The Economic Benefits of Mainland Tourists for Hong Kong: The Individual Visit Scheme (IVS) and Multiple Entry Individual Visit Endorsements (M-Permit)

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內地旅客對香港的經濟貢獻：自由行及一簽多行

Abstract

The inauguration of the Individual Visit Scheme (IVS) in 2003 liberalized Mainland tourist visits to Hong Kong. This led to an explosive growth of Mainland visitors and severe overcrowding in Hong Kong. The adoption of Multiple Entry Individual Visit Endorsements (M-Permit) for residents of Shenzhen in 2009 exacerbated the problem.

Analysis of the economic benefits of tourism is important for policy making in Hong Kong. Though official estimates of benefits (in value-added/employment) of all visitors are available every year since 2000, estimates for key sub-groups of visitors, namely Mainland and non-Mainland, IVS mainland and non-IVS mainland, and M-Permit IVS and non-M-Permit IVS, are largely unavailable. This paper fills the gaps in official estimates by disaggregating official estimates of the benefits of all visitors from 2007 to 2013 by the above sub-groups. For each sub-group, the benefits are further disaggregated by industry (hotels, restaurants, retail trade, cross-boundary transport, and others).

Main results are as follows. In 2013, the contributions to value-added (employment in 10^{-3} man-years) of each M-Permit visitor, non-M-Permit IVS visitor, non-IVS mainland visitor, and non-Mainland visitor were respectively $502 (1.67), $1,764 (5.33), $1,709 (4.96), and $2,449 (5.17). Per person, M-Permit visitors generated the least value-added and employment; non-Mainland visitors generated the most value-added while non-M-Permit IVS visitors generated the most employment. IVS includes two very different types of visitors: M-Permit (non-M-Permit) visitors with low (high) per capita benefits. The value-added (employment in 10^{-3} man-years) of IVS visitors, Mainland visitors, and all visitors (which were weighted averages of their sub-components) were respectively $1,205 (3.71), $1,370 (4.12), and 1,639 (4.38) in 2013. All visitors, Mainland visitors, IVS visitors, and M-Permit visitors respectively generated 4.2%, 2.6%, 1.6%, and 0.3% of GDP, and also generated 6.4%, 4.5%, 2.7%, and 0.5% of total employment in 2013. The patterns of results are similar for other years.

In 2013, though the per capita spending of IVS visitors was 13% higher than that of non-Mainland visitors, the per capita value-added (employment) generated by IVS visitors was only 49% (72%) of that of non-Mainland visitors. The spending of IVS visitors is weighted heavily towards Retail Trade (shopping), which generates little value-added or employment per dollar of spending as most of the goods sold are imported. Moreover, IVS visitors generate little value-added or employment in cross-boundary transport as most of them come from nearby areas. Per capita visitors' spending can be a poor indicator of per capita value-added.

While the contributions of IVS visitors to total value-added and employment were not large (1.6% of GDP and 2.7 % of total employment in 2013), the contribution of IVS visitors to the *growth* of employment was large as tourism is labour intensive. From 2004 to 2013, the increase in all visitors (IVS visitors) accounted for 24.3% (18%) of the increase in total employment in Hong Kong. Among the four key industries of Hong Kong, tourism was number one contributor to the increase in employment. Increase in M-Permit visitors from 2010 to 2013 likewise contributed little to growth of GDP (1.1%), but contributed more to growth of employment (4.5%).

In April 2015, the Central Government tightened the restriction on Shenzhen residents to visit Hong Kong (one visit a week instead of unlimited multiple entries) in response to severe overcrowding. The economic impact should be small as the economic contributions of M-Permit visitors were small. However, the Hong Kong tourist industry was co-incidentally heading into a severe recession due to other factors. To stimulate tourism, there was a proposal to add more cities in China (e.g., Xian, Qingdao, and Harbin) to the present list of 49 cities under the IVS. The proposal is worth considering as the per capita benefits generated by non-M-Permit IVS visitors are much larger than those by M-Permit visitors. To optimize the limited capacity to receive tourists in Hong Kong, it is rational to substitute high value-added visitors for low value-added ones.

摘要

2003 年開始實施的「個人遊」計劃（又稱：自由行）放寬了內地遊客來港的限制，引致內地來港旅客數目急劇增長，造成過度擠逼。2009 年深圳常住居民可通過「一簽多行」訪港，問題更形惡化。

分析旅遊業的經濟貢獻對香港甚為重要，政府雖然提供了 2000 年以來所有旅客每年產生的經濟利益（增加值及就業）的估計，卻沒有提供旅客的

主要群組（內地與非內地、自由行與非自由行、及一簽多行與非一簽多行）經濟利益的完整估計。本文把 2007 年至 2013 年的官方估計按上述群組細分，彌補了官方估計的不足。本文亦把每一個群組產生的經濟利益按不同行業（酒店、餐飲、零售、跨境運輸及其他）進一步細分。

本文主要結果如下：在 2013 年，每位一簽多行旅客、非一簽多行旅客、非自由行內地旅客及非內地旅客產生的增加值，依次為 502、1764、1709、及 2449 港元；而產生的就業（以 10^{-3} 人計算）依次為 1.67、5.33、4.96 及 5.17。按每位旅客計算，一簽多行產生的增加值及就業俱為最低，非內地旅客產生的增加值最高，而由非一簽多行旅客產生的就業則最多。自由行包括兩類截然不同的旅客：低增值的一簽多行旅客，及高增值的非一簽多行旅客。自由行旅客、內地旅客及所有旅客產生之經濟利益為其群組內子組別的加權平均。在 2013 年，以上三個旅客群組產生的人均增加值依次為 1205、1370 及 1639 港元。其產生的人均就業（以 10^{-3} 人計算）依次為 3.71、4.12 及 4.38。在同一年，所有旅客、內地旅客、自由行旅客及一簽多行旅客對增加值的貢獻依次為 4.2%、2.6%、1.6%及 0.3%，而其對總就業的貢獻依次為 6.4%、4.5%、2.7%及 0.5%。其他年份的結果亦相類似。

在 2013 年，自由行旅客的人均消費較非內地旅客高 13%，可是前者的人均增加值（就業）卻只有後者的 49%（72%）。自由行旅客的消費集中在零售業，以購買入口貨為主，於本地產生的經濟利益亦較低。此外，自由行旅客多數來自鄰近地區，在運輸行業產生的利益較低。因此，旅客的人均消費並非其人均增加值的可靠指標。

自由行旅客對增加值及就業的貢獻雖然不大（分別佔 2013 年 GDP 及就業的 1.6% 和 2.7%），可是旅遊業屬於勞工密集行業，其對就業增長的貢獻卻甚大。2004 至 2013 年間，香港就業增長有 24.3%（18%）源於所有旅客（自由行旅客）的增長。旅遊業對就業增長的貢獻位居香港四個主要行業之首。在 2010 至 2013 年間，香港 GDP（就業）的增長有 1.1%（4.5%）來自一簽多行旅客的增長。

為了減少旅客過度擠逼，中央政府在 2015 年 4 月把「一簽多行」改為「一周一行」。一簽多行產生的經濟利益不高，因此該政策對香港的經濟影響應該不大。不過，受其他因素影響，香港旅遊業卻於此時步入嚴重衰退。有論者建議中央開放更多城市（例如西安、青島和哈爾濱）參與自由行，來刺激旅遊業。因為非一簽多行產生的人均利益遠高於一簽多行，所以此建議值得考慮。香港旅客容量有限，需要以高增值旅客替代低增值旅客，來優化旅客結構。

1. Introduction

The explosive growth of Mainland visitors under the Individual Visit Scheme (IVS) has led to overcrowding and escalating social tensions with the local population in Hong Kong (Sung 2014: 4). Before the inauguration of IVS in mid-2003, Mainland tourist visits to Hong Kong were restricted to group tours. The flexibility of IVS facilitated visits to Hong Kong, and the number of IVS visitors rose from less than 0.7 million in 2003 to over 31 million in 2014, accounting for 66% of Mainland visitors and 51% of all visitors in 2014.

The rapid growth of IVS visitors has accelerated since April 2009, when the Central Government allowed permanent residents in Shenzhen to visit Hong Kong on one-year Multiple Entry Individual Visit Endorsements (M-Permit). M-Permit visitors grew explosively from under 1.5 million in 2009 to nearly 15 million in 2014, accounting for over 47% of IVS visitors in 2014. Of the increase in IVS visitors from 2009 to 2014, 65% were M-Permit visitors.[1]

As a result of severe social tensions in Hong Kong, the Central Government announced that, starting April 13 2015, Shenzhen would stop issuing M-Permits, which would be superseded by "one trip per week" Individual Visit Endorsements (However, M-Permits already issued would still be effective till they expire in a year after the original date of issue). The Hong Kong Special Administrative Region Government (HKSAR Government) estimated that the change would reduce M-Permit visitors by about 30% (or about 4.6 million) eventually (when all existing M-Permits expire).

It is commonly believed that the economic contributions of M-Permit visitors to Hong Kong are quite limited. Over 90% of M-Permit visitors are same-day visitors (instead of overnight visitors). As a result, their per capita spending in Hong Kong is quite low, around $2,300 in 2012 (Commerce and Economic Development Bureau, 2013), which was less than half of the average for all visitors.

To gauge the economic contribution of tourists, value-added is a better measure than tourists' spending. In Hong Kong, the value-added of tourism is usually much less than tourists' spending because visitors in Hong Kong spend

[1] See Section 3 below for details.

heavily on shopping (Sung 2014:1). Most shopping items in Hong Kong are imported and they do not directly generate value-added for Hong Kong. This is especially true for M-Permit visitors as their spending is very heavily weighted towards shopping.

In addition to value-added, employment generated is also an important measure of the economic contribution of tourism. However, as stressed in the author's previous paper titled "Economic Benefits of the Independent Visitor Scheme for Hong Kong: How Large are They?" (Sung 2014), official estimates of value-added/employment by different types of tourists are very incomplete. Though official estimates of value-added/employment of all visitors are available every year since 2000, estimates for IVS visitors are only available for a few selected years (2004 to 2009 and 2012). Estimates for M-Permit visitors and for Mainland and non-Mainland visitors are not available at all.

Sung's 2014 paper filled in some of the gaps in official estimates. The official estimates of value-added/employment of all visitors in 2009 and 2012 were disaggregated into those generated by Mainland vs. non-Mainland visitors. Value-added/employment of Mainland visitors were further disaggregated into those generated by IVS vs. non-IVS visitors. Sung found that, in 2012, the per capita value-added (employment) generated by IVS visitors was 49% (28%) lower than that generated by non-Mainland visitors. In comparison with Non-Mainland visitors, the spending of IVS visitors is much more (less) heavily weighted towards Retail Trade (Hotels), which has a relatively low (high) rate of value-added/employment generation.

This paper extends Sung's 2014 paper in four ways. First, the value-added/employment estimates for IVS visitors are further disaggregated into those for M-Permit and for other (non-M-Permit) IVS visitors. Second, estimates are done for five more years, namely, 2007, 2008, 2010, 2011, and 2013 in addition to those of 2009 and 2012 (a complete time series from 2007 to 2013 is thus presented in this paper).[2] Third, the method used to estimate value-added/employment generated in cross-boundary transport (an important item in

[2] Estimates for M-Permit visitors were done from 2009 to 2013, as M-Permit only started in 2009.

tourists' expenditure) is further refined.[3] Fourth, better data are used in estimation[4].

A number of M-Permit visitors have acted as parallel traders and their activities have generated a lot of conflicts with local residents who live near border areas. While Hong Kong is a free port, the tariff differential between Hong Kong and the Mainland encourages a number of M-Permit visitors and Hong Kong residents carry consumer goods from Hong Kong to the Mainland for resale through multiple trips in the same day. The prevalence of counterfeit consumer goods in the Mainland market also strengthened Mainland consumers' preference for goods in Hong Kong. The activities of parallel traders have led to severe congestion and overcrowding in border areas. There were demonstrations and even physical assaults on tourists suspected of taking part in parallel trading in early 2015.

Since the curb on M-Permits in April, the agitation against parallel traders has diminished. This cannot be attributed to the effectiveness of the curb as M-Permits already issued would still be effective till a year after the date of issue. Moreover, there is no curb on Hong Kong residents to take part in parallel trade, and they can take up any slack from the curb on M-Permits. The decline in parallel trade can be attributed to four factors. First, the Mainland has stiffened customs inspection. Second, the Mainland has slashed tariffs on hot items in parallel trade in May 2015.[5] Third, Shenzhen has established large scale duty-free shopping malls in its bonded areas.[6] Fourth, as detailed below, tourist arrivals from the Mainland have stagnated or even declined.

Ironically, even before the imposition of curbs on M-Permit visitors, Hong Kong's tourist industry was stagnating or even heading into a recession. The rate of growth of tourist arrivals slowed down from double digit rates during 2009 to 2014, to 4.9% in the first quarter of 2015 and fell further to an anemic 0.5% in the second quarter (over the same quarters in the previous year). Worse still, visitors are spending less: Hong Kong's export of travel services in the first and second quarters of 2015 declined respectively by 4.1% and 3.7% over the same quarters

[3] See Footnote 16 of Appendix 3 for details.
[4] See Footnote 9 below.
[5] Hong Kong Economic Journal, May 10, 2015.
[6] Sing Tao Daily, June 8, 2015, p. A1.

in the previous year. Hong Kong's retail sales suffered and fell respectively by 2.3% and 0.8% in the first and second quarters of 2015 (over the same quarters in the previous year).

The recession in Hong Kong tourism can be attributed to three factors. First, the appreciation of the Hong Kong dollar (which is linked to the strong US dollar), played an important role. Second, as a result of the anti-corruption campaign in China, Mainland tourists are spending less on items of conspicuous consumption. Third, Mainland tourists are less attracted to Hong Kong, partly due to overcrowding of tourist facilities in Hong Kong, and also partly due to the hostility of local residents towards mainlanders. While the number of Mainland tourists going to other destinations has been growing rapidly, IVS visitors to Hong Kong fell by 7.5% in the second quarter of 2015 (over the same quarter in the previous year), reversing a decade of double digit growth.

As Hong Kong tourism is heading into a recession, the public agitation against M-Permit and IVS visitors may soon dissipate. Though the policy urgency of curbs on M-Permit has faded, the estimation of the economic contributions of M-Permit visitors and other types of visitors is nevertheless an important issue. Policy making should be based on knowledge instead of ignorance.

This paper is organized as follows. Besides the introductory section, Section 2 discusses the conceptual issues involved in estimating the economic benefits of tourism. Official estimates of value-added/employment of tourism are also presented in the context of the major industries of the Hong Kong economy. Section 3 reviews the growth of tourism in terms of visitor arrivals and spending. Section 4 estimates the value-added/employment of different types of visitors (Mainland vs. non-Mainland, IVS vs. non-IVS, and M-Permit vs non-M-Permit). Section 5 estimates the shares of GDP (employment) growth from 2004 to 2013 accounted for by the growth of value-added (employment) of all visitors and of IVS visitors. Section 6 covers the potential biases and limitations of our estimates. Section 7 concludes.

2. Estimation of economic benefits of tourism: Official estimates and conceptual issues

The definition of "tourist industry" is problematic because most "tourist enterprises" are available also to local residents, and many tourists purchase goods and services from enterprises which predominantly cater to the needs of local residents (e.g., shops or retail trade). In standard mainstream models, the tourist industry is defined from the viewpoint of tourists' spending. Tourists spend on many different industries, e.g., hotels, taxis, and retail trade. The tourist industry is treated as a weighted average of outputs of these industries. The weights are the expenditures of tourists on each industry. The same methodology is used in official estimates and also in this paper.

2.1 Official estimates of value-added/employment of tourism

The HKSAR government has designated tourism as one of the four "key industries" of Hong Kong (namely, Financial Services, Tourism, Trading and Logistics, and Professional and Other Producer Services). Tables 1 and 2 show respectively the official estimates of the contributions to value-added and employment of the four key industries from 2004 to 2013.

In terms of value-added, Tourism is by far the smallest of the four key industries (5% of GDP in 2013). In terms of employment, Tourism is slightly bigger than Financial Services (7.2% vs. 6.2% in 2013), but still much smaller than Trading and Logistics (20.6%), and Professional Services and Other Producer Services (13.3%). It should be noted the share of tourism in employment is much higher than its share in GDP while the opposite is true for Financial Services. This shows that Tourism is much more labour intensive than Financial Services.

Tourism is disaggregated into outbound and inbound tourism. As expected, inbound tourism accounted for the major part of the GDP and employment generated by tourism. Inbound tourism is further disaggregated into 5 sub-sectors, namely, Retail Trade, Accommodation Services, Food and Beverage Services, Cross-Boundary Passenger Transport Services, and Others. Retail Trade is the largest sector in value-added as well as employment, showing that inbound tourists spend a lot on shopping.

Table 1 Direct value-added generated by inbound visitors in comparison with those of four key industries ($ billion), 2004-2013

Industries	2004	2007	2008	2009	2010	2011	2012	2013
(1) Financial Services	168.3	322.6	277.1	255.9	284.2	305.3	319.3	346.0
	(13.1%)	(20.1%)	(17.1%)	(16.2%)	(16.4%)	(16.1%)	(15.9%)	(16.5%)
(2) Tourism	38.7	54.0	44.7	51.0	74.6	86.2	94.6	105.9
	(3%)	(3.4%)	(2.8%)	(3.2%)	(4.3%)	(4.5%)	(4.7%)	(5.0%)
(A) Outbound	10.3	12.8	7.5	10.7	15.4	14.1	15.4	16.8
	(0.8%)	(0.8%)	(0.5%)	(0.7%)	(0.9%)	(0.7%)	(0.8%)	(0.8%)
(B) Inbound (all visitors)	28.4	41.3	37.1	40.3	59.2	72.1	79.1	89.0
	(2.2%)	(2.6%)	(2.3%)	(2.5%)	(3.4%)	(3.8%)	(3.9%)	(4.2%)
i. Retail Trade	6.6	11.1	12.5	13.3	16.9	22.7	26.4	32.0
	(0.5%)	(0.7%)	(0.8%)	(0.8%)	(1.0%)	(1.2%)	(1.3%)	(1.5%)
ii. Accommodation Services	7.5	12.4	12.9	9.8	16.1	23.2	25.0	25.6
	(0.6%)	(0.8%)	(0.8%)	(0.6%)	(0.9%)	(1.2%)	(1.2%)	(1.2%)
iii. Food and Beverage Services	3.5	4.5	5.0	4.5	6.3	7.9	9.1	10.0
	(0.3%)	(0.3%)	(0.3%)	(0.3%)	(0.4%)	(0.4%)	(0.5%)	(0.5%)
iv. Cross-Boundary Passenger Transport Services	7.5	9.2	2.5	8.0	13.8	10.5	10.0	11.7
	(0.6%)	(0.6%)	(0.2%)	(0.5%)	(0.8%)	(0.6%)	(0.5%)	(0.6%)
v. Others	3.3	4.1	4.3	4.7	6.1	7.7	8.6	9.7
	(0.3%)	(0.3%)	(0.3%)	(0.3%)	(0.4%)	(0.4%)	(0.4%)	(0.5%)
(3) Trading and Logistics	354.4	408.9	414.7	377.8	439.6	485.4	495.4	500.5
	(27.6%)	(25.5%)	(25.6%)	(23.9%)	(25.3%)	(25.5%)	(24.6%)	(23.9%)
(4) Professional Services and Other Producer Services	139.6	181.8	197.6	201.5	216.1	235.9	257.6	260.2
	(10.9%)	(11.3%)	(12.2%)	(12.7%)	(12.4%)	(12.4%)	(12.8%)	(12.4%)
Four Key Industries	701.0	967.3	934.1	886.2	1,014.5	1,112.8	1,166.8	1,212.5
	(54.5%)	(60.3%)	(57.7%)	(56.0%)	(58.4%)	(58.5%)	(58%)	(57.8%)
All Industries	1,285.3	1,605.2	1,620.0	1,581.8	1,737.7	1,901.0	2,013.1	2,097.5
	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)

Figures in brackets represent percentage shares of GDP.

Sources: Section on the four key industries at the website of the Census and Statistics Department.

Table 2 Direct employment generated by inbound visitors in comparison with those of four key industries (thousand)

Industries	2004	2007	2008	2009	2010	2011	2012	2013
(1) Financial Services	169.4	192.7	206.1	211.4	216.7	226.3	228.8	231.7
	(5.2%)	(5.5%)	(5.9%)	(6.1%)	(6.2%)	(6.3%)	(6.3%)	(6.2%)
(2) Tourism	154.4	191.4	194.8	192.2	215.1	235.9	250.9	269.7
	(4.7%)	(5.5%)	(5.6%)	(5.5%)	(6.2%)	(6.6%)	(6.9%)	(7.2%)
(A) Outbound	25.8	31.3	33.6	28.7	27.2	29.7	32.1	31.9
	(0.8%)	(0.9%)	(1.0%)	(0.8%)	(0.8%)	(0.8%)	(0.9%)	(0.9%)
(B) Inbound (all visitors)	128.6	160.0	161.2	163.6	187.8	206.3	218.8	237.8
	(3.9%)	(4.6%)	(4.6%)	(4.7%)	(5.4%)	(5.8%)	(6.0%)	(6.4%)
i. Retail Trade	52.0	74.0	75.9	82.2	88.8	91.3	100.2	112.6
	(1.6%)	(2.1%)	(2.2%)	(2.4%)	(2.6%)	(2.6%)	(2.7%)	(3.0%)
ii. Accommodation Services	23.6	29.6	28.5	27.1	34.5	39.0	39.4	39.8
	(0.7%)	(0.9%)	(0.8%)	(0.8%)	(1.0%)	(1.1%)	(1.1%)	(1.1%)
iii. Food and Beverage Services	32.5	31.2	31.3	27.9	37.3	42.8	45.9	48.8
	(1.0%)	(0.9%)	(0.9%)	(0.8%)	(1.1%)	(1.2%)	(1.3%)	(1.3%)
iv. Cross-Boundary Passenger Transport Services	8.3	11.1	11.3	11.6	11.7	13.4	13.6	14.0
	(0.3%)	(0.3%)	(0.3%)	(0.3%)	(0.3%)	(0.4%)	(0.4%)	(0.4%)
v. Others	12.1	14.1	14.2	14.8	15.5	19.7	19.7	22.5
	(0.4%)	(0.4%)	(0.4%)	(0.4%)	(0.4%)	(0.6%)	(0.5%)	(0.6%)
(3) Trading and Logistics	785.2	836.2	820.2	783.9	778.2	774.4	764.9	767.2
	(23.9%)	(24.0%)	(23.4%)	(22.6%)	(22.4%)	(21.6%)	(20.9%)	(20.6%)
(4) Professional Services and Other Producer Services	392.8	438.1	457.0	456.2	460.1	469.4	483.0	495.6
	(12.0%)	(12.6%)	(13.0%)	(13.1%)	(13.2%)	(13.1%)	(13.2%)	(13.3%)
Four Key Industries	1,501.7	1,658.3	1,678.1	1,643.8	1,670.1	1,706.0	1,727.6	1,764.2
	(45.8%)	(47.6%)	(47.8%)	(47.4%)	(48.0%)	(47.7%)	(47.2%)	(47.3%)
All Industries	3,279.1	3,480.5	3,509.8	3,470.3	3,478.6	3,579.5	3,657.1	3,728.5
	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)

Figures in brackets represent percentage shares of total employment.

Sources: Section on the four key industries at the website of the Census and Statistics Department.

As mentioned above, the HKSAR government has estimated the value-added/employment of IVS tourists for selected years, and these official estimates are shown in Table 3. The 2012 estimates were done by the Commerce and Economic Development Bureau (2013). The 2004 to 2009 estimates were done by the Economic Analysis and Business Facilitation Unit (EABF). It should be noted that the EABF estimated the benefits of IVS instead of the benefits of IVS visitors. The inauguration of IVS has spurred additional Mainlanders to visit Hong Kong by instituting a more flexible and convenient arrangement to visit Hong Kong than group tours. The incremental visitors (or additional visitors) spurred by IVS is less than the increase in total number of IVS visitors because some Mainland visitors would shift from group tours to IVS after the institution of IVS. In other words, there would be more Mainland visitors coming on group tours if IVS had not been instituted.[7]

It is known that the EABF has also estimated the value-added/employment of incremental IVS visitors in 2012, but the results were not released. For 2012, the only official estimates of value-added/employment on IVS visitors were released by the Commerce and Economic Bureau, which were estimates of value-added/employment of all IVS visitors instead of incremental IVS visitors. It appears that the government has chosen to release estimates for all IVS visitors instead of estimates for incremental IVS visitors.

This paper focuses on total IVS visitors instead of incremental IVS visitors because the number of incremental visitors spurred by IVS is very difficult to estimate. The EABF estimates rely on interviewees' assessments of number of additional trips spurred by IVS. Such assessments are highly subjective. Moreover, the concept of benefits generated by IVS visitors is more intuitive than the concept of benefits generated by IVS.

[7] Besides direct value-added/employment generated, the EABF has also estimated overall benefits which include benefits from induced consumption and investment (see the paragraph on *Short Run: Neo-Keynesian Models* in the next section).

Table 3 Value-added and employment generated by tourism (official estimates), 2004-2013

	Value-added ($billion)		Employment (thousand)	
	IVS visitors	All inbound visitors	IVS visitors	All inbound visitors
2004	2.7	28.4	18.9	128.6
	(0.2%)	(2.2%)	(0.6%)	(3.8%)
2005	2.8	32.9	19.9	136.8
	(0.2%)	(2.4%)	(0.6%)	(4.1%)
2006	4.3	36.2	31.5	144.9
	(0.3%)	(2.5%)	(0.9%)	(4.2%)
2007	7.5	41.3	41.2	160.0
	(0.5%)	(2.6%)	(1.2%)	(4.6%)
2008	8.0	37.1	44.5	161.2
	(0.5%)	(2.3%)	(1.3%)	(4.6%)
2009	10.1	40.3	53.8	163.6
	(0.6%)	(2.5%)	(1.6%)	(4.7%)
2010	-	59.2	-	187.8
	-	(3.4%)	-	(5.4%)
2011	-	72.1	-	206.3
	-	(3.8%)	-	(5.8%)
2012	26.1	79.1	114.3	218.8
	(1.3%)	(3.9%)	(3.1%)	(6.0%)
2013	-	89.0	-	237.8
	-	(4.2%)	-	(6.4%)

Figures in brackets represent percentage shares of GDP and total employment.

Sources: For value-added and direct employment generated by IVS visitors, the 2004-09 figures are obtained from the EABF (Economic Analysis and Business Facilitation Unit), 2010; 2012 figures are from the CEDB (Commerce and Economic Development Bureau), 2013. For value-added and employment generated by all inbound visitors, figures are obtained from the website of the Census and Statistics Department.

For consistency, Table 3 gives the estimates of value-added/employment of all IVS visitors instead of incremental IVS visitors. From the results of the 2004-2009 EABF estimates, we first calculate the per capita value-added/employment generated by IVS visitors (by dividing the value-added/employment of incremental IVS visitors by the number of incremental IVS visitors). We then multiply the per capita results by the total number of IVS visitors. Table 3 shows that the value-added/employment of IVS visitors has grown rapidly since 2005. By 2012, the value-added (employment) of IVS visitors were around one-third (half) of that of all inbound visitors.

Our estimates of value-added and employment generated by IVS visitors (to be derived below) are somewhat different from official estimates as we have better data. Official estimates were done year by year once preliminary estimates of industrial data and of distribution of visitors spending were available. Our estimates should be more reliable as we rely on final official estimates. Appendix 1 compares official estimates with ours.

2.2 Measuring economic benefits of tourism: Conceptual issues

This paper focuses on the estimation of the direct value-added and direct employment generated by tourism. However, the contribution of tourism to GDP (employment) can be much bigger, or much smaller, than the direct value-added (direct employment) generated by tourism.

2.2.1 Positive or negative externalities

If negative (positive) externalities exist, the economic contributions of tourism would be smaller (bigger) than our standard estimates. As noted in Sung (2014: 10), in the case of IVS visitors, negative externalities in congestion and overcrowding are highly visible. However, as noted by some economists, IVS can have important positive externalities for the development of financial services and other key industries.[8] IVS facilitates the movement of personnel between the Mainland and Hong Kong and lower cross-boundary transaction costs. This promotes the economic integration of Hong Kong with the Mainland and may generate significant external economies in production and consumption. On the production or supply side, improved exchanges with the Mainland may allow HK firms to hire skilled personnel from the Mainland more easily. On the consumption or demand side, the lowering of cross-border transaction costs may stimulate the Mainland's demand for Hong Kong services, including services not related to tourism, such as financial services and educational services. IVS may also generate external economies in cross-boundary investment as Mainland investors may understand the Hong Kong investment environment better through IVS visits.

Before institution of IVS, Mainland tourist visits were restricted to group tours that are highly inflexible. IVS removes a critical barrier in Mainland-Hong Kong integration and may generate significant external benefits. However, externalities are very difficult to quantify, and we cannot tell whether the positive

[8] See "自由行撐起港四大支柱", (*Ta Kung Pao*, March 3, 2014, A15").

externalities are big enough to out-weight the negative ones. Though we cannot quantify externalities, we need to bear in mind that they can be important.

2.2.2 Economic models: The short, the medium, and the long run

Even if externalities do not exist, the economic benefits of tourism cannot be ascertained without a specific economic model. Standard macro models distinguish between the short, the medium, and the long run. In the short and the medium run, we abstract from economic growth (i.e., no change in stock of labour, capital, and technology). Short run models are neo-Keynesian as prices/wages may not adjust fast enough to ensure full employment. Medium run models are neo-classical as prices/wages have enough time to adjust to ensure full employment.

Short Run: Neo-Keynesian Models

In the short run, unemployment may exist. In this case, the contribution of tourism to GDP may exceed the direct value-added of tourism due to multiplier effects. A rise in tourists' spending may induce extra consumption as well as extra investment. As Sung (2014: 24) noted, in the case of the econometric model on GDP forecasting of the HKSAR government, the *overall* value-added generated by IVS visitors (including induced consumption and investment) was estimated to be nearly 3 times as large as the *direct* value-added generated. For simplicity, our discussion here focuses largely on value-added generated by tourism, but the same reasoning also applies to employment generated by tourism.

Medium Run: Neo-Classical Models

The medium run assumes full employment but no economic growth. In this case, the direct value-added generated by tourism overstates the contribution of tourism to GDP because the resources used to produce tourist services can generate income elsewhere. Conceptually, the benefit of tourism to GDP should be the *extra* income generated in comparison with using the resources involved in the next best alternative.

Long Run: Dynamic considerations

In the long run, it is difficult to know if tourism is good for economic growth. Tourism is labour intensive instead of skill intensive, and it does not seem obvious that tourism may be good for technical change or for skill accumulation. However, as noted previously, IVS lowers cross-boundary transaction costs and

promotes economic exchanges with the Mainland in many areas. IVS can have a positive impact on growth.

2.2.3 Input-Output models: Direct and indirect effects

As tourists spend on many different industries, it is customary to use an input-output table, which shows the direct value-added across all industries of the economy, to estimate the value-added of tourism. The value-added per dollar of tourists' spending is just the weighted average of value-added per dollar of final demand across different industries, where the weights are given by the shares of total tourists' spending on each industry.

It is also customary to estimate *direct* and *indirect* value-added of tourism with the help of input-output tables (Lin and Sung, 1983: 241). Indirect benefits refer to the benefits generated by the intermediate inputs required to support production in the tourist industry. For instance, a tourist agency uses electricity as an intermediate input. Indirect benefits include the benefits generated by the electricity produced for the use of the tourist agency.

The inclusion of indirect benefits highlights the linkages of tourism to other industries. In Sung's previous work on value-added of Hong Kong tourism in 1980, indirect value-added was around 47% of direct value-added (Sung 2014: 22). However, as noted in Sung (2014: 8-9), the inclusion of indirect effects is problematic. First, in the context of comparing the economic contributions of tourism to other industries, the inclusion of indirect effects will easily lead to double counting. Second, indirect value-added is difficult to compute as the Hong Kong government does not compile input-output tables for the Hong Kong economy. Third, in comparison with direct and indirect value-added, the concept of direct value-added is easier to understand as it is more intuitive. This paper thus focuses on direct effects on value-added and employment as the preferred measures of economic contributions of tourism.

2.3 Which model is appropriate?

Which model is appropriate depends on the context. For the purpose of our paper, the short run Neo-Keynesian model is quite inappropriate for two reasons. First, the Hong Kong economy has been close to full employment for most of the

period. Second, our focus is on medium or long run benefits of tourism rather than short term changes in tourists' spending.

However, if tourists' spending were to fall instead of to rise (as may happen in 2015), the neo-Keynesian model is relevant, at least in the short run. Full employment will constrain a rise in output, but it will not restrict a fall in output. In the short run, a fall in tourists' spending may have multiplier effects, and the overall decline in value-added/employment may well exceed the direct value-added/employment generated.

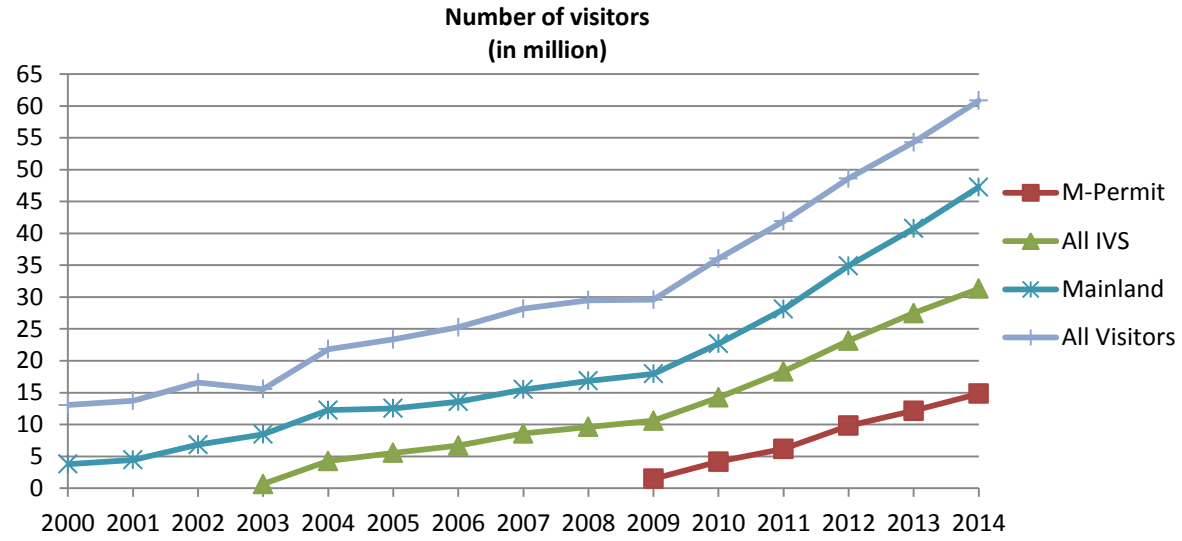
It should be noted that this paper is mostly an accounting exercise (disaggregating the total value-added/employment generated by all tourists into those generated by different types of tourists) instead of a causal model. Depending on the model chosen, the contribution of tourism to GDP (employment) can be bigger or smaller than the direct value-added (direct employment) generated. This paper nevertheless focuses on direct value-added/employment generated. They are more intuitive and relatively easy to estimate (unlike externalities and growth effects), thus they are very useful in depicting the economic benefits of tourism.

3. Growth of tourism: Visitor arrivals and spending

Figure 1 shows the number of visitors, disaggregated into Mainland, IVS, and M-Permit visitors from 2000 to 2014. The details of data for Figure 1 are listed in Table 4. It should be noted that official data for M-Permit visitors are very scanty. Official data on the number of M-Permit visitors are available, but official data on their per capita spending and distribution of spending among different industries have to be estimated as they are largely unavailable. The methods of estimation are detailed in Appendix 2.

From 2000 to 2014, non-Mainland visitor arrivals grew slowly at 3.6% annually on average and its share of total visitor arrivals fell from 71% to 22%. Concurrently, Mainland visitor arrivals grew rapidly at 20.5% annually on average and its share of total visitor arrivals rose from 29% to 78%.

Figure 1 Number of visitors from 2000 to 2014



Sources: See Table 4

The growth of IVS visitors is particularly rapid, growing annually at 22.3% on average from 2004 to 2014, and its share in total tourist arrivals rose from 20% in 2004 to 51% in 2014. The rapid growth of IVS visitors has accelerated since April 2009, when the Central Government allowed permanent residents in Shenzhen to visit Hong Kong on one-year M-Permit. From 2009 to 2014, M-Permit visitors grew explosively from under 1.5 million to over 14 million, accounting for 47% of IVS visitors in 2014.

Data on visitor arrivals are available up to 2014, but estimates of contributions to value-added and employment are only available up to 2013 due to the time lag in spending and industrial surveys, which provide data on value-added and employment by industry. For this reason, our estimates of value-added and employment can only be done up to 2013.

It should be noted that visitors' spending includes expenditure in Hong Kong as well as expenditure on cross-boundary transport (e.g., airfares for flights to Hong Kong) which occurs outside Hong Kong. While visitors' spending in Hong Kong obviously benefits Hong Kong, the spending on cross-boundary transport occurring outside Hong Kong benefits Hong Kong too (e.g., airlines need to pay airport charges).

Table 4 Number of different types of visitors (thousand), 2000 to 2014

	Mainland					Non-Mainland	Total
	IVS			Non-IVS	Subtotal		
	M-Permit	Non-M-Permit	All IVS				
2000	-	-	-	-	3,786	9,274	13,059
					29.0%	71.0%	100.0%
2001	-	-	-	-	4,449	9,277	13,725
					32.4%	67.6%	100.0%
2002	-	-	-	-	6,825	9,741	16,566
					41.2%	58.8%	100.0%
2003	-	-	667	7,800	8,467	7,070	15,537
			4.3%	50.2%	54.5%	45.5%	100.0%
2004	-	-	4,260	7,986	12,246	9,565	21,811
			19.5%	36.6%	56.1%	43.9%	100.0%
2005	-	-	5,550	6,991	12,541	10,818	23,359
			23.8%	29.9%	53.7%	46.3%	100.0%
2006	-	-	6,673	6,918	13,591	11,660	25,251
			26.4%	27.4%	53.8%	46.2%	100.0%
2007	-	-	8,593	6,893	15,486	12,684	28,169
			30.5%	24.5%	55.0%	45.0%	100.0%
2008	-	-	9,619	7,243	16,862	12,645	29,507
			32.6%	24.5%	57.1%	42.9%	100.0%
2009	1,472	9,119	10,591	7,365	17,957	11,634	29,591
	5.0%	30.8%	35.8%	24.9%	60.7%	39.3%	100.0%
2010	4,168	10,076	14,244	8,440	22,684	13,346	36,030
	11.6%	28.0%	39.5%	23.4%	63.0%	37.0%	100.0%
2011	6,168	12,176	18,344	9,756	28,100	13,821	41,921
	14.7%	29.0%	43.8%	23.3%	67.0%	33.0%	100.0%
2012	9,827	13,314	23,141	11,770	34,911	13,704	48,615
	20.2%	27.4%	47.6%	24.2%	71.8%	28.2%	100.0%
2013	12,150	15,315	27,465	13,280	40,745	13,554	54,299
	22.4%	28.2%	50.6%	24.5%	75.0%	25.0%	100.0%
2014	14,850	16,485	31,335	15,248	47,248	13,591	60,839
	24.4%	27.1%	51.5%	25.1%	77.7%	22.3%	100.0%

Percentage figures indicate shares of total number of visitors.

Sources: For figures of M-permit visitors, see Appendix 2. All other figures are obtained from the website of the HKTB (Hong Kong Tourism Board).

Statistics on visitors' spending in Hong Kong are available from annual sample surveys of visitors conducted by the Hong Kong Tourism Board (HKTB). The data are available in considerable detail: It is classified by spending of visitors from different countries and also by spending on different industries/sectors. The Hong Kong government has also conducted surveys to obtain data on visitors' spending on cross-boundary transport. The data are rough as they rely on visitors' memory before they start their trips. For package tours, visitors usually do not know the cost of cross-boundary transport and the government has to rely on estimates obtained from tourist agencies or transportation companies (air, sea, and land transport). Moreover, the government does not publish its estimates, except for the value-added/employment generated by all visitors shown in Tables 1 and 2.

As there are no reliable data, this paper does not estimate visitors' spending on cross-boundary transport. Instead, the government's estimates of value-added/employment generated by visitors' spending on cross-boundary transport are disaggregated into value-added/employment generated by different types of tourists, with the method detailed later.

Table 5 shows per capita spendings of different types of visitors in Hong Kong. From 2000 to 2004, the per capita spending of all visitors remained depressed due to the unfavourable effects of the September 11 terrorist attack in 2001 and the Severe Acute Respiratory Syndrome (SARS) epidemic in 2003. Since 2004, growth of the per capita spending of all visitors has been substantial, rising from $3,061 in 2004 to $5,092 in 2013. The per capita spending of Mainland visitors has been consistently higher than that of non-Mainland visitors, mainly because Mainland visitors spend a lot on shopping.

Among Mainland visitors, the per capita spending of non-IVS visitors has generally been higher than that of IVS visitors (except in 2007 and 2009). This is expected as non-IVS visitors tend to come from areas farther away and they tend to stay longer. The growth of the per capita spending of IVS visitors has slowed down markedly since 2009 due to the rise of M-Permit visitors. M-Permit visitors come from Shenzhen nearby, and ninety percent of them are same-day visitors. Their per capita spending tends to be lower as they do not stay overnight in Hong Kong. As a result, the gap in per capita spending between non-IVS and IVS visitors

has widened since 2009. The per capita spending of IVS visitors has also fallen beneath the overall average for all visitors since 2009. However, it should be noted that the per capita spending of non-M-Permit IVS visitors are higher than those of non-IVS Mainland visitors. This suggests that the per capita spending of visitors on individual tours tends to be higher than that of those on group tours. As a whole, the average per capita spending of IVS visitors remained higher than that of non-Mainland visitors mainly because IVS visitors spend a lot on shopping.

Table 5 Per capita spending of different types of visitors, 2000-2014 ($)

	Mainland					Non-Mainland	All visitors
	IVS			Non-IVS	All Mainland		
	M-Permit	Non-M-Permit	All IVS				
2000	-	-	-	-	3,818	3,131	3,331
2001	-	-	-	-	3,918	2,859	3,202
2002	-	-	-	-	4,110	2,808	3,344
2003	-	-	-	-	3,942	2,850	3,445
2004	-	-	2,846	3,313	3,151	2,945	3,061
2005	-	-	3,048	3,616	3,365	3,108	3,246
2006	-	-	3,348	3,651	3,503	3,248	3,385
2007	-	-	3,871	3,723	3,805	3,355	3,603
2008	-	-	4,106	4,106	4,106	3,415	3,810
2009	2,463	5,063	4,702	4,572	4,649	3,170	4,067
2010	2,425	5,808	4,818	5,254	4,980	3,861	4,565
2011	2,326	6,100	4,831	5,999	5,237	4,262	4,915
2012	2,307	6,407	4,666	6,008	5,119	4,360	4,905
2013	2,467	6,950	4,967	6,075	5,328	4,382	5,092
2014	N/A	N/A	N/A	N/A	5,124	4,318	4,944

Sources: For figures on M-Permit visitors, see Appendix 2. Figures on IVS visitors are obtained from *Finance Committee Meeting Documents* 2014. Figures on Mainland visitors and all visitors are obtained from the website of the HKTB (Hong Kong Tourism Board). Figures on non-IVS and non-Mainland visitors are derived as residuals.

Table 6 shows visitors' spending by different types of visitors. From 2004 to 2013, the share of IVS visitors' spending in all visitors' spending rose from 18% to 49%, while that of Mainland visitors rose from 58% to 79%. The share of non-Mainland visitors' spending in the total declined correspondingly from 42% to 22% in the period. In addition, the share of M-Permit visitors' spending in all visitors' spending rose from 3% in 2009 to 11% in 2013. In 2013, M-Permit visitors accounted for more than 24% of total visitor arrivals (Table 4), but they only accounted for less than 11% of total visitors' spending as the per capita spending of M-Permit visitors is less than half of the overall average. The spending of non-M-Permit IVS visitors accounts for the bulk of IVS visitors' spending.

4. Estimation of value-added/employment of different types of visitors

This paper uses mainstream methodology to quantify the direct contributions to GDP and employment of all types of visitors, namely, M-Permit, IVS, non-IVS, Mainland, and non-Mainland visitors in 2007-2013. Mainstream models focus on visitors' spending. As mentioned before, the economic benefits of visitors arise from two types of spending, including expenditure in Hong Kong and expenditure on cross-boundary transport (e.g. flights to Hong Kong) before their arrival in Hong Kong. The estimation of the value-added generated by visitors' spending in Hong Kong and outside Hong Kong (on cross-boundary transport) is detailed below in Sections 4.1 and 4.2 respectively.

4.1 Estimation of benefits from visitors' spending in Hong Kong

To estimate the direct value-added of visitors' spending in Hong Kong, we need data on the following:

1. Distribution of tourists' spending by industry, and

2. Rate of direct value-added in each industry (i.e. direct value-added per dollar spending on that industry)

For each industry, the direct value-added generated by visitors' spending is easily obtained by multiplying the rate of value-added by the amount of visitors' spending on that industry. Summing across all industries gives the total direct value-added generated by visitors' spending.

Table 6 Total spending of different types of visitors ($ million), 2000-2014

	Mainland					Non-Mainland	Total
	IVS			Non-IVS	Subtotal		
	M-Permit	Non-M-Permit	All IVS				
2000	-	-	-	-	14,454	29,039	43,493
					33.2%	66.8%	100.0%
2001	-	-	-	-	17,432	26,520	43,953
					39.7%	60.3%	100.0%
2002	-	-	-	-	28,052	27,353	55,405
					50.6%	49.4%	100.0%
2003	-	-	-	-	33,378	20,148	53,526
					62.4%	37.6%	100.0%
2004	-	-	12,123	26,459	38,583	28,172	66,754
			18.2%	39.6%	57.8%	42.2%	100.0%
2005	-	-	16,914	25,282	42,196	33,626	75,823
			22.3%	33.3%	55.7%	44.3%	100.0%
2006	-	-	22,344	25,261	47,605	37,867	85,472
			26.1%	29.6%	55.7%	44.3%	100.0%
2007	-	-	33,262	25,665	58,927	42,556	101,483
			32.8%	25.3%	58.1%	41.9%	100.0%
2008	-	-	39,494	29,743	69,237	43,185	112,422
			35.1%	26.5%	61.6%	38.4%	100.0%
2009	3,626	46,174	49,800	33,674	83,474	36,880	120,354
	3.0%	38.4%	41.4%	28.0%	69.4%	30.6%	100.0%
2010	10,109	58,517	68,626	44,342	112,968	51,523	164,492
	6.1%	35.6%	41.7%	27.0%	68.7%	31.3%	100.0%
2011	14,348	74,271	88,619	58,530	147,149	58,903	206,052
	7.0%	36.0%	43.0%	28.4%	71.4%	28.6%	100.0%
2012	22,676	85,304	107,980	70,714	178,694	59,754	238,448
	9.5%	35.8%	45.3%	29.7%	74.9%	25.1%	100.0%
2013	29,973	106,444	136,417	80,670	217,086	59,395	276,482
	10.8%	38.5%	49.3%	29.2%	78.5%	21.5%	100.0%
2014	N/A	N/A	N/A	N/A	242,103	58,689	300,792
					80.5%	19.5%	100.0%

Percentage figures indicate shares of total visitors' spending.

Sources: Figures are obtained by multiplying figures in Table 3 with corresponding figures in Table 4.

Distribution of tourists' expenditure by industry

The HKTB conducts annual sample surveys on distribution of tourists' spending on different industries. As in official estimates, we group the different industries into the following four sub-sectors:

1. Retail Trade,

2. Accommodation (hotels, boarding houses and accommodation services),

3. Food Services (food and beverage services),

4. Others (tour agents, ticketing agents, domestic transport, and miscellaneous personal services).

In this paper, the four sub-sectors are referred to as sub-sectors of tourism. Data on the distribution of visitors' spending are available at the website of the HKTB. The distribution of spending of Mainland visitors is available since 2007, and the distribution of spending of IVS visitors is available since 2003 from a different source (Finance Committee Meeting Documents, 2014).[9] Due to data availability, this paper estimates the value-added/employment generated by IVS (Mainland) visitors starting 2004 (2007).

Table 7 shows the distribution of tourists' spending by different types of visitors from 2007 to 2013 on the four sub-sectors. In 2013, IVS visitors spent much more on shopping (81% share) than on hotels (7% share), while non-Mainland visitors spent more on hotels (36% share) than on shopping (34% share). The contrast is even sharper for M-Permit visitors: They spent 90% of their expenditure on shopping and just 1% on hotels.

[9] The Finance Committee Meeting Documents gave the final estimates of distribution of IVS spending by the four sub-sectors from 2004 to 2013. These final estimates are more reliable than the preliminary estimates of 2004 to 2009 used in the studies of the Economic Analysis and Business Facilitation Unit (EABF), and also used in Sung (2014) to estimate economic benefits generated in 2009. This paper relies on the best available data.

Table 7 Distribution of tourist expenditure, 2007 to 2014

		Mainland					Non-Mainland	All visitors
		IVS			Non-IVS	All Mainland		
		M-Permit	Non-M-Permit	All IVS				
2007	Retail Trade	-		78%	73%	76%	40%	61%
	Accommodation	-		8%	10%	9%	35%	20%
	Food Services	-		8%	10%	9%	14%	11%
	Others	-		6%	8%	7%	11%	9%
2008	Retail Trade	-		78%	73%	76%	41%	62%
	Accommodation	-		8%	10%	9%	33%	18%
	Food Services	-		8%	10%	8%	15%	11%
	Others	-		6%	8%	7%	12%	9%
2009	Retail Trade	88%	81%	82%	77%	80%	42%	68%
	Accommodation	2%	6%	6%	8%	7%	29%	14%
	Food Services	4%	7%	6%	8%	7%	15%	10%
	Others	5%	6%	6%	7%	6%	14%	9%
2010	Retail Trade	88%	79%	80%	74%	78%	42%	67%
	Accommodation	3%	8%	7%	10%	8%	31%	15%
	Food Services	4%	7%	7%	9%	8%	14%	10%
	Others	5%	6%	6%	7%	6%	13%	8%
2011	Retail Trade	86%	75%	77%	73%	75%	39%	65%
	Accommodation	3%	10%	9%	11%	10%	34%	17%
	Food Services	5%	8%	8%	9%	8%	14%	10%
	Others	6%	6%	6%	7%	7%	13%	9%
2012	Retail Trade	88%	76%	79%	73%	77%	35%	66%
	Accommodation	3%	10%	8%	11%	9%	36%	16%
	Food Services	4%	8%	7%	9%	8%	15%	10%
	Others	5%	6%	6%	7%	6%	14%	8%
2013	Retail Trade	90%	78%	81%	73%	78%	34%	68%
	Accommodation	2%	9%	7%	10%	8%	36%	14%
	Food Services	4%	7%	7%	9%	7%	16%	9%
	Others	4%	6%	6%	8%	6%	14%	8%
2014	Retail Trade	N/A	N/A	N/A	N/A	78%	33%	69%
	Accommodation	N/A	N/A	N/A	N/A	8%	36%	13%
	Food Services	N/A	N/A	N/A	N/A	7%	16%	9%
	Others	N/A	N/A	N/A	N/A	6%	15%	8%

Sources: Same as Table 5.

Rate of direct value-added by industry

The Census and Statistics Department, in its annual estimates on value-added of tourism, gives the direct value-added generated by tourism in each of the four sub-sectors of tourism (Table 1). For each sub-sector, dividing the direct value-added by the actual spending gives its rate of direct value-added. The rates are shown in Table 8.

Table 8 shows that, among the four sub-sectors in 2013, Accommodation services have the highest rate of direct value-added (0.65), while retail trade has the lowest rate of direct value-added (0.17). The results for 2007-2012 are similar. The rate of direct value-added in retail trade is low because the goods sold are mostly imported. Imported goods generate little value-added as they are not manufactured in Hong Kong. Value-added in retail trade comes from the retail margin or mark-up on imported goods, which covers the wages, rent, and profits of retailing.

Direct value-added generated per dollar of spending by different types of visitors

For each sub-sector, the rate of direct value-added is assumed to be the same across different types of visitors. However, the distributions of spending of different types of visitors on the four sub-sectors are not the same. For each type of visitor, the direct value generated per dollar of spending is a weighted average of the rates of direct value-added of the four sub-sectors, where the weights are the shares of spending on the sub-sectors. Table 9 shows the direct value generated per dollar of visitors' spending by different types of visitors.

4.2 Estimation of benefits from visitors' spending on cross-boundary transport

The direct value-added per dollar of spending in Table 9 only covers the value-added generated by visitors' spending in Hong Kong. To arrive in Hong Kong, visitors may need to spend on cross-boundary transport. Such spending takes place outside Hong Kong, but it generates value-added for Hong Kong.

Table 8 Rate of direct value-added of all visitors' spending by different types of visitors, 2004 to 2013

	Retail Trade	Accommodation	Food Services	Others
2004	0.17	0.61	0.41	0.47
2005	0.17	0.62	0.42	0.48
2006	0.18	0.64	0.42	0.48
2007	0.18	0.63	0.40	0.47
2008	0.18	0.63	0.41	0.44
2009	0.16	0.60	0.39	0.46
2010	0.15	0.64	0.39	0.45
2011	0.17	0.67	0.39	0.44
2012	0.17	0.66	0.40	0.44
2013	0.17	0.65	0.39	0.43

Sources: Value added generated by tourism in each industry is obtained from the data on the four key industries at the website of the Census and Statistics Department. Visitors' spending on each industry is obtained from *Statistical Review of Hong Kong Tourism*, various years, Hong Kong Tourism Board.

Table 9 Rate of direct value-added of visitors' spending by different types of visitors, 2004 to 2013

	Mainland					Non-Mainland	All visitors
	IVS			Non-IVS	All Mainland		
	M-Permit	Non-M-Permit	All IVS				
2004	-	-	0.26	-	-	-	0.31
2005	-	-	0.26	-	-	-	0.33
2006	-	-	0.26	-	-	-	0.33
2007	-	-	0.25	0.27	0.26	0.40	0.32
2008	-	-	0.25	0.27	0.26	0.39	0.31
2009	0.20	0.22	0.22	0.23	0.23	0.36	0.27
2010	0.19	0.23	0.22	0.24	0.23	0.38	0.28
2011	0.21	0.26	0.25	0.26	0.26	0.41	0.30
2012	0.20	0.25	0.24	0.26	0.25	0.42	0.29
2013	0.20	0.24	0.23	0.26	0.24	0.41	0.28

Sources: Estimation results of this paper.

In official estimates, contribution to value-added by tourists' spending on cross-boundary transport is based on data on the numbers of visitor arrivals by land, sea, and air (available from surveys of the HKTB), and estimates of value-added generated by each mode of transport (unpublished). The benefits of the

different modes of transport for Hong Kong are quite different. For visitors arriving in Hong Kong through Lo Wu, there is no spending on cross-boundary transport because they walk into Hong Kong. Thus, no benefit is generated for Hong Kong in terms of cross-boundary transport.

For visitors who arrive on the through train from Guangzhou, a part of the train fares accrues to Hong Kong. For visitors flying into Hong Kong, we need to distinguish those who travel on Hong Kong airlines from those who travel on non-Hong Kong airlines. The benefits of the former for Hong Kong is much higher than the latter, though non-Hong Kong airlines still need to pay for using the Hong Kong airport and related services. The benefits for Hong Kong in cross-boundary transport of visitors arriving by air are much larger than those of visitors arriving by land or by sea.

Table 10 shows the ratio (in percent) of visitors arriving by air for different types of visitors. The ratio of M-Permit visitors flying to Hong Kong is close to zero as Shenzhen is less than an hour's drive from Hong Kong and there is no air link between the two cities.[10] The ratio of IVS visitors flying to Hong Kong is very low (5.9% in 2013), while the ratio of non-IVS visitors flying to Hong Kong is higher (22.1% in 2013). The ratio of non-Mainland visitors flying to HK is the highest (57% in 2013). Non-Mainland visitors should generate the highest value-added in cross-boundary transport, to be followed by non-IVS visitors, non-M-Permit IVS visitors, and M-Permit visitors.

Estimates of benefits in cross-boundary transport can only be rough as precise data needed in estimation may not be available. As the government has not revealed the data used in its estimates, we have to do our own estimates based on data of visitors' arrivals by mode of transport. The procedure is tedious and is detailed in Appendix 3. The estimation results are given in Table 11.

[10] A very small proportion of M-Permit visitors may first travel from Shenzhen to other cities and then fly to Hong Kong.

Table 10 Percentages of visitors arriving by air

	Mainland					Non-Mainland	All visitors
	IVS			Non-IVS	All Mainland		
	M-Permit	Non-M-Permit	All IVS				
2007	-	-	7.9%	20.2%	13.4%	56.4%	32.7%
2008	-	-	7.7%	18.9%	12.5%	55.4%	30.9%
2009	0.0%	7.9%	6.8%	19.4%	12.0%	55.7%	29.1%
2010	0.0%	9.1%	6.4%	21.6%	12.1%	55.8%	28.3%
2011	0.0%	9.8%	6.5%	21.4%	11.7%	56.0%	26.3%
2012	0.0%	10.0%	5.8%	21.0%	10.9%	56.5%	23.8%
2013	0.0%	10.6%	5.9%	22.1%	11.2%	57.4%	22.7%

Source: *Statistical Review of Tourism*, various years, Hong Kong Tourism Board.

4.3 Per capita value-added of different types of visitors

Table 11 shows the per capita value-added generated by visitors' spending of different types of visitors. Our analysis shifted from rate of value-added or value-added per dollar of visitors' spending (Tables 8 and 9) to value-added per visitor. The reason for this shift is the lack of available data on visitors' spending on cross-boundary transport. Estimation of value-added per dollar of visitors' spending on cross-boundary transport is thus impossible. We can nevertheless estimate the per visitor value-added generated by spending on cross-boundary transport by different types of visitors.

In Table 11, for each year, the first row shows the per capita value-added generated by spending on cross-boundary transport from 2007 to 2013. In 2013, the per capita value-added in cross-boundary transport of M-Permit visitors was the lowest ($8); those of non-M-Permit IVS visitors and non-IVS visitors were higher ($72 and $141 respectively); and that of non-Mainland visitors was the highest ($637). The figures for all IVS visitors ($43), Mainland visitors ($75), and all visitors ($215) were weighted averages of their sub-components. The results are expected. Per capita value-added in cross-boundary transport is proportional to the share of visitors arriving by air.

Table 11 Per capita direct value-added generated by visitors' spending by different types of visitors ($), 2007 to 2013

	Value-added generated by	Mainland					Non-Mainland	All visitors
		IVS			Non-IVS	All Mainland		
		M-Permit	Non-M-Permit	All IVS				
2007	Spending on cross-boundary transport	-	-	47	108	74	634	327
	All spending in HK	-	-	967	994	979	1,335	1,140
	Total	-	-	1,014	1,103	1,054	1,970	1,466
2008	Spending on cross-boundary transport	-	-	53	120	82	89	85
	All spending in HK	-	-	1,023	1,095	1,054	1,339	1,176
	Total	-	-	1,076	1,215	1,136	1,427	1,261
2009	Spending on cross-boundary transport	8	22	20	43	30	642	270
	All spending in HK	487	1,123	1,035	1,073	1,050	1,155	1,092
	Total	495	1,145	1,055	1,117	1,080	1,797	1,362
2010	Spending on cross-boundary transport	8	83	61	188	108	850	383
	All spending in HK	463	1,322	1,071	1,278	1,148	1,450	1,260
	Total	471	1,406	1,132	1,466	1,256	2,300	1,643
2011	Spending on cross-boundary transport	8	65	46	133	76	605	250
	All spending in HK	498	1,565	1,206	1,587	1,339	1,728	1,467
	Total	506	1,630	1,252	1,720	1,415	2,333	1,718
2012	Spending on cross-boundary transport	8	62	39	121	66	560	206
	All spending in HK	468	1,595	1,117	1,562	1,267	1,815	1,421
	Total	475	1,657	1,156	1,683	1,333	2,376	1,627
2013	Spending on cross-boundary transport	8	72	43	141	75	637	215
	All spending in HK	494	1,693	1,162	1,567	1,295	1,812	1,424
	Total	502	1,764	1,205	1,709	1,370	2,449	1,639

Sources: Estimation results of this paper.

For each year, the second row of Table 11 shows the per capita value-added generated by visitors' spending in Hong Kong during 2007-2013. In 2013, M-Permit visitors have the lowest per capita value-added ($494); non-M-Permit IVS visitors and non-IVS visitors have higher per capita value-added ($1,693 and $1,567 respectively); and non-Mainland visitors have the highest per capita value-added ($1,812). The per capita value-added of IVS visitors ($1,162), Mainland visitors ($1,295) and all visitors ($1,424) are weighted averages of their sub-components.

It should be noted (in Table 5) that, in 2013, the per capita spending of IVS visitors ($4,967) was 13% higher than that of non-Mainland visitors ($4,382) but the per capita value-added of IVS visitors ($1,162) was only 64% of that of non-Mainland visitors ($1,812). This is because IVS visitors spend heavily on shopping, which has the lowest rate of value-added among the tourism sub-sectors. The results for 2007-2012 were similar to those of 2013. This shows that spending can be a poor indicator of value-added.

For each year, the third row of Table 11 shows the per capita value-added generated by visitors' total spending (all spending in Hong Kong plus spending on cross-boundary transport taking place outside Hong Kong). In 2013, M-Permit visitors have the lowest per capita value-added ($502); non-M-Permit IVS visitors and non-IVS visitors have higher per capita value-added ($1,764 and $1,709) respectively; and non-Mainland visitors have the highest per capita value-added ($2,449). The results are as expected. The patterns for earlier years were similar.

In 2013, the per capita value-added of M-Permit visitors was only 42% of the average of IVS visitors and only 20% of that of non-Mainland visitors. In the same year, the per capita value-added of IVS visitors was only 71% and 49% of those of non-IVS visitors and non-Mainland visitors respectively. The results for earlier years were similar. The per capita value-added of IVS visitors is relatively lower due to two factors. First, IVS visitors spend heavily on shopping which has a low rate of value-added. Second, a great majority of IVS visitors arrives in Hong Kong by land, generating little value-added in cross-boundary transport. The per capita value-added of M-Permit visitors is lower still due to a third factor: Their per capita spending in Hong Kong is also low (Table 5).

4.4 Total direct value-added of different types of visitors by sub-sectors of tourism

Table 12 shows the total direct value-added of different types of visitors by sub-sectors of tourism from 2011 to 2013. Estimates for earlier years (2007 to 2010) take up too much space and they are relegated to Appendix 4. In 2013, M-Permit visitors generated around $6 billion in direct value-added, which was 0.29% of GDP; IVS visitors generated $33.1 billion in direct value-added, which was 1.55% of GDP. The 2013 value-added generated by Mainland visitors, non-Mainland visitors and all visitors accounted for respectively 2.6%, 1.6%, and 4.2% of GDP.

Tourism is important for three sub-sectors, namely, Retail Trade, Accommodation, and Food Services. In 2013, the value-added generated by all visitors accounted for 35% of the value-added of Retail Trade, 88% of the value-added of Accommodation Services, and 22% of the value-added of Food Services. In 2013, IVS visitors also generated substantial income for these three industries, generating 20% of the value-added of Retail Trade, 23% of the value-added of Accommodation Services, and 8% of the value-added of Food Services. However, M-Permit visitors generated only 1% to 5% of the value-added of these three industries.

4.5 Estimation of benefits to employment

Estimates of benefits to employment are analogous to those of value-added. Table 13 shows the direct employment generated per million dollars of spending in the sub-sectors of tourism. One unit of spending is chosen to be one million dollars instead of one dollar because the employment generated by one dollar spending is very small. Per unit of spending, Retail Trade generates the least employment (0.59 man-years in 2013), and Food Services generates the most employment (1.92 man-years in 2013). Retail Trade generates little employment per unit of spending because the goods sold are mostly imported. For each sub-sector, employment generation tend to fall over time due to rise in labour productivity.

Table 12 Total direct value-added of different types of visitors' by sub-sectors of tourism ($ million), 2011-2013

		Mainland					Non-Mainland	All visitors
		IVS			Non-IVS	All Mainland		
		M-Permit	Non-M-Permit	All IVS				
2011	Retail Trade	2,087	9,486	11,575	7,254	18,828	3,872	22,700
		2.8%	12.6%	15.4%	9.7%	25.1%	5.2%	30.2%
	Accommodation	327	5,129	5,450	4,430	9,886	13,314	23,200
		1.3%	20.5%	21.8%	17.7%	39.5%	53.2%	92.7%
	Food Services	270	2,359	2,630	1,983	4,612	3,288	7,900
		0.7%	5.7%	6.4%	4.8%	11.1%	7.9%	19.1%
	Others	389	2,081	2,468	1,817	4,287	3,413	7,700
	Cross-Boundary Transport	49	795	844	1,299	2,142	8,358	10,500
	Total	3,121	19,851	22,967	16,784	39,756	32,245	72,000
		0.16%	1.03%	1.19%	0.87%	2.06%	1.67%	3.72%
2012	Retail Trade	3,350	10,892	14,240	8,626	22,869	3,531	26,400
		4.0%	13.1%	17.1%	10.4%	27.4%	4.2%	31.7%
	Accommodation	409	5,404	5,819	4,940	10,753	14,247	25,000
		1.5%	19.7%	21.2%	18.0%	39.1%	51.8%	91.0%
	Food Services	373	2,665	3,036	2,509	5,547	3,553	9,100
		0.8%	6.0%	6.8%	5.6%	12.4%	8.0%	20.4%
	Others	463	2,279	2,746	2,312	5,053	3,547	8,600
	Cross-Boundary Transport	78	822	900	1,421	2,321	7,680	10,000
	Total	4,673	22,063	26,742	19,808	46,543	32,558	79,101
		0.23%	1.08%	1.31%	0.97%	2.28%	1.60%	3.88%
2013	Retail Trade	4,536	14,020	18,562	9,988	28,535	3,456	32,000
		5.0%	15.4%	20.4%	11.0%	31.3%	3.8%	35.1%
	Accommodation	447	6,100	6,526	5,292	11,831	13,761	25,600
		1.5%	21.0%	22.5%	18.3%	40.8%	47.5%	88.3%
	Food Services	448	3,097	3,526	2,816	6,360	3,639	10,000
		1.0%	6.7%	7.6%	6.1%	13.7%	7.8%	21.5%
	Others	566	2,705	3,289	2,720	6,020	3,709	9,700
	Cross-Boundary Transport	96	1,095	1,191	1,875	3,066	8,634	11,700
	Total	6,093	27,017	33,095	22,691	55,813	33,200	89,001
		0.29%	1.27%	1.55%	1.06%	2.62%	1.56%	4.17%

Percentage figures indicate shares of value-added in the respective sectors/in total GDP.

Sources: Value-added of visitors are estimation results of this paper. The value-added of sub-sectors are taken from Table 16 in *2013 Gross Domestic Product*, Census and Statistics Department, Feb 2014.

Table 13 Direct employment generated per million dollars of spending in 4 sub-sectors of tourism (man-year), 2004-2013

	Retail	Accommodation	Food Services	Others	Total
2004	1.34	1.91	3.79	1.74	1.80
2005	1.29	1.53	3.61	1.65	1.69
2006	1.28	1.36	3.30	1.60	1.58
2007	1.20	1.49	2.76	1.61	1.47
2008	1.08	1.38	2.59	1.46	1.33
2009	1.00	1.65	2.42	1.43	1.26
2010	0.81	1.37	2.30	1.15	1.07
2011	0.68	1.12	2.12	1.12	0.94
2012	0.63	1.04	2.03	1.00	0.86
2013	0.59	1.01	1.92	1.00	0.81

Sources: Employment generated by tourism in each sector is obtained from Table 2. Visitors' spending on each sector is obtained from *A statistical Review of Hong Kong Tourism*, various years, Hong Kong Tourism Board.

Table 14 shows direct employment generated per million dollars of visitors' spending in Hong Kong by different types of visitors. Visitors' spending is distributed over the four sub-sectors. The employment generated by visitors' spending is a weighted average of the employment generated in the four sub-sectors. Comparing the employment generated by per unit spending of different types of visitors in 2013, M-Permit visitors generated the least employment (0.67 man-year), followed by IVS visitors (0.74 man-year), and non-Mainland visitors generated the most employment (1.01 man-years). This is because M-Permit/IVS visitors spent the most on shopping (which generated the least employment), and non-Mainland visitors spent the least on shopping. Results for earlier years were similar.

Table 15 shows direct employment generated per thousand visitors' spending by different types of visitors. The unit chosen is per thousand visitors instead of per visitor because the employment generated by the spending of one visitor is very small. Comparing the employment generated in 2013 by spending of different types of visitors on cross-boundary transport, M-Permit visitors

generated the least employment (0.01 man-years), and non-Mainland visitors generated the most employment (0.75 man-years). This is because the share of arrivals by air of M-Permit visitors is the lowest, and that of non-Mainland visitors is the highest.

Table 14 Direct employment generated per million dollars of spending of different types of visitors in Hong Kong (man-year), 2004-2013

	Mainland					Non-Mainland	All visitors
	IVS			Non-IVS	All Mainland		
	M-Permit	Non-M-Permit	All IVS				
2004	-		1.72	-	-	-	1.80
2005	-		1.61	-	-	-	1.69
2006	-		1.51	-	-	-	1.58
2007	-		1.37	1.41	1.39	1.57	1.47
2008	-		1.24	1.29	1.26	1.45	1.33
2009	1.10	1.16	1.16	1.20	1.17	1.46	1.26
2010	0.90	0.99	0.97	1.03	0.99	1.24	1.07
2011	0.79	0.87	0.86	0.89	0.87	1.10	0.94
2012	0.72	0.80	0.79	0.83	0.80	1.04	0.86
2013	0.67	0.75	0.74	0.79	0.75	1.01	0.81

Sources: Estimation results of this paper.

Table 15 Direct employment generated per thousand visitors' spending by different types of visitors (man-year), 2007-2013

	Employment generated by	Mainland					Non-Mainland	All visitors
		IVS			Non-IVS	All Mainland		
		M-Permit	Non-M-Permit	All IVS				
2007	Spending on cross-boundary transport	-	-	0.06	0.13	0.09	0.76	0.39
	All spending in HK	-	-	5.31	5.27	5.29	5.28	5.29
	Total	-	-	5.37	5.40	5.38	6.04	5.68
2008	Spending on cross-boundary transport	-	-	0.06	0.14	0.10	0.76	0.38
	All spending in HK	-	-	5.11	5.29	5.19	4.94	5.08
	Total	-	-	5.17	5.43	5.28	5.70	5.46
2009	Spending on cross-boundary transport	0.01	0.04	0.03	0.08	0.06	0.91	0.39
	All spending in HK	3.15	5.88	5.44	5.48	5.46	4.64	5.14
	Total	3.16	5.92	5.48	5.57	5.51	5.55	5.53
2010	Spending on cross-boundary transport	0.01	0.08	0.06	0.17	0.10	0.71	0.32
	All spending in HK	2.19	5.72	4.69	5.39	4.95	4.79	4.89
	Total	2.20	5.80	4.75	5.56	5.05	5.49	5.21
2011	Spending on cross-boundary transport	0.01	0.09	0.06	0.18	0.10	0.76	0.32
	All spending in HK	1.85	5.33	4.16	5.33	4.57	4.67	4.60
	Total	1.86	5.42	4.22	5.51	4.67	5.43	4.92
2012	Spending on cross-boundary transport	0.01	0.09	0.05	0.18	0.10	0.75	0.28
	All spending in HK	1.66	5.15	3.67	4.97	4.10	4.52	4.22
	Total	1.67	5.23	3.72	5.14	4.20	5.27	4.50
2013	Spending on cross-boundary transport	0.01	0.09	0.05	0.18	0.10	0.75	0.26
	All spending in HK	1.66	5.24	3.65	4.78	4.02	4.42	4.12
	Total	1.67	5.33	3.71	4.96	4.12	5.17	4.38

Sources: Estimation results of this paper.

Table 15 also shows employment generated per thousand visitors' spending in Hong Kong (which excludes spending on cross-boundary transport), and also employment generated per thousand visitors' total spending (which includes spending on cross-boundary transport). In 2013, though the per capita spending of IVS visitors in Hong Kong was higher than that of non-Mainland visitors, the employment generated per thousand visitors' spending in Hong Kong by IVS visitors (3.65 man-years) was only 83% of that by non-Mainland visitors (4.42 man-years). This is because IVS visitors' spending was heavily weighted towards shopping, which generated the lowest employment per unit of spending, while non-Mainland visitors' spending was least weighted towards shopping. For M-Permit visitors, their spending was most heavily weighted towards shopping, and their per capita spending was low. As a result, the employment generated (1.66 man-years) was the lowest. However, the employment generated by non-M-Permit IVS visitors (5.24 man-years) was the highest as they have the highest per capita spending ($6,950 in Table 5). Throughout 2009 to 2013, the employment generated by non-M-Permit IVS visitors were even higher than those of non-Mainland visitors.

As for employment generated per thousand visitors' total spending (which includes spending on cross boundary transport) in 2013, the employment generated by M-Permit visitors (1.67 man-years) and IVS visitors (3.71 man-years) were respectively only 32% and 72% of that generated by non-Mainland visitors (5.17 man-years). The gap in employment generation between M-Permit visitors and non-M-Permit IVS visitors was even bigger: In 2013, the employment generated by the former was only 31% of that of the latter. IVS includes two very different types of visitors: M-Permit (non-M-Permit) visitors with low (high) employment generation. The patterns for 2007-2012 were similar to that of 2013: The employments generated per thousand visitors' spending for M-Permit visitors and IVS visitors were lower than those of non-Mainland visitors and non-M-Permit IVS visitors.

Table 16 shows direct employment generated by different types of visitors by sub-sectors of tourism from 2011 to 2013. Estimates for earlier years (2007 to 2010) are relegated to Appendix 5 as they take up too much space. In 2013, all visitors, Mainland visitors, IVS visitors, and M-Permit visitors respectively generated 6.4%, 4.5%, 2.7%, and 0.5% of total employment. Tourism is important in the employment of the three industries, namely, Retail Trade, Accommodation, and Food Services. In 2013, the spending of all visitors (IVS visitors) generated 34.7% (20.1%) of the employment in Retail Trade, 103%[11] (26.5%) of the employment in Accommodation, and 20.9% (7.4%) of the employment in Food Services.

5. Contributions of IVS to economic growth

IVS visitors have grown very rapidly. Though the value-added (employment) generated by IVS visitors is not large as a percentage of GDP (employment), it is possible that IVS has contributed significantly to the growth or the change of GDP (employment). In the media, it is often asserted that IVS contributed to the rapid recovery of the Hong Kong economy from the severe 2003 recession caused by the SARS epidemic.

5.1 Contribution to growth of GDP

Table 17 shows the contributions of tourism and other key industries to the growth of GDP from 2004 to 2013. We choose 2004 as the base year as it was the first full year for implementation of IVS and was also the year that Hong Kong recovered from the 2003 recession. The period 2004 to 2013 was divided into two sub-periods, namely, 2004 to 2007, and 2007 to 2013. 2004 to 2007 was the period of economic recovery with rapid growth. The unemployment rate fell from the peak of 7.9% in 2003 to almost full employment level of 4% in 2007. As full employment was reached in 2007, the rate of economic growth fell from 7% in the first period to 2.5% in the second period. The 2008 global financial crisis also contributed to the slowdown.

[11] The employment generated by tourism in Accommodation was estimated from tourists' spending, whereas the total employment in Accommodation was obtained from industry surveys. The former can be higher than the latter due to various reasons. One likely reason is that employment in unlicensed guesthouses is included in the former but not the latter. Estimation error is also possible.

Table 16 Direct employment generated by different types of visitors by sub-sectors of tourism, 2011-2013 (man-year)

		Mainland					Non-Mainland	All visitors
		IVS			Non-IVS	All Mainland		
		M-Permit	Non-M-Permit	All IVS				
2011	Retail Trade	8,395	38,154	46,549	29,177	75,726	15,574	91,300
		2.8%	12.5%	15.3%	9.6%	24.9%	5.1%	30.0%
	Accommodation	550	8,622	9,172	7,447	16,619	22,381	39,000
		1.6%	25.2%	26.8%	21.8%	48.6%	65.5%	114.1%
	Food Services	1,460	12,779	14,239	10,746	24,985	17,815	42,800
		0.6%	5.5%	6.1%	4.6%	10.8%	7.7%	18.4%
	Others	994	5,325	6,320	4,648	10,968	8,732	19,700
	Cross-Boundary Transport	49	1,071	1,119	1,780	2,900	10,500	13,400
	Total	11,448	65,951	77,399	53,799	131,198	75,002	206,200
		0.3%	1.8%	2.2%	1.5%	3.7%	2.1%	5.8%
2012	Retail Trade	12,715	41,342	54,056	32,740	86,797	13,403	100,200
		4.0%	13.0%	17.0%	10.3%	27.3%	4.2%	31.5%
	Accommodation	645	8,517	9,162	7,785	16,947	22,453	39,400
		1.8%	23.2%	25.0%	21.2%	46.2%	61.2%	107.4%
	Food Services	1,882	13,442	15,324	12,654	27,978	17,922	45,900
		0.8%	5.8%	6.6%	5.5%	12.1%	7.7%	19.8%
	Others	1,060	5,220	6,279	5,296	11,576	8,124	19,700
	Cross-Boundary Transport	78	1,172	1,250	2,069	3,319	10,282	13,600
	Total	16,379	69,692	86,071	60,545	146,616	72,184	218,800
		0.4%	1.9%	2.4%	1.7%	4.0%	2.0%	6.0%
2013	Retail Trade	15,960	49,333	65,293	35,145	100,438	12,162	112,600
		4.9%	15.2%	20.1%	10.8%	31.0%	3.8%	34.7%
	Accommodation	696	9,484	10,180	8,227	18,407	21,393	39,800
		1.8%	24.7%	26.5%	21.4%	47.9%	55.6%	103.5%
	Food Services	2,185	15,111	17,296	13,743	31,039	17,761	48,800
		0.9%	6.5%	7.4%	5.9%	13.3%	7.6%	20.9%
	Others	1,314	6,274	7,588	6,310	13,898	8,602	22,500
	Cross-Boundary Transport	96	1,385	1,481	2,402	3,884	10,108	14,000
	Total	20,250	81,588	101,838	65,828	167,666	70,026	237,700
		0.5%	2.2%	2.7%	1.8%	4.5%	1.9%	6.4%

Percentage figures indicate shares of employment in the respective sub-sectors/in total employment.
Sources: Employment generated by visitors is estimation result of this paper. The employment of sub-sectors is Composite Employment Estimates obtained from the website of Census and Statistics Department.

Table 17 Contribution of tourism and other key industries to growth of GDP ($ million)

Increase in value-added in	2004-2007	2007-2013	2004-2013
1. Financial Services	154.3	23.4	177.7
	48.2%	4.8%	21.9%
2. Tourism	15.3	51.9	67.2
	4.8%	10.5%	8.3%
2.1 Inbound Tourism	12.9	47.7	60.6
	4.0%	9.7%	7.5%
2.1.1. IVS Visitors	5.4	24.4	29.8
	1.7%	5.0%	3.7%
3. Trading and Logistics	54.5	91.6	146.1
	17.0%	18.6%	18.0%
4. Professional Services and Other Producer Services	42.2	78.4	120.6
	13.2%	15.9%	14.9%
Four Key Industries = (1)+(2)+(3)+(4)	266.4	245.1	511.5
	83.3%	49.8%	63.0%
All Industries	319.9	492.3	812.2
	100.0%	100.0%	100.0%

Source: Estimation results of this paper.

The contribution of tourism to GDP in each period is obtained by dividing the *increase* in GDP generated by tourism by the *increase* in overall GDP. The contributions of other key industries are similarly obtained. From 2004 to 2007, direct value-added generated by IVS visitors increased by $5.4 billion, while GDP increased by $319.9 billion. IVS visitors only contributed 1.7% of the increase in GDP. From 2007 to 2013, the contribution of IVS visitors to GDP growth rose to 5%, as IVS became popular with Mainland visitors, and the corresponding contribution of all visitors (inbound tourism) was 9.7%. From 2004 to 2013, the contribution of IVS visitors and all visitors to GDP growth were 3.7% and 7.5% respectively. The contributions were significant, but still not very large.

As for the other key industries, Financial Services contributed 48.2% of the growth of GDP from 2004 to 2007. It was the period of "irrational exuberance" just before the sub-prime crisis. In comparison, the contributions of the other key industries to GDP growth were much smaller. In the second period, Financial Services contracted due to the global financial crisis, and its contribution to GDP growth was only 4.8%; as a result, the contributions of the other three key industries rose correspondingly. The contributions of IVS visitors (5%) and all visitors (9.7%) were significant.

Combining the two periods (from 2004 to 2013), Financial Services was still the number one contributor to GDP growth (21.9%), followed by Trading and Logistics (18%), Professional Services and Other Producer Services (14.9%), and Tourism (8.3%). Tourism still came last, but its contribution was significant.

5.2 Contribution to growth of total employment

Table 18 shows the contributions of tourism and other key industries to growth of total employment. From 2004 to 2007, IVS and Inbound Tourism contributed respectively 12.5% and 15.6% to the growth of total employment. The contribution of all visitors (15.6%) exceeded that of Financial Services (11.6%). This again shows that tourist industry is much more labour intensive than the financial services sector.

From 2007 to 2013, the contributions of IVS and Inbound Tourism rose to 22.5% and 31.4% respectively. Among the four key industries, Tourism became the number one contributor to growth of total employment. An important reason for the prominence of tourism in employment was the rapid contraction in employment of the trading and logistics sector, which has been the largest sector in Hong Kong in terms of both GDP and employment. This sector has suffered severely from the competition with Shanghai and Shenzhen. Shanghai surpassed Hong Kong in container throughput in 2007 mainly due to cargo diversion from Hong Kong to Shenzhen, and Shenzhen also surpassed Hong Kong in container throughput in 2013.

Table 18 Contribution of tourism and other key industries to growth of employment (man-year)

Increase in employment in	2004-2007	2007-2013	2004-2013
1. Financial Services	23,300	39,000	62,300
	11.6%	15.7%	13.9%
2. Tourism	37,000	78,300	115,300
	18.4%	31.6%	25.7%
2.1. Inbound Tourism	31,400	77,800	109,200
	15.6%	31.4%	24.3%
2.1.1. IVS Visitors	25,112	55,689	80,801
	12.5%	22.5%	18.0%
3. Trading and Logistics	51,000	-69,000	-18,000
	25.3%	-27.8%	-4.0%
4. Professional Services and Other Producer Services	45,300	57,500	102,800
	22.5%	23.2%	22.9%
Four Key Industries = (1)+(2)+(3)+(4)	156,600	105,900	262,500
	77.8%	42.7%	58.4%
All Industries	201,400	248,000	449,400
	100.0%	100.0%	100.0%

Source: Estimation results of this paper.

The diversion of Hong Kong sea cargo to Shenzhen has been partly offset by growth of air cargo. The slowdown of Hong Kong re-exports trade is partly compensated by the growth of offshore trade. Although air transport and offshore trade generate substantial value-added, they generate very little employment. From 2007 to 2012, value-added in the trading and logistics sector continued to grow, but the sector lost 71,300 workers. Given this large fall, expansion of employment in tourism and the other key industries is crucial to maintaining full employment in Hong Kong.

In terms of contribution to growth of employment from 2004 to 2013, Tourism was again the number one contributor, followed by Professional Services and Other Producer Services, and then by Financial Services. The contribution of Trading and Logistics was negative due to the fall in employment. The prominence of tourism in growth of employment can be attributed to three factors. First, tourists' spending has grown very rapidly. Second, tourism is the most labour intensive industry among the four key industries. Third, the contraction of employment in the trading and logistics sector raised the relative contributions of the other key industries.

It should be stressed that, from 2007 to 2013, IVS accounted for the greater part of the growth of employment in tourism. Employment generated by IVS rose by 55,689, accounting for over 71% of the growth of employment in tourism of 78,300. Within tourism, most of the growth in employment came from inbound tourism. Within inbound tourism, IVS was the fastest growing component. Non-IVS visitors grew moderately because Mainland visitors shift from group tours to IVS. Non-Mainland visitors grew slowly by comparison.

With regard to M-Permit visitors, the growth in GDP (employment) contributed by the M-Permit Scheme was $4,130 million (11,079 man-years) or 1.2% (4.4%) of the increase in GDP (employment) between 2010 and 2013.[12] The contribution of the Scheme to the growth of GDP was small, but its contribution to the growth of employment was not insignificant.

To conclude, while the contributions of IVS visitors' spending to GDP and employment were not large (1.6% of GDP and 2.7% of employment in 2013), the growth of IVS visitors' spending from 2007 to 2013 accounted for 22.5% of the growth of total employment during this period. Given the fall in employment in Trading and Logistics (the number one sector in total employment) since 2007, unemployment in Hong Kong may be substantially higher were it not for the rapid expansion of IVS.

It should be emphasized that our analysis of contribution of IVS to growth is an accounting exercise and not a causal analysis of contributions of IVS to

[12] The contributions of M-Permit visitors to GDP (employment) are not give in Table 17 (18) as the M-Permit Scheme was launched in 2009.

economic growth. However, this accounting exercise is highly suggestive. The institution of IVS in 2003 is an exogenous event that led to rapid increase in visitors' spending and employment creation in tourism. The rise of Shenzhen ports is also an exogenous event that led to fall in employment in Trading and Logistics, the number one sector in employment. The large contributions of tourism and IVS visitors to growth of employment are consistent with our knowledge of the macro-trends in the economy.

6. Potential biases and limitations of the paper

The distribution of visitors' spending comes from interviews with visitors, asking them to recall their spending on various items. This is subject to bias. The crucial question for our paper is whether the biases are more serious for IVS visitors than for other types of visitors.

There is some reasons to believe that the reported spending of IVS visitors is biased downwards more seriously than other types of visitors. From press reports, a number of IVS visitors are very big shoppers, spending hundreds of thousands on luxury items, e.g., buying scores of luxury watches on a single trip. The distribution of spending of IVS visitors is likely to be more highly skewed (with a long tail of big spenders) than non-Mainland visitors. In this case, the outliers on the long tail can have a significant effect on the average of the distribution. Interviews may not catch the big spenders because their opportunity cost of time is high and they are less likely to take interviews. For this reason, the spending estimated by the HKTB is likely to be biased downwards. However, we cannot gauge the size of the bias.

In this paper, we assume that the value-added or employment generated per dollar of spending in each sub-sector is the same for different types of visitors. This may not be the case. For example, IVS visitors may tend to stay in low-end hotels while non-Mainland visitors may tend to stay in luxury hotels. This will further widen the gap in per capita value-added between IVS visitors and non-Mainland visitors.

Our paper does not analyze the impact of IVS on income distribution. There is a popular belief that IVS is not favourable for income distribution. However, as mentioned in Sung (2014: 41), there are two opposing effects of IVS on income distribution. On the one hand, the growth of IVS visitors has vastly outstripped the increase in retailing space, and shop rentals have rose rapidly in premium tourist districts. This should lead to a worsening of income distribution at the

upper end. On the other hand, IVS is important for employment creation and lowering the unemployment rate, especially for low skilled workers. This should lead to an improvement in income distribution at the lower end. The overall effect of soaring shop rentals and lowering unemployment on income distribution is very difficult to judge without a detailed study.

7. Conclusion

This paper quantifies the direct benefits in value-added and employment of different types of visitors. Direct benefit is the best measure because the inclusion of indirect or induced effects may exaggerate benefits and also lead to double counting. In 2013, all visitors, Mainland visitors, IVS visitors, and M-Permit visitors respectively generated 4.2%, 2.6%, 1.6%, and 0.3% of GDP, and also generated 6.4%, 4.5%, 2.7%, and 0.5% of employment.

In 2013, though the per capita spending of IVS visitors was 13% higher than that of non-Mainland visitors, the per capita value-added (employment) generated by IVS visitors was only 49% (72%) of that of non-Mainland visitors. This is because the spending of IVS visitors is weighted heavily towards Retail Trade (shopping), which generates little value-added or employment per dollar of spending as most of the goods sold are imported. Moreover, IVS visitors generate little value-added or employment in cross-boundary transport as they mostly arrive in Hong Kong by land. Per capita visitor's spending can be a poor indicator of per capita value-added. As a group, non-Mainland visitors generated more value-added than IVS visitors ($33,200 million vs. $33,095 million in 2013) though non-Mainland visitors were much less numerous (25% of tourist arrivals vs. 52% in 2013).

While the contributions of IVS visitors to total value-added and employment were not large (1.6% of GDP and 2.7 % of total employment in 2013), the contribution of IVS visitors to the *growth* of employment was large. This is due to rapid growth of employment generated by tourism and slow growth of total employment in Hong Kong. In the 2007-2013 (2004-2013) period, the increase in IVS visitors accounted for 22.5% (18%) of the increase in total employment in Hong Kong. Among the four key industries, tourism is number one contributor to increase in employment.

When the economy is close to full employment, an increase in tourists' spending will not be able to generate much real gains. However, the losses in income and employment arising from a decrease in tourists' spending can be large. Full employment will constrain a rise in output, but it will not restrict a fall in output. If IVS were to disappear, the overall fall in income and employment can be substantially larger than direct effects in the short run due to indirect and induced effects.

It may be argued that, in the long run, with falling wages and rentals, other industries will expand to take up the idle resources released by tourism. However, in the current Hong Kong context, the prospect of other industries is quite uncertain. Trade and Logistics, the number one industry in both value-added and employment, is under serious threat. Its employment is shrinking rapidly. Financial Services may have better prospects, but the industry will not be able to create a lot of employment as it is not labour intensive. The unemployment rate in Hong Kong may rise substantially were it not for IVS.

The estimates of this paper ignore negative or positive externalities, which can be substantial. Negative externalities of IVS in terms of congestion and overcrowding are highly visible. Positive externalities of IVS can be large, but they are often ignored in public discussion because they are less conspicuous. It should be noted that the size of negative externality of tourism is highly dependent on the capacity to receive tourists. If the government can expand the capacity to receive tourists significantly, the negative externalities of tourism will diminish. Overcrowding and congestion are obviously a result of capacity constraints. The undesirable impact of tourism on income distribution arising from soaring shop rentals is also a result of shortage of retail space. Inept government policy is responsible for most of the negative externalities of tourism. With effective government policies to relieve capacity constraints, positive externalities may out-weight negative ones.

However, expansion of supplies of land and labour and upgrading of infrastructure is a very time-consuming process. Even with aggressive policies to expand capacity, supply bottlenecks will not be relieved soon. Given the very rapid increase in tourist arrivals and the very severe shortage of land and labour in Hong Kong, demand is likely to outstrip supply for a long time to come. In addition to aggressive policies to expand supply, the government should also consider demand-side management to alleviate congestion and overcrowding. In this regard, the restriction on M-Permits in 2015 was justified. In 2013, the per

capita value-added (employment) generated by M-Permit visitors was only 20.5% (32%) of that of non-Mainland visitors. In the same year, the total value-added (employment) generated by M-Permit visitors was only 0.29% (0.5%) of GDP (total employment).

In 2015, the Hong Kong tourist industry is heading towards a severe recession, largely a result of a strong Hong Kong dollar (which is linked to the USD), and economic slowdown in China and in the world. The hostility of local residents towards Mainland visitors plays a contributory role. To stimulate tourism, there are proposals to widen the geographical coverage of IVS, adding more cities in China (e.g., Xian, Qingdao, and Harbin) to the present list of 49 cities under the IVS.[13] The proposal is worth considering as the per capita value-added and the per capita employment generated by non-M-Permit IVS visitors were much higher than those of M-Permit visitors. In 2013, the per capita value-added (employment) of non-M-Permit IVS visitors was 3.5 times (3.2 times) of that of M-Permit visitors. Throughout 2009 to 2013, the employment effects of non-M-Permit IVS visitors were even higher than those of non-Mainland visitors. Widening the geographical coverage of IVS has been very unpopular, but the pains of unemployment may eventually swing public opinion. To optimize the limited capacity to receive tourists in Hong Kong, it is rational to substitute high value-added visitors for low value-added ones.

[13] *The Standard*, 2015 April 13, http://www.thestandard.com.hk/news_detail.asp?art_id=156006&con_type=3.

Appendix 1 Estimated value added and employment generated by IVS visitors: Comparison of official estimates with ours

	Value added ($ million)		Employment generated (man-year)	
	Official	Ours	Official	Ours
2004	2718.26	3274.49	18948.14	21036.76
	(1.2)		(1.1)	
2005	2771.67	4580.90	19878.95	27337.92
	(1.7)		(1.4)	
2006	4327.81	6128.49	31483.67	33952.08
	(1.4)		(1.1)	
2007	7461.82	8717.45	41157.09	46149.03
	(1.2)		(1.1)	
2008	7980.21	10350.10	44545.74	49777.95
	(1.3)		(1.1)	
2009	10091.84	11173.21	53841.76	57987.74
	(1.1)		(1.1)	
2010	N/A	16127.56	N/A	67591.17
2011	N/A	22966.96	N/A	77399.21
2012	26100	26741.54	114280	86071.15
	(1.0)		(0.8)	
2013	N/A	33094.77	N/A	101838.13

Sources: For official estimates, see Table 3. For our estimates on value added (employment), see Table 12 (16).

Appendix 2: Estimates for M-Permit visitors

The HKTB (Hong Kong Tourism Board) provides detailed statistics on various types of visitors (IVS, Mainland, and non-Mainland visitors) at its website. However, data on M-Permit visitors are scanty. This Appendix details the sources of our data for M-Permit visitors and the method used in our estimates when official data is not available.

Number of M-Permit visitors (Table 4 and Figure 1)

Data on same-day and overnight M-Permit visitors from 2009 to 2013 are required to estimate per capita spending:

2009 to 2012: The numbers of same-day and overnight M-Permit visitors are released in the CEDB report (Commerce and Economic Development Bureau 2013: 7).

2013: Statistics on same-day and total M-Permit visitor arrivals are respectively sourced from Research Brief of the Legislative Council Secretariat (2014 May) and Mingpao News (2015, January 19). The number of overnight visitors is obtained as a residual.

2014: Total M-Permit visitor arrivals are taken from Mingpao News (2015, January 19).

For brevity, the estimates of same-day and overnight visitors are not reported separately as this study focuses on the estimates for all visitors, which are reported in Table 4.

Per capita spending of M-Permit visitors (Table 5)

Per capita spendings of same-day and overnight M-Permit visitors are mostly not available, except for those in 2012 (Commerce and Economic Development Bureau 2013: 8), and also for same-day M-Permit visitors' per capita spending (Oriental Daily 2014, June 26).

Whenever official data are not available, the official estimates of per capita spendings of same-day and overnight M-Permit visitors in 2012 are used to estimate the corresponding per capita spending in other years, by assuming that the proportional change of per capita spending over time (using 2012 as the base year) of same-day (overnight) M-Permit visitors is the same as that of same-day (overnight) IVS visitors. For each year, the estimate of per capita spending of all M-Permit visitors (Table 5) is then obtained as a weighted average of our estimates of same-day and overnight per capita spending, where the weights are given by the numbers of same-day and overnight M-Permit visitors. The total spending of M-Permit visitors (Table 6) is easily obtained as the product of per capita spending and number of visitors.

Distribution of spending of M-Permit visitors (Table 7)

The distribution of M-permit visitors' spending is mostly not available except for official estimates for 2009 (EABF 2010). To gauge the distributions in various years, our estimates assume that the distributions of the expenditures of same-day and overnight M-Permit visitors are the same as those of corresponding IVS visitors. The distribution of the spending of all M-Permit visitors (reported in Table 7) is a weighted average of those of same-day and overnight M-Permit visitors, where the weights are the shares of their spending in the total. As can be seen in the table below, our estimates for 2009 are extremely close to those of the EABF, showing that our method of estimation is quite robust.

Table: Distribution of expenditure of M-permit visitors in 2009: comparison of the EABF estimates with our own estimates

	EABF estimates	Our own estimates
Retail Trade	87.4%	88.1%
Accommodation	2.9%	2.5%
Food Services	4.4%	4.1%
Others	5.3%	5.3%

Appendix 3: Estimation of value added/employment in cross-boundary transport

To disaggregate the official estimates of value added/employment in cross-boundary transport generated by different types of visitors (shown in Table 1/2), we rely on data released by the HKTB on modes of transport (air, land, and sea) of arrival. As mentioned before, the per capita value added/employment in cross-boundary transport of visitors arriving by air[14] is much higher than that of those arriving by land and by sea.

The HK government has estimated the value added/employment of IVS visitors for selected years, namely, 2004 to 2009, and 2012. The 2004 to 2009 estimates were done by the Economic Analysis and Business Facilitation Unit (EABF), and the 2012 estimates were done by the Commerce and Economic Development Bureau (CEDB). These studies have also estimated the value added/employment in cross-boundary transport generated by IVS visitors, providing valuable data for our estimates.

For brevity, Value Added (Employment) in Cross-Boundary Transport is abbreviated as VACBT (ECBT). We will first cover the method of estimation of VACBT. The method of estimating ECBT is analogous to that of VACBT, as will be seen later.

We assume that the per capita VACBT of visitors arriving by land, abbreviated L, is the same as those arriving by sea. The EABF studies on IVS made the same assumption (EABF 2005: Annex C). Furthermore, we assume L is the same for all types of visitors. This assumption is not unrealistic as visitors arriving by land or by sea mostly came from the areas near Hong Kong (the Pearl River Delta). The per capita VACBT of short-distance travels to Hong Kong should not be very different.

Estimate of L (per capita VACBT of visitors arriving by land and by sea)

The EABF, in its estimate of value added by IVS visitors, gives the VACBT of "M-permit" visitors in 2009 ($6 million in value added generated by 758,383 "M-permit" visitors) (EABF 2010). "M-permit" visitors are from Shenzhen and nearly all of them come to Hong Kong by land or by sea as there is no flight between Shenzhen and Hong Kong.[15] From this information, we can easily compute L:

L = $6 million/758,383 = $7.91157

As expected, L is very small. We further assume that L is constant from 2007 to 2013. This assumption does not appear to be realistic as there would be inflation over time. However, as L is very small, adjusting L for inflation does not change our estimates significantly. As will be seen below, the VACBT of air travel plays a dominating role in our estimates.

For air travel, we distinguish between Mainland and Non-Mainland visitors. The per capita VACBT of Mainland visitors arriving by air (denoted M_A_t for year t) should be significantly lower than that of non-Mainland visitors arriving by air (denoted NM_A_t for year t) as the latter

[14] See Table 10 for the proportions of various types of visitors arriving by air.
[15] A very small proportion of M-Permit visitors may first travel to other cities and then fly to Hong Kong.

involves more long haul flights.[16] Given L, M_A_t, and NM_A_t, the VACBT of all types of visitors can easily be computed.

We need to estimate M_A_t and NM_A_t from 2007 to 2013. Our estimates from 2007 to 2009 are based on the estimates of the studies of the EABF. Our estimates for 2012 are based on the estimates of the study of the CEDB. Our estimates for 2010, 2011, and 2013 are extrapolated from our 2012 estimates. Details are given below.

Our estimates for 2007, 2008, 2009, and 2012

For each year, M_A_t is easily solved from equation (1) below:

$$(L)\ (N\_IVS\_L_t) + (M\_A_t)\ (N\_IVS\_A_t) = VACBT\_IVS_t$$

where $N\_IVS\_L_t$ is the number of IVS arrivals by Land and by Sea in year t,

$N\_IVS\_A_t$ is the number of IVS arrivals by Air in year t. and,

$VACBT\_IVS_t$ is the VACBT of IVS visitors in year t (obtained from the EABF estimates in 2007, 2008, 2009, and from the CEDB estimate in 2012).

As M_A_t is assumed to be the same for all Mainland visitors, the VACBT of all types of Mainland visitors (IVS vs. non-IVS) are easily computed.

NM_A_t is easily solved from equation (2) below:

$$(L)\ (N\_NM\_L_t) + (NM\_A_t)\ (N\_NM\_A_t) + VACBT\_M_t = VACBT\_ALL_t$$

where $N\_NM\_L_t$ is the number of Non-Mainland visitors arriving by Land and by Sea in year t,

$N\_NM\_A_t$ is the number of Non-Mainland visitors arriving by Air in year t,

$VACBT\_M_t$ and $VACBT\_ALL_t$ are respectively the VACBT of Mainland visitors and ALL visitors in year t.

Our estimates for 2010, 2011, and 2013

Our estimates for the three years of 2010, 2011, and 2013 are extrapolated from M_A_t and NM_A_t in 2012. Over time, the per capita VACBT of air travel is largely determined by airfares. For these three years, we assume that M_A_t and NM_A_t change by the same proportion, K_t , over those in 2012:

$$M\_A_t = K_t\ (M\_A_{2012}), \text{ and}$$

$$NM\_A_t = K_t\ (NM\_A_{t2012})$$

[16] This is a refinement over the method used In Sung (2014), which assumed that the VACBT of Mainland and non-Mainland visitors arriving by air was identical.

K_t is easily solved from equation (3) below:

$$K_t\,(M\_A_{2012})\,(N\_ALL\_L_t) + K_t\,(NM\_A_{2012})\,(N\_ALL\_A_t) = VACBT\_ALL_t$$

where $N\_ALL\_L_t$ is Number of all visitors arriving by Land and by Sea in year t, and

$N\_ALL\_A_t$ is the number of all visitors arriving by Air in year t.

Once K_t is computed, the VACBT of all types of visitors are easily obtained.

Estimation of ECBT (Employment generated in Cross-Boundary Transport)

For all types of visitors, the estimation of ECBT is exactly analogous to that of VACBT (Value Added in Cross-Boundary Transport). We distinguish between (1) the per capita ECBT of visitors arriving by land and by sea (assumed to be the same for all years and for all types of visitors), (2) the per capita ECBT of Mainland visitors, and (3) the per capita ECBT of non-Mainland visitors.

As in the case of VACBT, the per capita ECBT of visitors arriving by land and by sea is computed from the EABF estimates of ECBT generated by M-Permit visitors in 2009. The per capita ECBT of Mainland visitors arriving by air in the three years of 2007, 2008, and 2009 (in the year 2012) are computed from the EABF (CEDB) estimates of ECBT generated by IVS visitors in the corresponding years. To obtain the ECBT of non-Mainland visitors arriving by air, we just subtract the ECBT of Mainland visitors arriving by air, and that of all visitors arriving by land and by sea from the ECBT of all visitors.

As in the case of VACBT, the per capita ECBT's of Mainland and non-Mainland visitors arriving by air in 2010, 2011, and 2013 are extrapolated from the corresponding estimates in 2012.

Appendix 4 Total direct value-added of different types of visitors' by sub-sectors of tourism ($ million), 2007-2010

		Mainland					Non-mainland	All visitors
		IVS			Non-IVS	All mainland		
		M-Permit	Non-M-Permit	All IVS				
2007	Retail Trade	-	-	4,687	3,364	8,051	3,049	11,100
		-	-	11.0%	7.9%	18.9%	7.2%	26.1%
	Accommodation	-	-	1,633	1,544	3,177	9,223	12,400
		-	-	9.7%	9.2%	18.9%	54.8%	73.7%
	Food Services	-	-	1,050	1,001	2,052	2,448	4,500
		-	-	3.3%	3.1%	6.4%	7.7%	14.1%
	Others	-	-	940	945	1,886	2,214	4,100
	Cross-Boundary Transport	-	-	407	747	1,154	8,047	9,200
	Total	-	-	8,718	7,601	16,319	24,982	41,300
		-	-	0.53%	0.46%	0.99%	1.51%	2.50%
2008	Retail Trade	-	-	5,516	3,851	9,367	3,133	12,500
		-	-	11.6%	8.1%	19.7%	6.6%	26.3%
	Accommodation	-	-	2,053	1,870	3,922	8,978	12,900
		-	-	11.4%	10.4%	21.8%	49.9%	71.7%
	Food Services	-	-	1,233	1,169	2,402	2,598	5,000
		-	-	3.5%	3.3%	6.7%	7.3%	14.0%
	Others	-	-	1,035	1,045	2,080	2,220	4,300
	Cross-Boundary Transport	-	-	513	866	1,379	1,121	2,500
	Total	-	-	10,350	8,800	19,151	18,051	37,200
		-	-	0.61%	0.52%	1.12%	1.06%	2.18%
2009	Retail Trade	517	6,074	6,591	4,201	10,792	2,508	13,300
		1.1%	12.9%	14.0%	8.9%	22.9%	5.3%	28.2%
	Accommodation	53	1,753	1,806	1,517	3,324	6,476	9,800
		0.4%	12.1%	12.5%	10.5%	23.0%	44.8%	67.8%
	Food Services	59	1,194	1,253	1,090	2,343	2,157	4,500
		0.2%	3.5%	3.6%	3.2%	6.8%	6.3%	13.1%
	Others	87	1,221	1,308	1,097	2,405	2,295	4,700
	Cross-Boundary Transport	12	203	214	318	533	7,467	8,000
	Total	728	10,445	11,174	8,223	19,397	20,904	40,300
		0.04%	0.63%	0.67%	0.50%	1.17%	1.26%	2.43%

Appendix 4 (Continued)

		Mainland					Non-mainland	All visitors
		IVS			Non-IVS	All mainland		
		M-Permit	Non-M-Permit	All IVS				
2010	Retail Trade	1,380	7,113	8,492	5,068	13,560	3,340	16,900
		2.5%	12.6%	15.1%	9.0%	24.1%	5.9%	30.0%
	Accommodation	177	3,021	3,198	2,707	5,905	10,195	16,100
		0.9%	15.8%	16.8%	14.2%	31.0%	53.5%	84.4%
	Food Services	166	1,683	1,849	1,586	3,436	2,864	6,300
		0.4%	4.5%	5.0%	4.2%	9.2%	7.7%	16.9%
	Others	208	1,506	1,714	1,429	3,143	2,957	6,100
	Cross-Boundary Transport	33	840	873	1,583	2,456	11,344	13,800
	Total	1,963	14,165	16,128	12,374	28,501	30,700	59,200
		0.11%	0.80%	0.91%	0.70%	1.60%	1.73%	3.33%

Percentage figures indicate shares of value-added in the respective sub-sectors/in total GDP.
Sources: See Table 12.

Appendix 5 Direct employment generated by different types of visitors by sub-sectors of tourism, 2007-2010 (man-year)

		Mainland					Non-mainland	All visitors
		IVS			Non-IVS	All mainland		
		M-Permit	Non-M-Permit	All IVS				
2007	Retail Trade	-	-	31,249	22,424	53,673	20,327	74,000
		-	-	11.0%	7.9%	18.8%	7.1%	26.0%
	Accommodation	-	-	3,898	3,685	7,583	22,017	29,600
		-	-	11.3%	10.7%	22.0%	63.8%	85.8%
	Food Services	-	-	7,283	6,942	14,226	16,974	31,200
		-	-	3.2%	3.0%	6.2%	7.4%	13.7%
	Others	-	-	3,234	3,251	6,485	7,615	14,100
	Cross-Boundary Transport	-	-	474	885	1359	9641	11100
	Total	-	-	46,138	37,188	83,326	76,575	160,000
		-	-	1.3%	1.1%	2.4%	2.2%	4.6%
2008	Retail Trade	-	-	33,492	23,382	56,874	19,026	75,900
		-	-	11.5%	8.0%	19.6%	6.5%	26.1%
	Accommodation	-	-	4,535	4,130	8,665	19,835	28,500
		-	-	13.0%	11.8%	24.8%	56.8%	81.6%
	Food Services	-	-	7,720	7,318	15,038	16,262	31,300
		-	-	3.4%	3.2%	6.6%	7.1%	13.7%
	Others	-	-	3,418	3,451	6,869	7,331	14,200
	Cross-Boundary Transport	-	-	612	1,049	1,661	9,639	11,300
	Total	-	-	49,778	39,330	89,108	72,092	161,200
		-	-	1.4%	1.1%	2.5%	2.1%	4.6%
2009	Retail Trade	3,198	37,540	40,738	25,961	66,699	15,501	82,200
		1.1%	12.8%	13.9%	8.8%	22.7%	5.3%	28.0%
	Accommodation	147	4,849	4,996	4,195	9,191	17,909	27,100
		0.4%	14.5%	14.9%	12.5%	27.5%	53.5%	81.0%
	Food Services	364	7,404	7,768	6,760	14,528	13,372	27,900
		0.2%	3.4%	3.5%	3.1%	6.6%	6.1%	12.6%
	Others	275	2,684	4,119	3,454	7,573	7,227	14,800
	Cross-Boundary Transport	12	356	368	623	991	10,609	11,600
	Total	3,996	52,832	57,988	40,994	98,982	64,618	163,600
		0.1%	1.5%	1.7%	1.2%	2.9%	1.9%	4.7%

Appendix 5 (Continued)

		Mainland					Non-mainland	All visitors
		IVS			Non-IVS	All mainland		
		M-Permit	Non-M-Permit	All IVS				
2010	Retail Trade	7,248	37,375	44,623	26,628	71,252	17,548	88,800
		2.4%	12.6%	15.0%	9.0%	24.0%	5.9%	29.9%
	Accommodation	379	6,474	6,853	5,800	12,653	21,847	34,500
		1.1%	19.2%	20.3%	17.2%	37.5%	64.7%	102.1%
	Food Services	984	9,966	10,950	9,393	20,342	16,958	37,300
		0.4%	4.4%	4.8%	4.1%	8.9%	7.4%	16.4%
	Others	527	3,828	4,355	3,632	7,987	7,513	15,500
	Cross-Boundary Transport	33	777	810	1,457	2,267	9,433	11,700
	Total	9,171	58,420	67,591	46,910	114,501	73,299	187,800
		0.3%	1.7%	1.9%	1.3%	3.3%	2.1%	5.4%

Percentage figures indicate shares of employment in the respective sub-sectors/in total employment.
Sources: Same as Table 16.

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