meanwhile, the negative "compositional change" effect was more significant from the 1980s to the 1990s, due to the structural transformation that arose as economic activities shifted away from the relatively higher labour income share secondary industry to the tertiary industry (Table 1 and Chart 2).

Table 2: Shift-share Analysis by Broad Industry

	From the 1980s to 1990s	From the 1990s to 2000s	From the 2000s to 2010-18			
Change in labour	+0.2% pt.	+1.5% pts.	+0.5% pt.			
income share	(from 48.8% to	(from 49.0% to	(from 50.6% to			
	49.0%)	50.6%)	51.0%)			
Contribution due to						
Compositional change in the economy	-2.5% pts.	-0.9% pt.	-0.1% pt.			
Secondary industry	-7.6% pts.	-4.5% pts.	-1.2% pts.			
Tertiary industry	+5.2% pts.	+3.6% pts.	+1.1% pts.			
Within industry effect	+2.7% pts.	+2.5% pts.	+0.6% pt.			
Secondary industry	-0.8% pt.	-0.5% pt.	0.7% pt.			
Tertiary industry	+3.5% pts.	+3.0% pts.	-0.2% pt.			

Notes: Figures are calculated based on unrounded figures.

As the estimated effects of the primary industry are negligible, related figures are not shown.

11. To summarise, as the "within industry" effect was almost offset by the "compositional change" effect from the 1980s to 1990s, the labour income share of the economy on average remained little changed during this time. However, the negative "compositional change" effect declined sharply in subsequent intervals as Hong Kong had already become a highly service-oriented economy. With the positive "within industry" effect dominating the negative "compositional change" effect between the 1990s and the 2000s, the labour income share saw a noticeable rise

Office of the Government Economist – Economic Letter 2020/13

More specifically, the contribution to the "within industry" effect resulting from the increase in labour income share within the tertiary industry more than outweighed the opposite effect created by the fall in labour income share within the secondary industry (from 64.4% to 54.4%) during the period (**Chart 2**) given the much higher economic contribution of the tertiary industry to the overall economy (**Table 1**).

over the second interval (+1.5 percentage points on average). Nevertheless, as the labour income share of the tertiary industry remained little changed at around 50% since then (Chart 2), the extent of the "within industry" effect diminished visibly from the 2000s to 2010-18 <sup>11</sup>, though it still outweighed the slightly negative "compositional change" effect. As a result, only a mild increase in the labour income share of 0.5 percentage point on average was recorded over the last interval (Table 2).

### IV. ANALYSIS BY SECTOR WITHIN THE TERTIARY INDUSTRY

12. The preceding section indicated that the notable rise in the labour income share of the tertiary industry was the main driver of the positive "within industry" effect and the increase in the labour income share of the overall economy from the 1990s to the 2000s. This section further examines which sectors played important roles in the labour income share increase of the tertiary industry. The decomposition results in **Table 3** suggest that **the visible rise in the labour income share within the tertiary industry from the 1980s to 2000s was mainly due to positive "within sector" effect.** 

The "within industry" effect remained positive in light of the boost coming from the rebound of labour income share of the secondary industry from 54.4% to 64.6% during the last interval after falling in the preceding two intervals. The rebound was mainly attributable to the notable increase in the labour income share of the manufacturing sector (from 59.2% to 73.4%) over that time. This might be due to an upgrading in the labour force within the manufacturing sector, which saw an increase in the proportion of higher-skilled workers from 32.2% on average in the 2000s to 37.6% on average in 2010-18. In fact, Paul (2020) found that the labour income share for low-skilled workers in the US declined from 1977 to 2005, whereas that for high-skilled workers increased over the same period. He suggested that the advancement of technology may strengthen capital–skill complementarity, i.e. that capital and skilled labour are complements, though technological progress such as automation could facilitate the substitution of capital for low-skilled labour.

Paul, S. (2020). "Understanding the global decline in the labor income share." *IZA World of Labor*. Retrieved from <a href="http://acdc2007.free.fr/saumikpaul320.pdf">http://acdc2007.free.fr/saumikpaul320.pdf</a>

Table 3: Shift-share Analysis by Sector within the Tertiary Industry

	From the 1980s to 1990s	From the 1990s to 2000s	From the 2000s to 2010-18			
Change in labour income share	+ <b>4.2% pts.</b> (from 42.6% to 46.9%)	+3.3% pts. (from 46.9% to 50.2%)	-0.2% pt. (from 50.2% to 50.0%)			
Contribution due to:						
Compositional change effect within the tertiary industry	-0.4% pt.	+1.1% pts.	+0.4% pt.			
Within sector effect	+4.5% pts.	+2.1% pts.	-0.5% pt.			

Note: Figures are calculated based on unrounded figures.

13. The increase in the labour income share within the tertiary industry (+4.2 percentage points) from the 1980s to the 1990s was fully attributable to the positive "within sector" effect resulting from rises in the labour income share within most services sectors <sup>12</sup>. However, while the labour income share within the tertiary industry was still rising from the 1990s to 2000s, the increase slowed down to +3.3 percentage points, mainly because the "within sector" effect diminished when entering the 2000s as decline in the labour income share within the import and export trade and wholesale sector partially offset the gains recorded in other services sectors (Table 4)<sup>13</sup>.

The transportation, storage, postal and courier services & information and communications sector was the exception as its labour income share remained practically unchanged during the period.

On the other hand, the compositional change effect turned positive for the period from the 1990s to 2000s, as real estate sector, a sector which had a particularly low labour income share, saw a decline in its value added share in the overall economy, and as a number of services sectors with relatively higher labour income shares (such as transportation, storage, postal and courier services & information and communications sector, and financing and insurance sector) made gains in their shares in the overall economy.

Table 4: "Within Sector" and "Compositional Change" Effects of Each Services
Sector within the Tertiary Industry

Sector within the tertiary industry	From the 1980s to 1990s			From the 1990s to 2000s			From the 2000s to 2010-18		
	Change in LIS (Total) / Within sector effect (Within) / Compositional change effect (Between) (% point(s))								
	Total	Within	Between	Total	Within	Between	Total	Within	Between
Import and export trade & wholesale	+2.6	+1.3	+1.2	-0.3	-1.4	+1.1	-1.4	-0.6	-0.9
Retail trade	-0.4	+0.5	-0.8	-0.6	-0.1	-0.5	+0.6	-0.1	+0.7
Food and beverage services & accommodation services	-0.7	+0.3	-1.0	-1.0	0.0	-1.0	+0.2	-0.3	+0.5
Transportation, storage, postal and courier services & information and communications	-0.1	0.0	-0.1	+0.7	+0.2	+0.5	-0.6	+0.1	-0.7
Financing & insurance	+1.1	+0.7	+0.5	+2.7	+1.0	+1.7	+2.0	+0.8	+1.2
Real estate	+0.2	+0.3	-0.1	-0.1	+0.7	-0.8	+0.1	-0.1	+0.1
Professional and business services	+0.8	+0.3	+0.5	+0.8	+0.6	+0.2	+1.1	+0.1	+0.9
Public administration, social and personal services	+0.6	+1.2	-0.6	+1.0	+1.1	-0.1	-1.9	-0.5	-1.4
Total	+4.2	+4.5	-0.4	+3.3	+2.1	+1.1	-0.2	-0.5	+0.4

Notes: Figures are calculated based on unrounded figures.

Both the "within sector" and "compositional change" effects of the ownership of premises sector were zero and hence are not shown in the table.

14. From the 1980s to the 2000s, over 85% of the "within sector effect" under the tertiary industry was contributed by **financing and insurance**, **real estate**, **professional and business services**, **and public administration**, **social and personal services sectors** (**Table 4**). This was not only because of the noticeable increases in labour income shares in these sectors (which ranged from 11.1 to 17.9 percentage

points)<sup>14</sup>(**Chart 3a**), but also the significant economic contributions to the tertiary industry by these sectors (totalling close to 50% of tertiary GDP between the 1980s and the 2000s) (**Chart 3b**). In these sectors, both nominal payroll per person engaged and employment saw increases, thereby contributing to the increase in the labour income share of these key sectors<sup>15</sup>.

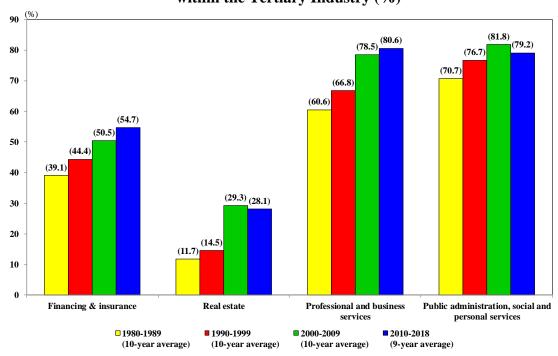


Chart 3a: Labour Income Share of Selected Sectors within the Tertiary Industry (%)

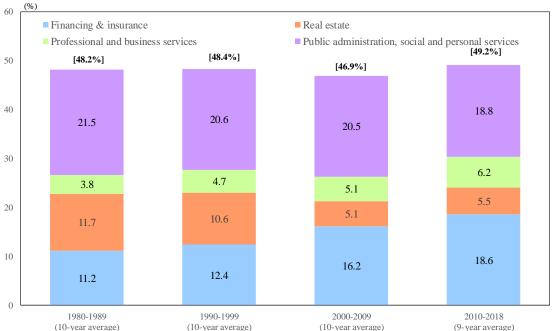
As mentioned in Footnote 11, one possible hypothesis behind the labour income share increase is related to skill-biased technological change (Paul, 2020). However, due to data limitations, it is very difficult to verify whether this hypothesis is relevant to the increase in labour income share in selected services sectors of Hong Kong.

Catalán, L. D. (2018). "The labour share in the service economy." (BBVA Research Working Paper). Retrieved from <a href="https://www.bbvaresearch.com/wp-content/uploads/2018/09/Observatorio LaborShare sept3 finalversion english maquetacion.pdf">https://www.bbvaresearch.com/wp-content/uploads/2018/09/Observatorio LaborShare sept3 finalversion english maquetacion.pdf</a>

<sup>&</sup>lt;sup>14</sup> If these sectors are combined, the corresponding labour income share rose by 16.8 percentage points.

In fact, Catalán (2018) found that the labour income share of the services sector recorded an upward trend in several economies including the US, Spain, Germany, France and Italy, though the study did not provide a concrete explanation underlying this phenomenon.

Chart 3b: Value Added Share of Selected Sectors within the Tertiary Industry (%)



Note: Figures in square bracket refer to the sum of average value added share of four selected services sectors in respective time interval.

15. However, the "within sector" effect turned negative (-0.5 percentage point) from the 2000s to 2010-18, as an increasing number of services sectors recorded declines in their labour income shares (such as real estate, and public administration, social and personal services sectors) during the period. Nevertheless, the labour income share within the tertiary industry still remained around 50%, thanks to the positive "compositional change" effect (+0.4 percentage point) which was mainly attributable to the gain in the value added share of a number of services sectors with higher-than-average labour income shares such as the professional and business services and financing and insurance sectors.

## v. CONCLUDING REMARKS

16. This study uses shift-share analysis to look into the long-term trend of the overall labour income share in Hong Kong on a sectoral basis. The results indicate that the average labour income share remained little changed at a level slightly below 50% from the 1980s to the 1990s because the positive "within industry" effect and the negative "compositional change effect" largely offset each other. This reflected the fact that Hong Kong's economy experienced economic restructuring through shifting the bulk of economic activities from the more labour-intensive manufacturing sector to services sectors across the intervals, and the city has now become an international

financial and trading centre. From the 1990s to the 2000s, the overall labour income share registered a visible increase since the positive "within industry" effect dominated the negative "compositional change effect" (which diminished sharply as the economy had already become highly service-oriented by the 1990s). It further recorded a slight increase from the 2000s to 2010-18 as the positive "within industry" effect continued to outweigh the negative "compositional change" effect over the period.

17. It is worthwhile to point out that the positive "within industry" effect from the 1980s to the 2000s was largely due to the increase in the labour income share within the tertiary industry. Further analysis indicates that the financing and insurance, real estate, professional and business services, and public administration, social and personal services sectors were the major driving forces as these sectors registered substantial labour income share increases from the 1980s to 2000s, coupled with their nearly 50% economic contribution to the tertiary industry as a whole.