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An economic assessment of the likely competitive effects arising from the proposed HKT/CSL transaction

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1. Introduction and Summary

This report has been prepared by RBB Economics at the joint request of HKT Limited, the holding company of Hong Kong Telecommunications (HKT) Limited (hereafter jointly referred to as "HKT"), Telstra Corporation Limited ("Telstra") and New World Development Co. Ltd ("NWD").

HKT intends to acquire CSL New World Mobility Limited, the holding company of CSL Limited (hereafter jointly referred to as "CSL") from Telstra and NWD, the current owners of CSL.

HKT and CSL are carrier licensees and active as mobile network operators ("MNOs") in Hong Kong. HKT is also the incumbent fixed network operator ("FNO") in Hong Kong. The acquisition of CSL by HKT has been notified to the Office of the Communications Authority ("OFCA") for merger control purposes.

This report forms part of the response of HKT and CSL to OFCA's public consultation paper. At the request of the parties, we have been asked to conduct an economic assessment on the following three competition issues that the parties consider most relevant for OFCA's competitive assessment;[1]

1. whether the transaction is likely to give rise to unilateral effects in the Hong Kong mobile market;

2. whether the transaction is likely to give rise to adverse competitive effects through an accumulation of spectrum; and

3. the potential impact of the transaction on HKT's activities in related markets.

Our main conclusions and findings can be summarised as follows:

- **The proposed transaction is unlikely to give rise to unilateral effects.**
    - Our analysis shows that the mobile market in Hong Kong is characterised by intense competition. The combined market share of the merging parties would not result (nor be likely to result) in a level of concentration in terms of market share or the number of MNOs remaining post-merger that would justify *a priori* concerns as regards the competitive impact of the transaction. Indeed, the degree of concentration following the proposed merger will remain low as compared to mobile markets in numerous other countries.

[1] For the sake of completeness, we note that the likelihood of coordinated effects to arise as a result of the transaction is not considered in this report. Apart from the fact that the merger will result in a reduction of the number of MNOs to four, none of the other elements/'indicators' typically considered in an assessment of coordinated effects (e.g. ability to reach agreement (including symmetry of the players), transparency and the existence of a credible punishment mechanism etc.) are materially affected by the transaction (i.e. the other elements are not present). See also Whish, Competition Law, Sixth Edition, p. 808.

  - Our analysis also shows that although the retail offerings of individual MNOs are somewhat differentiated, none of the five MNOs appears to confine itself to any particular customer segment. Moreover, there is little to prevent MNOs (or, indeed, Mobile Virtual Network Operators ("MVNOs") that offer services on the basis of access to the MNOs' networks) in Hong Kong from repositioning their brand(s) and plans, or from introducing additional brands or plans to target additional subscribers in competition with other MNOs. As a result of this ongoing observed market dynamic, it is unlikely that a merger that reduces the number of MNOs in the market from 5 to 4, particularly in the presence of multiple MVNOs and with a combined market share of the merged party of only around 30%, will have the effect of substantially lessening competition.

  - Using available porting data,[2] we show that the degree of switching between two particular MNOs can (and frequently does) change quickly, either because MNOs reposition themselves by adjusting their voice and/or data plans or by repositioning or introducing a new brand. Given these competitive dynamics, a focus solely on the current (i.e. static) retail offerings of the various MNOs active in the Hong Kong market is inappropriate for assessing the likely competitive effects of the proposed transaction.

- **The proposed transaction is unlikely to result in adverse competitive effects through an accumulation of spectrum.**

  - An analysis carried out by *Network Strategies* at the request of OFCA suggests that under the current spectrum allocation, there is sufficient 3G network capacity to accommodate all demand, while 4G network capacity significantly outstrips demand at present. This analysis evinces that MNOs do not, in aggregate, face capacity constraints in competing for greater share of the market. Furthermore, there is ample opportunity for MVNOs to provide mobile services to their customers.

- **The proposed transaction is unlikely to give rise to anticompetitive effects in related markets.**

  - We show that bundled fixed and mobile telephony services do not play a significant role in the Hong Kong market. Moreover, we show that the proposed transaction will not give the merged party a unique advantage over its competitors compared to the counterfactual situation (or, indeed, offer its customers any bundled services that it cannot offer pre-merger), and argue that the transaction is unlikely to alter significantly HKT's pricing incentives in the fixed telephony market.

[2] We note that the porting data covers only a small (and potentially severely biased) proportion of consumer switching in the Hong Kong mobile market, and therefore cannot capture the full extent of competition prevalent in the market.

- **The proposed transaction is likely to give rise to pro-competitive effects.**
  - Moreover, our analysis shows that the most likely effects arising from the proposed transaction would be pro-competitive: the combination of their activities will allow both HKT and CSL to improve the network quality for their own customers, and thus provide a more competitive and efficient service relative to their pre-transaction offerings.
  - Finally, we argue that the upcoming 3G spectrum auction will likely alleviate any current spectrum allocation imbalances without creating binding capacity constraints for any of the 3G incumbents. We show that the proposed transaction including the offered up-front spectrum commitment is likely to create a positive effect for Hutchison, SmarTone and China Mobile (and any potential new entrants), by freeing up additional spectrum as well as funds that can instead be utilised to further upgrade their networks.

2. Assessment of unilateral effects

2.1. Introduction

This section explores the potential for anticompetitive effects arising in the retail market for mobile telephony services from the combination of HKT's and CSL's activities in Hong Kong. In particular, we aim to address the following request made by OFCA in its consultation paper of 23 December 2013 in regard to unilateral effects:

> *"In particular, an assessment should be conducted on the extent to which any pre-existing competitive rivalry between HKT and CSL as independent competitors prevents them from exercising market power. To the extent that CSL can be considered as an especially close competitor to HKT and vice versa prior to the Proposed Transaction, the removal of such rivalry from the competitive landscape may create or significantly enhance the market power of HKT after the Proposed Transaction is completed."*

OFCA is hence posing the question whether the transaction by removing an important competitive constraint from the market would lead to a substantial lessening of competition and as a result the merged entity would be able to profitably increase prices for consumers.

Our analysis of the likelihood of unilateral effects is organised as follows.

- We first consider the role played by market shares in the assessment of unilateral effects and how that role is appropriately amended to take into account potential differentiation in the offerings of various firms.

- We then provide a brief overview of the Hong Kong mobile telephony industry. We note that competition in the Hong Kong market is intense and the level of concentration much less than in comparable international markets.

- Section 2.4 considers the market shares of existing mobile telephony providers and examines how the proposed transaction will alter the existing market structure. We note that the proposed transaction would result in a combined market share of [about 31%] (number of subscriptions) and [about 29%] (revenues), making the merged entity either the largest or third-largest MNO active in Hong Kong, respectively. The combined market share of the merging parties would not result in a level of concentration in terms of market share or the number of MNOs remaining post-merger that would justify concerns as regards the competitive impact of the transaction.

- Section 2.5 then describes the low barriers to expansion that exist in the Hong Kong mobile telephony market. In particular, we note the ability of mobile telephony providers to use the same spectrum capacity to adjust the features of their product offerings and/or to introduce new brands. When assessing the likely impact of a merger, it is always important to take these dynamic responses into account.[3]

- These observed dynamic responses in the Hong Kong mobile telephony market are assessed in more detail in Section 2.6.

2.2. Relevance of market shares and closeness of competition

Market shares typically play an important role in the competitive assessment of mergers by providing a screening device to determine whether it is necessary to perform more detailed analyses. Competition concerns only arise when a merged entity can be expected to reduce competition in the market either through a (sustained) unilateral increase in prices or because the change in market structure brought about by the merger enables firms to compete less vigorously i.e. to engage in tacit coordination.

The primary element of market share that is relevant for the competitive assessment is the combined market share of the merged entity. Typically, a merger that gives rise to a combined market share below 50 per cent (or in some cases below 40 per cent) would not be seen as giving rise to competition concerns. Only if it could be demonstrated that the market shares of the merging parties understate their competitive significance (for example, because both merging parties consistently compete for the same consumer segment) would intervention be justified at a combined market share below 40 per cent. As we discuss below, all of the MNOs active in Hong Kong currently target a wide range of consumer segments and, moreover, are all easily able to take steps to target additional consumer segments.[4] In other words, no two MNOs active in Hong Kong can be considered to be each other's closest competitors.

Below we will give a brief overview of the relevant characteristics of the mobile market and discuss market shares and the level of concentration. We then discuss the extent of supply-side substitution between MNOs before, for completeness, assessing the degree of customer switching between the merging parties.

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[3] In this respect, see for example the European Commission's Horizontal Mergers Guidelines, para. 30: "*In some markets it may be relatively easy and not too costly for the active firms to reposition their products or extend their product portfolio. In particular, the Commission examines whether the possibility of repositioning or product line extension by competitors or the merging parties may influence the incentive of the merged entity to raise prices.*"

[4] For completeness, we note that the fact that consumers may perceive various brands or MNOs to be differentiated via prices, service quality, customer care, or roaming tariffs at any point in time does not change the fact that any such characteristics can be subject to rapid change if MNOs would reposition their offerings.

2.3. Characteristics of the Hong Kong mobile market

The mobile market in Hong Kong is characterised by intense competition and is generally recognised as one of the most sophisticated and competitive mobile markets in the world.[5] With a penetration rate of 236.6% as of September 2013, and a total of around 17 million subscriptions,[6] the Hong Kong mobile market has one of the highest penetration rates in the world. Moreover, with over 10 million 3G/4G subscriptions, the penetration of 3G/4G services is almost 140%. Finally, the Hong Kong mobile market is characterised by a very high level of switching by customers between different mobile service providers (with most customers choosing to switch without porting their existing phone number to the new network): in 2012, HKT's new acquisitions accounted for nearly [✂]% of its average subscriber base over the entire year (i.e. [✂] new acquisitions compared to an average subscriber base of [✂], although only less than [✂] of these new acquisitions were covered by the number porting data).[7] This number is significantly higher than in other international mobile markets,[8] and further highlights that the Hong Kong mobile market is very competitive and dynamic. It also emphasizes the fact that consumers are price sensitive and have little brand loyalty.

The mobile market in Hong Kong currently consists of 5 MNOs and 18 MVNOs, as well as a number of resellers. Market shares, measured by the number of subscriptions, revenues and spectrum capacity respectively, are given in Table 1 below.

Table 1 Market shares for the Hong Kong mobile retail market (as of June 2013)*

	Subscriptions	Revenues	Spectrum
HKT	[11-12%]	[6-8%]	15.7%
CSL**	[19-20%]	[21-23%]	22.6%
HKT/CSL (merged)	*31%*	*29%*	*38.3%*
Hutchison (3)	[23-24%]	[31-33%]	22.0%
China Mobile***	[22.5-23.5%]	[3-5%]	17.1%

[5] See for example: http://www.gov.hk/en/about/abouthk/factsheets/docs/telecommunications.pdf, http://www.ofca.gov.hk/filemanager/ofca/listarticle/en/upload/356/20130409.pdf and also: http://www.info.gov.hk/gia/general/201312/08/P201312080685.htm

[6] See: http://www.ofca.gov.hk/en/media_focus/data_statistics/key_stat/index.html

[7] See [✂].

[8] See, for example, the EC decision on the T-Mobile/Orange UK merger, paragraph 51: "*The UK retail mobile market is further characterised by a high level of switching by customers (with or without porting the existing phone number to the new network) […] between different mobile service providers. In 2007/08, 12% of consumers had switched mobile service provider, and a further 14% were considering switching. The above data indicates that the rate of switching is relatively high and attitudes towards switching are positive*". The switching rates in the Hong Kong market, as estimated on the basis of HKT's churn data, are significantly higher than the "high level of switching" described by the EC in its decision.

SmarTone	[12-13%]	[32-34%]	17.6%
21 ViaNet	-	-	4.9%
MVNOs	[9-10%]	[1-3%]	-

*Source: HKT. *) The spectrum market shares do not yet take into account the effect of the sale of 8MHz of spectrum by China Mobile to HKTVN in early 2014. **) CSL market share includes all relevant brands (i.e. One2Free, 1O1O and New World Mobility). ***) China Mobile revenues do not include revenues from sales of devices.*

All five MNOs offer subscribers integrated 2G/3G/4G network coverage using their own network, except for China Mobile which relies on a MVNO agreement with HKT[9] (and other network operators) for its 3G network coverage. Importantly, none of the MNOs has a significant advantage or disadvantage in terms of spectrum allocation.

Below, we provide a brief description of the five MNOs active in the Hong Kong mobile market, 21 ViaNet and the MVNOs.

- HKT: HKT is currently the smallest of the five MNOs active in the Hong Kong market, operating in the mobile retail market under the PCCW Mobile brand. It is also the incumbent FNO, offering fixed-line telephone, broadband internet access (Netvigator) and IPTV services under the nowTV brand. HKT holds 2G/3G licenses as well as a 4G license via the "Genius" 50/50 joint-venture with Hutchison.[10] HKT does not have access to the below 1GHz spectrum band for use by its retail customers. HKT provides 3G capacity to China Mobile under a MVNO agreement.

- CSL: CSL is the result of the merger between CSL (then owned by Telstra following the sale by PCCW in 2002) and New World Mobility ("NWM") (then owned by NWD) in 2006. CSL obtained a 4G license in 2009 and offers 2G/3G/4G network coverage. CSL operates a differentiated set of brands, including One2Free ("O2F"), 1O1O and New World Mobility ("NWM"), and also offers pre-paid packages under various brands.[11] [✂]

- Hutchison: Hutchison is the market leading mobile operator in Hong Kong with a (subscriber based) market share exceeding 23% in 2013. It offers both mobile and fixed-line services under its '3' brand, via its subsidiaries Hutchison Telecommunications Holdings Ltd. and Hutchison Global Communications Ltd. respectively. Hutchison holds 2G/3G/4G spectrum licenses (in part via the 'Genius' JV with HKT).

[9] This agreement does not include any restrictions on China Mobile concerning downstream pricing or marketing.

[10] The Genius JV only concerns the joint ownership of the 4G spectrum license and the radio access network; both companies' retail activities are entirely separate.

[11] See: http://www.telstrainternationalgroup.com/csl

- SmarTone: SmarTone was one of the earliest mobile services providers in Hong Kong. For a considerable period it operated under the SmarTone-Vodafone brand, which was changed into SmarTone in 2011, following the termination of the cooperation with Vodafone. SmarTone initially lost out on 4G spectrum licenses in 2009, but obtained a 4G license in the recent 2013 auction. It now operates an integrated 2G/3G/4G network.

- China Mobile HK: China Mobile Hong Kong ("China Mobile") is part of China Mobile Limited, the market leading mobile telecommunications provider in mainland China. It is operating under its China Mobile brand in Hong Kong and has recently introduced the "and!" brand. China Mobile is able to offer much more attractive roaming tariffs (to mainland China) than the other MNOs, giving it a significant competitive advantage in particular when competing for customers that alternate frequently between Hong Kong and mainland China.[12] China Mobile holds 2G licenses and obtained one of four 4G licenses auctioned in 2009. In 2013, China Mobile obtained an additional 4G license. It has established MVNO type relationships with multiple MNOs active in the Hong Kong market, though it predominantly uses access to HKT's network to provide its customers with 3G coverage for those areas in Hong Kong where its own 4G network is not available.

- 21 ViaNet: 21 ViaNet, part of 21 ViaNet Group Inc., is an internet data centre services provider. It obtained a 4G spectrum license in the recent auction 4G auction in 2013, subject to a roll-out requirement that stipulates a minimum coverage of 50% of the population to be reached by March 2017. 21 ViaNet does not have its own mobile retail operations at present, and its future plans are not clear.

- MVNOs: The mobile market in Hong Kong currently counts 18 MVNOs (see Annex A.1), including operators from mainland China, such as China Unicom.[13] MVNOs typically target niche segments, such as international or frequent travellers, or domestic helpers.

2.4. Market shares

As explained in Section 2.2, market shares provide a useful first screen of the competitive constraints faced by the merging parties (and the extent to which they will face competition post-merger).

Figure 1 below provides an overview of the market shares of the MNOs and MVNOs active in Hong Kong, measured as a share of both subscriptions and revenues. For several MNOs, market shares by revenues differ substantially from market shares by subscriptions. This is predominantly due to the effects of handset revenues. For example, Hutchison,

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[12] For example, [✂].

[13] http://app1.coms-auth.hk/apps/telecom_lic/content/sbo_lic_list.asp?mobservice=Y

SmarTone and CSL are Apple distributors and have seen an upsurge in iPhone and iPad handset sales. HKT appears to have lower handset revenues and China Mobile, as a historically more low-end focused MNO, likely has the least handset revenue, although it does not include handset revenues in its reported revenue figures (which likely means that the revenues based market shares underestimate its position in the market and the competitive constraint China Mobile exerts on other MNOs).

Figure 1 [✂]

[✂]

The figures above show that the proposed transaction would result in a combined market share of [about 31%] (number of subscriptions) and [about 29%] (revenues), making the merged entity the largest or third-largest MNO active in Hong Kong respectively. Importantly, the combined market share of the merging parties would not result in a level of concentration in terms of market share or the number of MNOs remaining post-merger that would justify *a priori* concerns as regards the competitive impact of the transaction.

The combined market share of the merging parties and the level of concentration post-merger is in line with recently approved mergers internationally. Table 2 below shows a number of recent mergers in other jurisdictions, the number of MNO's remaining in the market and the combined market share of the parties to the merger, as well as the commitments or remedies imposed on the merging parties. The table is sorted by the number of operators remaining post-merger as well as the combined market share of the parties, starting with the least concentrated markets.

Table 2 Recent mergers between MNOs (approved unless stated otherwise)

Parties	Country	Year	Number of Operators	Combined Market Share	Commitments/ remedies
T-Mobile / Metro*****	USA	2013	5 to 4	< 30% in 17 local markets, > 30% in 2 local markets	None
HKT / CSL	Hong Kong	2014	5 to 4	~ 30%	Spectrum divestments + wholesale commitments offered
T-Mobile / tele.ring**	Austria	2006	5 to 4	30-40%	Spectrum divestments
T-Mobile / Orange**	UK	2009	5 to 4	30-40%	Spectrum divestments + wholesale commitments
KPN / Telfort*	Netherlands	2005	5 to 4	40-50%	None
AT&T / T-Mobile*****	USA	2012	5 to 4	> 40% (subscribers / revenues)	*Withdrawn*
T-Mobile / Orange**	Netherlands	2007	4 to 3	20-30%	None

Vodafone / Hutchison* **	Australia	2009	4 to 3	20-30%	None
Hutchison / Orange **	Austria	2012	4 to 3	20-30%	Spectrum divestments + wholesale commitments
Sunrise / Orange******	Switzerland	2010	3 to 2	~ 40% (subscribers)	*Blocked*

*Sources: *) NMa/ACM, **) European Commission (DG COMP), ***) ACCC, ****) ComCo, *****) FCC (5 to 4 on a national level, national market shares N/A), (for local market shares see footnote 118 of FCC decision text: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-13-384A1.pdf). ******) FCC (5 to 4 on a national level, see FCC staff working document, paragraph 37 & 42: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-11-1955A2.pdf)*

Notably, two of the mergers listed above were opposed by competition authorities. In Switzerland, the proposed Sunrise/Orange merger would have resulted in a combined market share of around 40% in terms of subscriptions. More importantly however, it would have reduced the number of MNOs from 3 to 2, with the only remaining competitor being Swisscom (holding a 60% market share in terms of subscriptions).

The proposed merger of AT&T and T-Mobile in the US was withdrawn. The merger would have resulted in combined post-merger market shares of the largest two MNOs, AT&T/T-Mobile and Verizon, of around 75% in terms of subscriptions and revenues.

The acquisition of CSL by HKT is very different to these two problematic cases. This merger is more comparable to other 5-to-4 mergers such as those between T-Mobile/Orange in the United Kingdom and T-Mobile/tele.ring in Austria, where combined post-merger market shares were between 30% and 40%. Moreover, the proposed up-front commitments for the proposed transaction are at least as far-reaching as the remedies imposed in the comparable merger precedents listed above.

Indeed, the Hong Kong mobile market will remain less concentrated than most other international mobile markets, even post-merger. The table below shows the several measures of concentration for 21 international mobile markets, including (i) the number of operators, (ii) the HHI (i.e. Herfindahl-Hirschman Index), (iii) the market share of the largest MNO, (iv) the CR2 (i.e. the market share of the two largest firms) and (v) the CR3 (i.e. the market share of the three largest firms).

Table 3 Concentration in international mobile markets

Country	Number of MNOs	HHI	Largest MNO's share	CR2 (excl. MVNOs)	CR3 (excl. MVNOs)
Australia	3	3780	50%	80%	100%
Austria	3	3510	44%	74%	100%
Belgium	3	3510	44%	72%	100%
Canada	3	2770	34%	62%	90%
Denmark	4	3040	44%	68%	87%

Finland	3	3450	41%	75%	100%
France	4	2980	40%	71%	87%
Germany	4	2650	33%	61%	83%
Greece	3	3770	49%	81%	100%
Italy	4	2830	34%	65%	90%
Japan	4	3320	44%	72%	96%
Netherlands	3	3480	43%	74%	100%
New Zealand	3	3610	44%	79%	100%
Norway	3	3970	53%	81%	100%
Portugal	3	3630	45%	79%	100%
Singapore	3	3610	47%	74%	100%
Spain	4	2980	39%	67%	92%
Sweden	4	3160	45%	71%	88%
Switzerland	3	4470	60%	84%	100%
United Kingdom	4	2760	33%	63%	88%
United States	4	2530	33%	64%	80%
Hong Kong pre-merger	**5**	**1770**	**24%**	**51%**	**73%**
Hong Kong post-merger	**4**	**2230**	**31%**	**60%**	**86%**

Source: Global Wireless Matrix 4Q2013, BoA Merrill Lynch, January 2014. Market shares for Hong Kong measured in terms of subscribers.

The table shows that Hong Kong is currently the only major mobile market that has more than four active MNOs. Moreover, both its post-merger HHI, the market share of its largest MNO, and its CR2 will remain lower than similar measures in any of the other international mobile markets. Its CR3, finally, is the third-lowest of all mobile markets covered by the data above, with only the United States and Germany showing a slightly lower CR3 than Hong Kong *post*-merger. It is also noteworthy that mainland China has just three MNOs (one of which, China Mobile, also operates as a MNO in Hong Kong), and has only very recently introduced the licensing of MVNOs.

In summary, the proposed transaction does not result in a level of concentration in terms of market share or the number of MNOs remaining post-merger that would create concerns that would warrant an in-depth assessment of the merger. Indeed, the international comparison strongly suggests that the acquisition of CSL by HKT is unlikely to raise substantive competition issues.

2.5. Supply-side substitution

As discussed, the five MNOs currently active in the market possess similar network capacities and can supply (relatively) homogeneous mobile services. All five MNOs have integrated 2G/3G/4G networks, which means that no MNO is particularly advantaged or disadvantaged in terms of licenses, spectrum or capacity. Intrinsically, none of the five MNOs is therefore constrained in competing for any particular customer segment to a significant degree, although the lack of spectrum below 1GHz does negatively affect service quality (for some of the MNOs).

Network capabilities are differentiated only at the level of the end-consumer, although network similarities limit the extent to which MNOs (or their brands) can be truly differentiated. MNOs differentiate themselves in terms of the bundling of voice and data plans and in terms of access to 2G, 3G and/or 4G networks. The latter type of differentiation determines the quality of mobile services provided in terms of download speed, coverage and stability (e.g. service interruptions and dropped calls). Differentiation may also occur via pricing, value added services, roaming arrangements and customer care.

Ultimately however, the MNOs in Hong Kong compete in order to use their available network capacity in the most profitable way by offering various voice and data plans at different price points. MNOs may and will reposition their brand(s) and plans or introduce additional brands or plans to capture additional availability of subscribers in competition with the other MNOs. A high rate of customer switching and number portability ensures that MNOs can respond competitively and (re)gain market share and/or target particular customer segments. To use and fill the available network capacity, the MNOs also offer part of their network capacity through wholesale agreements with MVNOs.

China Mobile provides a good illustration of these dynamic responses. China Mobile entered the retail market following the acquisition of “Peoples”, but quickly introduced its own “China Mobile” brand. Initially it focussed on the lower end of the market with basic voice plans, partly explained by its network capabilities being limited (i.e. China Mobile did not hold any 3G spectrum of its own and 4G had not been launched at the time). Following the 4G spectrum auctions and the conclusion of the MVNO agreement with HKT, ensuring 3G network access, China Mobile introduced additional higher-end voice and data plans. It is further re-positioning itself with the introduction of its new “and!”-brand, and – based on the recently announced arrangements with Apple for supply of iPhones on the mainland – it is possible that China Mobile HK will soon offer iPhones in the Hong Kong market as well. China Mobile also continues to offer attractive roaming arrangements to the primary roaming destination: mainland China. These initiatives show how China Mobile re-positions itself to make best use of its 4G network capabilities, capacity and relationships.

CSL itself is also an example. It currently operates a multi-brand strategy with three different brands (1O1O, One2Free and NWM), each of which is targeting different market segments. [✂] By operating these brands in parallel, CSL succeeds in increasing its capacity utilisation by targeting various distinct segments of the market, [✂].[14]

These examples demonstrate that MNOs can and do quickly respond to any segments of the market left uncovered or underserved. Therefore, if any particular brand or pricing package were to be removed from the market (e.g. post-merger), it is to be expected that another operator would quickly seize the opportunity and fill the resulting gap, either by creating additional pricing packages, repositioning its own brands, introducing a new brand, or by allowing additional MVNOs access to its network.

As a result of this ongoing dynamic in the Hong Kong mobile market, it is unlikely that a merger that reduces the number of MNOs in the market from 5 to 4, in the presence of multiple MVNOs and with a combined market share of around 30%, is likely to remove an important competitive constraint that would result in the ability of the merged entity to increase prices in the Hong Kong market.

2.6. Consumer switching

In view of the above, an assessment of the observed, current retail offerings of MNOs will therefore only capture the current (static) situation without fully representing the dynamics persisting in the mobile market.[15]

In particular, we note that the perceived closeness of competition between two particular MNOs can change rapidly, either because MNOs reposition themselves by adjusting their voice and/or data plans or by repositioning or introducing a new brand. Nevertheless, and for the sake of completeness, we will provide below a basic account of the positioning and pricing of various MNOs/brands and an analysis of consumer switching data below.

2.6.1. Positioning and pricing

The five MNOs active in Hong Kong offer substitutable products but are to some extent differentiated in terms of voice and data bundles, where some offer unlimited voice, differently sized data packs, and/or differing limits on peak data speeds depending on the price of the product. Whether or not two particular operators are at any moment in time close competitors will, at least in part, depend on the respective positioning of their brand(s).

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[14] While CSL uses the same underlying network for all of its brands, the NWM brand [✂] at retail level offers lower speeds.

[15] We note that, for the same reason, the value of a so-called UPP analysis ("Upward Pricing Pressure") would be very limited, as it can only measure the change in pricing incentives assuming that competition remains static post-merger. In other words, the UPP-test does not take into account the likelihood that, if the merging parties were to change their pricing strategy post-merger (e.g. by increasing prices or by discontinuing certain offers or brands), any such initiatives are likely to trigger changes in their rivals' pricing strategies. New tariffs can be launched by operators immediately, and it is not only the merging party but also its rivals that are at liberty to redesign all of their existing tariffs post-merger.

CSL, unlike the other MNOs, operates under multiple brands: "1O1O", "One2Free" and "NWM". The "1O1O" brand is focussed on the more higher-end segment (in terms of ARPU) of the market, while "NWM" predominantly targets the lower end of the market. The other MNOs operate a single brand, none of which is particularly focussed on any particular consumer segment of the market. HKT's "PCCW mobile" brand, Hutchison's "3", and (to a lesser degree) SmarTone are all focused on a broader public consisting mainly of median income customers. China Mobile has long focused on the lower end-segment of the market (e.g. value-for-money), but has recently introduced more higher-end plans in the 4G segment for the mass market.

The table below summarises the brand positioning of the various MNOs active in the Hong Kong market.

Table 4 MNO brands and market segmentation

MNO	Brand(s)	Target segment(s)	Customer income profile
HKT	**PCCW Mobile**	Mid-market	Median
CSL	**One2Free**	Mid-market	Median
	1O1O	High-end / Business	High
	NWM	Low-end / Value-for-money	Low
Hutchison	**3**	Mid-market	Median
SmarTone	**SmarTone**	Mid-market / High-End	Median / High
China Mobile	**China Mobile**	Low-end / Value-for-money	Low

Source: HKT / CSL

As a result of its multi-brand strategy, CSL performs relatively strongly in both the high-end and the low-end segment of the market, [✂].

Figure 2 [✂]

[✂]

[✂]

Handheld devices are another factor by which MNOs (or MVNOs) differentiate their respective retail offerings. For example, iPhones may allow any MNO that acts as an Apple distributor to achieve higher revenues and a higher ARPU than its competitors. In addition, China Mobile may soon be offering iPhones in Hong Kong as well, following a recently signed distribution agreement between its parent company China Mobile Ltd. and

Apple Inc. It follows that even when it comes to differentiation by device, unique new smartphone models will assist selected distributors.

Finally, a meaningful comparison of prices in Hong Kong is not straightforward because of the bundled nature of mobile services. Consumers typically buy a combination of a handset, access/subscription, calls, SMS and data services. In addition, there is, also as a result of intense competition, a large variety of packages and add-ons (including 'freebies') available to consumers. Notwithstanding this, in Table 5 below we present publicly available information on the current prices of post mobile services in Hong Kong of recent 4G plans offered by the various MNOs/brands.

Table 5 Price comparison of post-paid SIM-only 4Glte plans across MNOs *(cheapest to most expensive)*

Ranking (low-high)	1GB	2GB	5GB
1	**CSL (NWM)*** ($100 – 2500min)	**CSL (NWM)*** ($150 – 2500min)	**China Mobile** ($230 - unlimited)
2	**China Mobile** ($140 - 1800min)	**SmarTone** ($200 - 1600min)	**HKT** ($250 - unlimited)
3	**HKT** ($188 - unlimited)	**HKT** ($210 - unlimited)	**3HK** ($278 - 3500min)
4	**3HK** ($198 – 2000min)	**3HK** ($228 - 2500min)	**CSL (One2Free)** ($279 - 5000min)
5	**CSL (One2Free)** ($199 - 3000min)	**CSL (One2Free)** ($229 - 4000min)	**SmarTone** ($280 - 2400min)

*Sources: HKT, CSL, Hutchison, SmarTone, China Mobile (HK). Pricing data valid on 16 January 2014. Prices shown are based on post-paid 4Glte sim-only plans, data & basic voice, including surcharges on the basis of 24-month subscription. SmarTone does not offer Wi-Fi, all other carriers offer unlimited Wi-Fi. CSL (NWM) only offers 12-month subscription plans, all other carriers offer 24-month subscriptions. See Annex A.3 for more details. *) NWM's 4Glite plans are speed capped, i.e. they offer lower speeds than CSL's other brands.*

Although this analysis is limited to 4G and does not take the differences in the endowed minutes or other add-ins into account, it is not evident from this comparison that HKT and CSL are particularly closely positioned to each other relative to the other MNOs. China Mobile and CSL (NWM)[16] offer relatively cheap plans, and SmarTone, CSL's other brands (One2Free, 1O1O) and 3HK appear to be relatively more expensive.

This (simple) price comparison shows that consumers have ample choice and can switch between various pricing packages and service offerings. Indeed, the high churn rate (e.g. of nearly [redacted]% of HKT's subscribers within one year, see Section 2.3 above) demonstrates that consumers switch frequently between subscriptions and MNOs, and suggests that they are price sensitive. It follows that the merged entity will have little scope or incentive to increase prices or decrease quality of service post-merger, as its subscribers would quickly switch to one of its rivals in response to such a price increase.

[16] We note that the NWM brand [redacted] offers lower speeds than CSL's other brands.

In summary, our analysis shows that no MNO focuses only on a particular consumer segment. It is therefore not the case that any two MNOs can be described as representing particular close competitors for one another. [✂] To the extent that HKT and CSL's brands are focused on different segments of the market and/or that consumers are price sensitive, this will make a unilateral price increase post-merger less attractive (as this means that the merger only removes a relatively weak pricing constraint).

2.6.2. Consumer switching

Another potential way in which it is possible to analyse the extent of pre-merger competition between the merging parties is to consider the ways in which customers switch between the various providers. Number portability ("porting"), i.e. the right to transfer telephone numbers between operators, enables one, in principle, to assess the degree of switching between mobile telephony providers.

Importantly, it should be noted however that number porting only plays a relatively limited role in Hong Kong. This may in part be due to the way in which number portability is set up in Hong Kong (donor lead rather than recipient lead). Moreover, the importance of data-centric subscriptions has likely decreased the prevalence and relevance of number porting. Finally, pre-paid customers are, according to the parties, all the more likely to 'exit' and 're-enter' the market rather than to use the porting service. As a result of these factors, the available number portability data only covers a relatively small fraction of all consumer switching in Hong Kong, and is therefore unlikely to provide a good proxy for the overall market: for example, less than [✂]% of HKT's new customers and less than [✂]% of HKT's lost customers in 2013 are covered by the porting data.[17]

As a consequence, the porting data may well be biased towards post-paid voice packages, and hence underestimate the true competitive constraint from MNOs that are strong in data and in the pre-paid segments of the market. In other words, while porting data may be somewhat representative of voice-centric post-paid services, it covers only a small (and potentially severely biased) proportion of consumer switching in mobile markets that, such as the Hong Kong mobile market, are predominantly data-centric and feature a high penetration level. In such markets, consumers are significantly less likely to utilise number porting services when switching providers, and conversely any switching data analysis based on number portability data cannot capture the full extent of competition prevalent in the market.

Finally, and as explained above, repositioning by MNOs may result in changing switching patterns over time: an MNO may appear to provide a particularly important competitive constraint in the market (e.g. if it introduces a steep discount that manages to attract new customers) at one point in time, while appearing to provide a less important competitive constraint at other times (e.g. once the discount offer has been discontinued). Hence, any assessment of the switching data can only give insights concerning the current and past

[17] See [✂].

patterns of switching, but does not allow drawing strong conclusions about likely future behaviour.

Due to these shortcomings of the switching data specific to the Hong Kong mobile market, any analysis of the switching data is unlikely to deliver reliable results that correctly represent the competitive constraints prevailing in the Hong Kong mobile telephony market. However, for the sake of completeness, we provide an assessment of the porting data of the two merging parties (i.e. HKT and CSL) below, albeit that such switching represents only a fraction of all consumer switching observed in the market.

CSL switching data

[✂]

Table 6 [✂]

Table 7 [✂]

Table 8 [✂]

The data shows that the "port-out" shares concerning CSL fluctuate significantly over time. [✂] The extent of these fluctuations demonstrates how quickly the competitive constraints posed by individual mobile operators changes, depending on the current positioning of each brand or the prevalence of specific pricing initiatives.

[✂]

Figure 3 [✂]

[✂]

The graph demonstrates that the competitive constraints posed by each MNO in the Hong Kong market can change rapidly over time, and sometimes within a few months. This suggests that pricing initiatives are rewarded by increased flows of customers switching to the MNO that has reduced the price, and conversely any price increases by MNOs are likely to be quickly defeated.

For example, the graph shows that SmarTone develops from posing a relatively unimportant competitive constraint on CSL in June 2012 [✂] to providing the individually most important competitive constraint only seven months later in January 2013 [✂]. This development appears to be closely related to the pricing initiative launched by SmarTone in August 2012, when it started offering a HK$80 unlimited data usage plan at 384kbps data speed with 1,700 voice minutes. Similarly, China Mobile saw a significant increase in its ratio in January 2013, when it launched its 3G Lite plan (offering the same conditions as SmarTone offered starting in August 2012). Meanwhile, Hutchison developed from CSL's closest competitor in 2011 [✂] to its most distant competitor throughout 2013 [✂].

These examples further reinforce the notion that any analysis of the closeness of competition in Hong Kong's mobile market is, at best, a snapshot of the current competitive situation, and demonstrates that any MNO can pose a more important competitive constraint provided it positions its brands and pricing packages accordingly.

[✂]

Table 9 [✂]

The table shows that CSL won customers from each rival largely in line with their market shares, and that the imbalances between market shares and switching shares are relatively minor.

In summary, the switching data for CSL suggests that SmarTone currently exercises an important competitive constraint on CSL, whereas the competitive constraint posed by Hutchison appears to have declined over the last two years. CSL itself, in turn, gains subscribers from other MNOs largely in proportion to their subscription market shares. More importantly, however, the data confirms once more that the extent to which one MNO poses a competitive constraint on another MNO can change very rapidly, and that the extent to which two rivals may have competed vigorously in the past does not preclude other rivals from providing equally or more important competitive constraints in the future.

<u>HKT switching data</u>

[✂]

Table 10 [✂]

Table 11 [✂]

Table 12 [✂]

The data shows once again that the "port-out" shares (concerning HKT) fluctuate significantly over time, and much more so than market shares. The data also shows that, in 2013, each rival MNO acquired at least [✂] of the customers lost by HKT in 2013.

[✂]

Figure 4 [✂]

[✂]

The graph demonstrates the extent to which competitive constraints posed by each MNO can change over time, and sometimes within a few months. As in the case of CSL's switching data discussed above, this suggests that pricing initiatives are rewarded by increased flows of customers switching to the MNO that has reduced the price, and conversely any price increases by MNOs are likely to be quickly defeated.

For example, the graph shows that SmarTone develops from posing a relatively unimportant competitive constraint on HKT's in July 2012 to providing the individually most important competitive constraint only five months later in December 2012 [✂]. The timing of this development appears to be closely related to the pricing initiative launched by SmarTone in August 2012 (when it started offering a HK$80 unlimited data usage plan at 384kbps data speed with 1,700 voice minutes). Similarly, Hutchison saw a short-lived increase in its ratio following the launch of its 4G rate plan in September 2013 (offering unlimited data usage 4G rate plan with Fair Usage Plan ("FUP") at 1GB for HK$130).

These examples and fluctuations show that any analysis of switching provides, at best, a snapshot of the current competitive situation, and demonstrates that any MNO can pose an important competitive constraint provided it positions its brands and pricing packages accordingly.

[✂]

Table 13 [✂]

The table shows that HKT won customers from each rival largely in line with their market shares, and that the imbalances between market shares and switching shares are relatively minor.

In summary, the switching data for HKT suggests that all MNOs obtain significant shares (i.e. [✂]% or more) of the subscribers lost by HKT, and as such should be expected to exert competitive pressure on HKT. Moreover, HKT itself gains subscribers from other MNOs largely in proportion to their subscription market shares. Finally, the HKT switching data confirms that the extent to which one MNO poses a competitive constraint on another MNO can change very rapidly.

Conclusion

Using the number portability data to assess the extent to which MNOs appear to compete with one another shows that both CSL and HKT face relatively similar constraints from each of their rivals: each rival to CSL captured between [✂]% and [✂]% of CSL's lost customers and each rival to HKT captured between [✂]% and [✂]% of HKT's lost customers in 2013. At the same time, both CSL and HKT gain subscribers from other MNOs largely in proportion to their subscription market shares.

More importantly, however, the analysis of the switching data for both parties has shown that the competitive constraint posed by an MNO can change very rapidly. Indeed, the analysis shows that MNOs can reposition themselves relatively quickly by adjusting their voice and/or data plans, which in turn can have significant consequences for the switching data analysis.

Finally, we reiterate that an analysis of closeness of competition based on porting data alone, as covered in this section, not only fails to capture the potential for (future) dynamic reactions by MNOs in response to any price changes, but it is also based on a relatively small and potentially biased set of data. Any conclusions to be drawn from this data therefore have to be treated with extreme caution.

3. The proposed transaction is unlikely to result in adverse competitive effects through an accumulation of spectrum

3.1. Relevance of spectrum for the assessment of the transaction

The core of an assessment of a proposed merger between MNOs is whether sufficient competition remains in the market for unilateral effects not to occur.

The competitive constraint that an MNO can exert on other MNOs is dependent on the available capacity on its network to grow its position in the market (directly, through attracting additional subscribers, or indirectly, through contracting with new MVNOs). If one or more MNOs would be faced with significant (spectrum based) capacity constraints, this may well impair the ability of such operators to actively compete in the market. Therefore, a competition authority may look at the distribution of spectrum in the market.

It is important to recognize however that if competition from the remaining MNOs in the market is sufficient to prevent price increases to occur (i.e. unilateral effects) as a result of a merger, there is no spectrum issue relevant to the assessment of the competitive effects of a merger.

3.2. The current spectrum allocation

The total amount of spectrum made available to mobile operators by the Hong Kong Communications Authority, as of December 2013, amounts to 610 MHz. The spectrum available for MNOs is spread across several blocks, including the below 1 GHz band, the 1700-1800 MHz band, the 1900-2100 MHz band, the 2.3 GHz band and the 2.5/2.6 GHz band. However, not all spectrum is equal:

- <u>Below 1 GHz</u>: spectrum on the below 1 GHz spectrum band is the most valuable as it provides superior indoor coverage compared to all other spectrum bands. This is especially relevant in densely populated mobile network markets such as Hong Kong.

- <u>1700-1800 MHz</u>: The 1700-1800 MHz spectrum band has been largely refarmed to provide 4G services.

- <u>1900-2100 MHz</u>: This block is used by mobile operators to provide 3G services.

- <u>2.3 GHz</u>: This block has been designated to be used to provide 4G services, in particular the new TD-LTE technology.

- <u>2.5-2.6 GHz</u>: This spectrum block has been designated to be used to provide 4G services, in particular LTE services.

Currently, a total of 6 parties have obtained licenses to one, or several, of the spectrum blocks designated for mobile services. The figure below gives a detailed overview of the current spectrum allocation.

Figure 5: Current Spectrum Allocation (December 2013)

		Hutchison Telecom Hong Kong Holdings	SmarTone	中国移动通信 CHINA MOBILE	PCCW 電訊盈科	世纪互联 www.21vianet.com
Below 1Ghz	800/900(16.6M);	900MHz (10M); 800/900(16.6M)	850MHz(10M); GSM 900(16.6M)	Mobile TV (8M)	CDMA2000 (15M);	NA
3G	19/2100MHz(29.6M); 1900 (5M)	19/2100MHz(29.6M); 1900 (5M)	19/2100MHz(29.6M); 2000(5M)	NA	19/2100MHz(29.6M); 1900 (5M)	NA
4G	DCS1800(46.4M)*; 2.5/2.6GHz (40M)	1700/1800(23.2M)*; 2.3Ghz (30M); 2.5/2.6GHz (20M) (w/PCCW)**	DCS1800(26.4M)*; 2.6GHz (20M)	DCS1800(26.4M)*; 2.3GHz (30M); 2.6GHz(40M)	DCS 1800(26.4M)*; 2.5GHz (20M) (w/HTHKH)**	2.3Ghz (30M)
Total Spectrum	137.6Mhz	134.4Mhz	107.6MHz	104.4 Mhz	96.0Mhz	30.0 Mhz

*Source: HKT. Note that the spectrum overview does not yet take into account the effect of the sale of 8MHz of (Below 1 GHz) spectrum by China Mobile to HKTVN in early 2014. However, this spectrum does remain in the market. *) [✂] **) Taking 50% of the joint acquisition of 2.5-2.6 GHz spectrum by PCCW and 3HK into account.*

Given the current allocation, the MNOs in the Hong Kong mobile market have the following holdings:

- <u>CSL</u>: CSL currently has access in aggregate to the most spectrum of all MNOs, slightly more than Hutchison, having acquired licenses for a total of 137.6 MHz. This is due in part to the fact that CSL has a significant holding of 1800 MHz spectrum by virtue of its merger with NWM in 2006 (as NWM's spectrum licenses were acquired by CSL). However, due to the inferior quality of the DCS1800 spectrum compared to the below 1 GHz band, this does not give CSL a direct competitive advantage (through increased network quality or otherwise) over its rivals. Moreover, CSL has a smaller allocation in the below 1 GHz band than its main rivals Hutchison and SmarTone, and furthermore did not manage to acquire the 2.3 GHz spectrum license necessary to deploy the new TD-LTE technology, which may put it at a slight disadvantage compared to its rivals going forward.

- <u>Hutchison</u>: Hutchison currently has access to all spectrum bands, having successfully acquired spectrum blocks suitable for all services. Moreover, Hutchison not only has the second largest amount of spectrum of 134.4 MHz in total, but it has also obtained the joint-largest share of the valuable below 1 GHz band. Finally, Hutchison is also well placed in the 4G spectrum segment, having acquired spectrum both in the 2.3 GHz band as well as in the 2.5-2.6 GHz band (together with HKT/PCCW) in addition to its holding in the 1800 MHz spectrum. Overall, therefore, Hutchison is probably the best placed of all competitors active in the Hong Kong mobile market in terms of spectrum allocation.

- <u>SmarTone:</u> SmarTone has access to 107.6 MHz of spectrum. This spectrum includes the joint-largest share of the valuable below 1 GHz band, allowing SmarTone to offer a superior network quality compared to most of its rivals. While SmarTone has only obtained a 20 MHz allocation in the 4G spectrum segment, it has instead built an extensive LTE network using its 1800 MHz band, allowing it to offer 4G services to its customers.

- China Mobile: China Mobile currently has the fourth largest spectrum allocation with 104.4 MHz of spectrum available.[18] While China Mobile is exceedingly well positioned in the 4G spectrum, having acquired a total of 70 MHz of spectrum in the 2.3 GHz and 2.5/2.6 GHz bands, it does not currently hold any below 1 GHz spectrum band[19] and does not own any 3G spectrum licenses (i.e. 1900 MHz to 2100 MHz). While the roll-out of its 4G spectrum and the re-farming of its 1800 MHz spectrum are likely to alleviate this problem, China Mobile currently relies on access to other networks for 3G coverage. We understand that it would be technically possible for China Mobile to switch its mobile customers to another 3G network if its current agreement with HKT were to end. Moreover, China Mobile will likely be able to redress its lack of 3G spectrum in the upcoming 3G spectrum auction in 2014.

- PCCW / HKT: Notably, HKT currently has the smallest amount of spectrum of the five MNOs active in the Hong Kong market, with a total spectrum holding of 96 MHz. Moreover, HKT does not have spectrum in the below 1 GHz band (other than its 850 MHz/CDMA 2000 spectrum, which is only used for inbound roaming services), and has only acquired a relatively small block of 4G spectrum. As a result, HKT is not well positioned in terms of the spectrum available to it.

- 21 ViaNet: 21 ViaNet has recently acquired 30 MHz in the 2.3 GHz band. It does not currently hold any other spectrum licenses, and its network is not yet operational (but is subject to a roll-out requirement that stipulates a minimum coverage of 50% of the population to be reached by March 2017).

- MVNOs: There is a large number of MVNOs active in the Hong Kong mobile market. MVNOs negotiate terms with the MNOs for use of their networks on commercial terms and do not have their own spectrum. MVNOs, and particularly “full” (infrastructure) card-issuing MVNOs that can re-direct their traffic easily, can switch between MNOs. In addition, a number of pure resellers exist in the market and they too can move between different MNOs. One example of a MVNO moving between networks is [✂].

In preparation for the upcoming re-assignment of 3G spectrum licenses, consultants from *Network Strategies*, in a study for OFCA, assessed whether existing network design capacity is sufficient to accommodate existing and future demand. *Network Strategies* analysed the current spectrum allocation across MNOs as well as the relevant alternative allocations that may follow after the 3G re-assignment. Their results show that given the

[18] This figure still includes the 8 MHz of spectrum that China Mobile has sold to HKTVN in January 2014, see footnote below.

[19] China Mobile had initially obtained a license for 8 MHz of spectrum in the 678-686 MHz range in June 2010, but this spectrum is designated to be mostly used for Mobile TV rather than 2G services. We understand that China Mobile has now sold this spectrum to HKTVN, reducing its total spectrum holdings (but not the total spectrum in the market).

current spectrum allocation, "*there is sufficient network design capacity to accommodate all demand. This is due to the fact that there is significantly more capacity than demand on the 4G networks at present.*"[20] This suggests that the MNOs active in the Hong Kong mobile market are not currently capacity constrained due to a lack of spectrum. *Network Strategies* also concluded that sufficient capacity is being made available for MVNOs.[21]

Moreover, we understand from the parties that it is likely that additional spectrum (i.e. the "digital dividend" spectrum; that is, the spectrum which is released in the process of digital television transition) is tentatively scheduled for 2015.[22] The release of this spectrum would further reduce the likelihood of any MNOs active in Hong Kong being capacity constrained in the future.

While the current imbalances in the 3G spectrum allocation (i.e. China Mobile not having its own spectrum in this range) are expected to be alleviated by the increasing roll-out of China Mobile's 4G network (as well as the impending 3G auction, see following sub-section), OFCA's access regulation requiring each network operator to make available at least 30% of its 3G spectrum to MVNOs or other operators interested in entering a network sharing/national roaming agreement ensures that neither China Mobile nor the various MVNOs will be capacity constrained in the meantime.[23]

The current imbalances in the allocation in the below 1 GHz spectrum range do appear to have some repercussions. [✂] These network quality differences were predominantly due to the 3G coverage and speed experience, which may be influenced by the availability of the below 1 GHz spectrum to each operator.

In summary, the current spectrum allocation including the 3G spectrum access regulations mean that there is currently sufficient network capacity to accommodate all demand, and that there is ample opportunity for MVNOs to provide mobile services to their customers. However, [✂] there appear to be some differences in network quality that may (at least in part) be related to the spectrum allocation (in particular in the below 1 GHz band), [✂]. These differences in network quality may well decrease as 4G services are rolled out further.

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[20] See Network Strategies, "*Final report for OFCA: Re-assigning the spectrum in the 1.9–2.2GHz band - Impacts on service quality and customers of adopting a hybrid between administratively-assigned and market based approach*" 29 August 2013, p. iv.

[21] *Ibid*, p. 13: "*Under the terms of the licences for 3G spectrum, 3G MNOs have an obligation to make available 30% of their network capacity in the 1.9–2.2GHz band to third parties (for MVNO arrangements). Although the terms and conditions of MVNO deals are commercially negotiated, we understand from OFCA that there have been no complaints from any parties concerning a lack of availability of spectrum for such arrangements. This implies that sufficient capacity is being made available for MVNOs*."

[22] Although this date may slip several years to enable China-wide harmonisation consistent with the Asia Pacific Telecommunity ("APT") 700 MHz band plan.

[23] To the best of the parties' knowledge, the 30% provision has never been invoked by any MVNO, as they have instead successfully negotiated access to the MNOs' networks on commercial terms. Moreover, we understand that the provision is unlikely to remain in force once the 3G spectrum has been re-auctioned.

3.3. The likely effects of the proposed transaction

The proposed transaction is unlikely to have adverse effects on the current spectrum allocation:

- In the valuable below 1 GHz band, HKT currently has no spectrum available that can be used for domestic retail services. Therefore, the proposed transaction will not lead to a change in the spectrum market shares in this band, and cannot have a negative impact on competition. Instead, HKT's customers gaining access to CSL's below 1 GHz spectrum may increase the service quality that HKT can offer, thereby increasing competition.

- In the 3G spectrum band, the transaction will combine two of the four 3G incumbents, resulting in a market share of close to 50% in this band. However, commercial agreements and the access regulations imposed by OFCA, stipulating that 30% of each operator's 3G spectrum has to be made accessible for other operators and MVNOs, will ensure that the parties' 3G spectrum will continue to be used in the same way as pre-merger. This is further reinforced by the up-front commitments offered by the parties, stipulating that they would continue to provide all wholesale services now provided by CSL and HKT (e.g. MVNO, resale and network sharing agreements) and would not retain more than 2x15 MHz of their current 3G holdings or participate in the 3G spectrum auction. Finally, the 3G spectrum auction in 2014 will lead to a (partial) re-assignment of the 3G spectrum, meaning that any imbalances are likely to be only temporary (see also below).

- In the 4G spectrum band (i.e. the refarmed 1.8 GHz spectrum as well as the 2.3 GHz and 2.6 GHz spectrum bands), CSL and HKT will, by combining their spectrum allocations, hold licences to approximately [✂]% of the available spectrum [✂]. China Mobile remains the MNO with the second largest endowment in this spectrum band, accounting for [✂]% of the total available spectrum [✂]. However, the parties' combined share in this band should not raise competition concerns, as there is currently ample 4G spectrum capacity available. In particular, each of the other MNOs currently has sufficient spectrum in the 4G bands. Moreover, the carrier-neutral 21 ViaNet has obtained a part of the 4G spectrum and has indicated previously that it will likely offer access to its network both to MVNOs and to other MNOs (e.g. via network sharing agreements) once it has been deployed.[24] Furthermore, *Network Strategies*' analysis of the current spectrum allocation concluded that "*there is significantly more capacity than demand on the 4G networks at present.*"[25] This view is reflected in the CA's statement on the arrangements for the upcoming auction, where the CA states that

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[24] See http://globenewswire.com/news-release/2012/02/07/467361/245044/en/21Vianet-Acquires-2-3-GHz-BWA-Spectrum-in-Hong-Kong.html.

[25] See Network Strategies, "*Final report for OFCA: Re-assigning the spectrum in the 1.9–2.2GHz band - Impacts on service quality and customers of adopting a hybrid between administratively-assigned and market based approach*" 29 August 2013, p. iv.

> "*there is ample capacity available in the 4G networks to meet mobile data service demand.*"[26]

On the basis of the above, the most likely effects arising from the proposed transaction would be pro-competitive: the combination of their activities allows both HKT and CSL to improve the network quality for their own customers, and thus provide a more competitive service. Post completion, HKT customers could directly benefit from being able to access CSL's below 1 GHz spectrum, offering improved indoor coverage as well as access to CSL's LTE network, which has been rolled out to a greater degree than HKT's 4G network. CSL's customers, on the other hand, would benefit from HKT's extensive WiFi network, improving network speeds in peak-times. Taken together, these improvements will help the merged entity to better compete with the network quality offered by Hutchison and SmarTone.

Moreover, the merged entity is likely to be able to operate more efficiently than either HKT or CSL currently do. Post-merger, the parties expect to be able to realise operating cost savings, in particular by optimising their radio access network and associated transmission assets and by realising economies of scale. For example, the merged entity will be able to significantly decrease the number of cell sites, which would reduce rental fees and equipment costs. Similarly, there may be a rationalization of shop leases over time, which would produce additional savings. Finally, further savings might come from lower tunnel and MTR costs and lower licence fees. Taken together, these savings are roughly estimated to be several hundred million HK dollars per year.

Taken together, these effects will allow the merged entity to provide an improved service at lower cost, and potentially free up HKT/CSL to invest more funds in innovation or network up-grades.

3.4. The upcoming spectrum auction

The existing assignments for the provision of 3G mobile services end in October 2016. The Communications Authority ("CA") has decided to re-auction the 3G spectrum for a period of 15 years, using a so-called hybrid "administratively-assigned cum market-based approach".

Currently, four MNOs (HKT, CSL, SmarTone and Hutchison, "the 3G incumbents") have 29.6 MHz (i.e. 2x14.8 MHz) of 3G spectrum each that will be covered by the auction.[27] The set-up of the auction is such that it divides each of the 3G incumbents' spectrum into three paired slots of 9.9 MHz (i.e. 2x5 MHz), resulting in a total of 12 slots. In a first step of the auction, each incumbent is given the right of first refusal for two-thirds of its current

[26] See Statement of the Communications Authority and the Secretary for Commerce and Economic Development, "*Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz Band upon Expiry of the Existing Frequency Assignments for the Provision of 3G Mobile Services and the Spectrum Utilisation Fee",* 15 November 2013, p. 13.

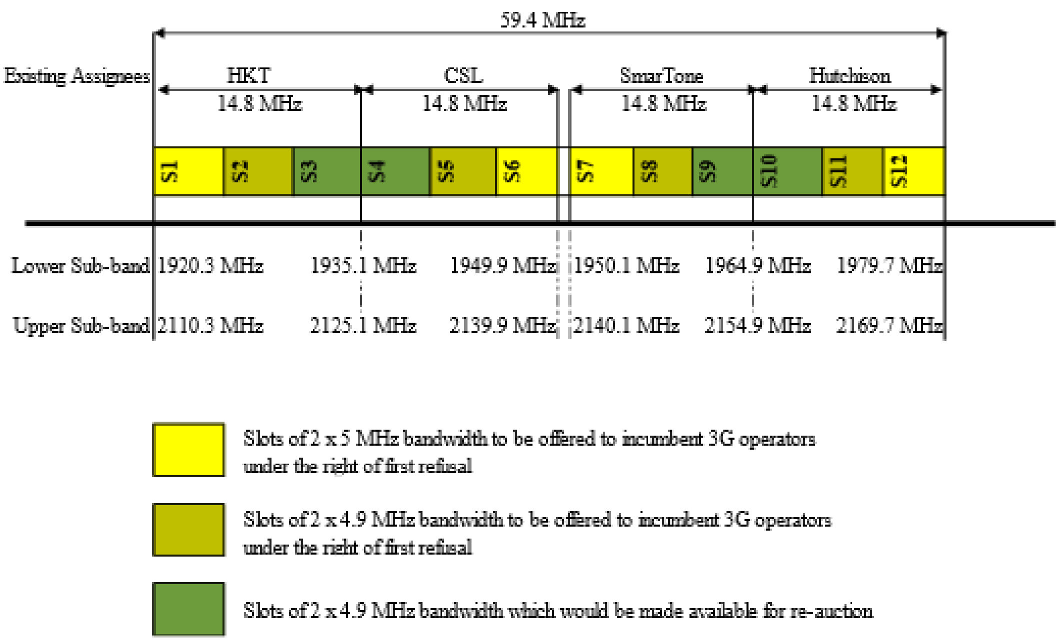
[27] The four MNOs will also be required to give up 5 MHz of unpaired (TDD) spectrum they currently hold in the 3G spectrum band. This spectrum is not part of the auction in 2014, but instead will be put back to reserve.

spectrum (i.e. 2 slots amounting to 2x9.9 MHz). The price for these slots is set at the higher of the average auction result for the remaining spectrum (capped at HK$86m/MHz) and a pre-set price level of HK$66m/MHz.

Once the 3G incumbents' right of first refusal elapses, any unclaimed slots as well as the remaining four slots (one from each 3G incumbent's allocation) for which no such rights have been granted are auctioned off in a "market based" auction. Any interested party, which is likely to include the four incumbent 3G operators as well as China Mobile, is allowed to take part in this auction.[28] The starting price of the auction is set at HK$48m/MHz, and the 3G incumbents are subject to the constraint that no one party is allowed to acquire more than 2x20 MHz of 3G spectrum in total.

The figure below presents a graphic representation of the auction design. In short, the slots S1 and S2 (HKT), S5 and S6 (CSL), S7 and S8 (SmarTone), and S11 and S12 (Hutchison) will be allocated via a first right of refusal, and any unclaimed slots as well as S3, S4, S9 and S10 will subsequently be available for re-auction.

Figure 6: Band plan for the re-assignment of the 3G frequency spectrum in the 2014 auction



Source: CA

[28] Although there will be a roll-out requirement for any spectrum that is "reassigned" (that is, allocated to a party other than the current incumbent), whereas renewals will not carry such a requirement.

According to market reports,[29] speculation prior to the announcement of the proposed merger between CSL and HKT (and the HKT commitments) was that each of the four incumbents would likely invoke their right of first refusal on all of their slots. Concerning the four slots that were expected to be available for re-auction, it was speculated that China Mobile would aggressively bid for at least two of these slots (i.e. 2x10 MHz), possibly "*at any cost*". Concerning the remaining two slots, it was speculated that Hutchison and CSL might bid most aggressively to each retain their current 2x15 MHz position, while SmarTone and HKT were believed to give up bidding if the price became too high.[30] Final auction prices are expected to be as high as HK$80m/MHz, meaning that both slots acquired via first refusal and slots acquired in the free auction would fetch the same price.

If this result would come to bear, i.e. <u>absent the proposed transaction</u>, China Mobile would essentially take over one-third of HKT's and SmarTone's spectrum each, putting its 3G spectrum allocation on par with those two operators (at 2x10 MHz) while CSL and Hutchison would retain the largest spectrum allocation (2x15 MHz). This would eliminate China Mobile's need to use HKT's 3G spectrum via MVNO agreements from October 2016. HKT, in turn, would be able to accommodate its relatively small mobile subscriber base on two-thirds of its current 3G spectrum. SmarTone, finally, would be expected to be able to compensate for the reduction in 3G capacity by "refarming" its 900 MHz and using its new 4G spectrum instead.

In summary, the 3G spectrum auction in 2014 would likely alleviate any spectrum allocation imbalances without creating binding capacity constraints for any of the 3G incumbents.

3.5. The likely effects of the proposed transaction (including the offered commitments) on the spectrum auction

Despite the fact that (i) the proposed transaction is unlikely to have adverse effects on the spectrum allocation and (ii) the upcoming spectrum allocation in 2016 is likely to address any existing imbalances in the 3G spectrum allocation, the parties have offered, as part of their notification, an additional up-front remedy that directly impacts their behaviour in the upcoming auction:

> *"HKT/CSL would acquire not more than a total of 2x15 MHz of spectrum in the 1.9–2.2 GHz band ("3G Spectrum") upon expiry of the existing assignment of the 3G Spectrum in October 2016. HKT and CSL would not participate in the auction for the 3G Spectrum. More specifically, HKT and CSL commit that each would not seek to renew the*

[29] See for example Merrill Lynch Rating Change Report, "*Hong Kong Telcos - Cautious on near term outlook and 3G re-auction"*, 19 November 2013.

[30] *Ibid*: *"HTHK and CSL may also be aggressive to bid the spectrum, even at higher prices, because their larger subscriber base will need more spectrum to support. SmarTone said in the past that they may set a price cap of their own for the auction, if the price is higher than the cap, they will give up the 1/3 of the spectrum. We believe SMT has enough spectrum at 2G 850MHz to refarm and new 4G spectrum at 2600MHz to make up the lost capacity in 3G."*

> *assignment of 2x5 MHz of 3G spectrum respectively in the 1930.2 – 1935.1 MHz paired with 2120.2 –2125.1 MHz, and 1935.1 –1940.0 MHz paired with 2125.1 –2130 MHz upon expiry of the existing assignment in October 2016; HKT further commits that it would not seek to renew the assignment of/acquire 2x5 MHz of 3G spectrum in the 1920.3 – 1925.3 MHz paired with 2110.3 –2115.3 MHz bands; and HKT and CSL commit that they would not participate in the auction for the 3G Spectrum."*

In other words, HKT/CSL may at most invoke their right of first refusal for only three of their four slots (i.e. slots S2, S5 and S6, but not S1, in Figure 6 above), and will abstain from bidding on any other slots during the auction.

Absent the proposed transaction, the likely counterfactual scenario resulting from the 2014 auction would be as described in the previous sub-section, i.e. China Mobile would likely gain at least 2x10 or more MHz.

Compared to this counterfactual scenario, the proposed transaction including the up-front remedy will mean a few changes. Firstly, rather than each 3G incumbent invoking their rights of first refusal for the maximum amount of slots, HKT and CSL will only retain three of their four slots. This means that the number of slots available in the 'free auction' increases from 4 to 5, as slot S1 will become available in addition to the slots S3, S4, S9 and S10.

Secondly, the number of potential bidders in the 'free auction' decreases by two, as both HKT and CSL will no longer bid for additional slots. This is especially relevant in the case of CSL, which was initially expected to be one of the more aggressive bidders (see previous section).

Taken together, these two changes (i.e. more spectrum and fewer bidders) are likely to lead to a decrease in prices during the 'free auction' compared to the counterfactual scenario.[31] This price decrease will free up additional funds for the various major network operators, and/or make entry into the Hong Kong mobile market less costly.

For example, the fact that five rather than four slots will be up for auction might mean that Hutchison and SmarTone no longer have to bid head-to-head against China Mobile when aiming to retain their entire current 3G spectrum. Whereas in the counterfactual scenario, with demand from these parties exceeded supply, the proposed transaction including the up-front remedy means that even after SmarTone and Hutchison re-acquire one of their slots via the 'free auction', three slots of 3G spectrum (i.e. S1, S3 and S4) remain for China Mobile, which is more than enough for China Mobile to meet its 3G demand.

The proposed transaction (including the up-front commitment) is thus likely to create a significant positive effect for Hutchison, SmarTone and China Mobile, compared to the

[31] Indeed, it may well be that supply exceeds demand, and that all spectrum will be auctioned at the minimal prices.

counterfactual scenario.[32] Lowering the cost of acquiring spectrum, in turn, is likely to free up funds that Hutchison, SmarTone and China Mobile could instead utilise to further upgrade their networks (e.g. by increasing the speed at which they roll out their 4G and LTE networks), which will ultimately benefit consumers. Fewer bidders makes it more likely that SmarTone and Hutchison will at least retain their 3G spectrum amounts, and that China Mobile will obtain substantial 3G spectrum.

3.6. MVNO access

The proposed transaction is not likely to have adverse effects on commercially negotiated wholesale access terms for MVNOs. Currently MVNOs can negotiate access terms with five MNOs (i.e. all MNOs currently offer wholesale services) and the proposed transaction will reduce this number to four. HKT has offered the up-front commitment to maintain all current MVNO agreements of both HKT and CSL, which would mean existing terms for these MVNOs will not worsen.

Post-merger, new and existing MVNOs would still be able to (re)negotiate access terms with four MNOs. Since MNOs have an interest to fill-up the available capacity on their networks, MNOs are likely to compete for MVNOs that would want access. The nature of competition for such MVNO contracts would be comparable to bidding markets, in which a limited number of players can be sufficient to achieve competitive outcomes. Indeed, the European Commission considered three MNOs sufficient for a competitive MVNO access market in the Dutch T-Mobile/Orange case.[33]

Moreover, and as mentioned before, MNOs have an obligation to make available 30% of their network capacity in the 1.9-2.2 GHz band to third parties (for MVNO arrangements), under the terms of the licences for 3G spectrum. The proposed transaction will not reduce the overall level of 3G spectrum (i.e. 30%) available to MVNOs under the licence requirements.

As concerns 4G spectrum, MVNOs may in fact soon rely on five wholesale services providers, provided that 21 ViaNet indeed rolls out its network and would provide MVNOs with wholesale access to its 4G network.

[32] A similar view is expressed in various market reports, including JPMorgan Asia Pacific Equity Research, *"Hong Kong Telecom"*, 20 December 2013: *"HKT's spectrum decision also largely increases the chances that [Hutchison and SmarTone] will get back their spectrum in the upcoming auction, and the prices are likely to be below earlier market expectations, as there will be two fewer bidders, but 25% more spectrum*."

[33] See European Commission, COMP/M.4748 - T-MOBILE / ORANGE NETHERLANDS, para. 47-61.

4. The potential impact of the transaction on HKT's activities in related markets

This section explores the potential for anticompetitive effects arising in related markets (i.e. markets other than the market for mobile services) as a result of the proposed combination of HKT's and CSL's activities in Hong Kong. In particular, we aim to address the following potential concern raised by OFCA in its consultation paper of 23 December 2013:

> *"Given that HKT is also an incumbent FNO in Hong Kong, the Proposed Transaction may have potential impact in terms of conferring on HKT, as an integrated fixed and mobile network operator, market power or enhanced market power in other relevant telecommunications markets. This may include the market power to offer interconnection services or backhaul facility services for MNOs without significant competitive constraints."*

In other words, OFCA is posing the question whether the proposed transaction would allow HKT/CSL to combine or bundle its fixed and mobile services in such a way that it would confer a unique competitive advantage upon the merged entity, e.g. because its rivals cannot offer similar bundles. Alternatively, the proposed transaction may change the pricing incentives for the merged entity such that it would be less likely to offer (discounted) bundles of fixed and mobile services post-merger, thereby effectively resulting in a price increase for consumers in the fixed network market.

In the remainder of this section, we will first give a brief overview of the current prevalence of fixed/mobile bundles in the Hong Kong market. We will then analyse the potential effects of the transaction, addressing each of the two concerns outlined above.

4.1. Bundled fixed and mobile telephony services currently play only a minor role in the Hong Kong market

HKT is the incumbent primary fixed network service provider in Hong Kong. It provides a broad range of voice and data services (both local and international) over a predominantly fibre network (e.g. FTTB and FTTH) to both consumers and business customers. However, fixed/mobile bundles (defined as offers with a single monthly fee for both fixed and mobile services) only play a very minor role in HKT's pricing strategy:

- In the consumer segment, HKT several years ago launched such bundles (bundling either fixed line or broadband services together with mobile services) [✂].
- In the commercial segment, HKT has only rarely offered bundles where a single monthly fee covered both fixed and mobile services.
- HKT has made some attempts to cross-sell (rather than bundle) mobile services to its fixed-line customer base among certain target customer groups:

- [✂].
- [✂].

In summary, the degree of fixed/mobile bundling employed by HKT is very limited. [✂]

[✂] As a whole [✂] HKT focuses on its value proposition to the customer [✂]. Its value-focus means that HKT [✂] does not engage in fixed/mobile bundling to a significant extent.

Indeed, bundles of fixed and mobile services do not currently play a significant role in the Hong Kong market as a whole. The few such bundles that are currently on offer (other than those offered by HKT) are provided predominantly by Hutchison. Hutchison integrated its residential fibre broadband and fixed telephony services into its '3' brand in July 2010 as part of a plan to achieve greater integration between fixed and mobile units, launching its '3ree Broadband' brand via promotions bundling FTTB access with discounted residential fixed telephony and mobile services in addition to free usage of 3's public Wi-Fi hotspots.[34] This puts Hutchison in a position to offer fixed/mobile bundles that are similar to those that HKT can currently offer. To the best of the parties' knowledge, Hutchison's focus in this regard has been in the corporate segment (where it offers tailor-made proposals), but it has not currently tried to use aggressive pricing of fixed/mobile bundles to gain market share in the consumer segment.

SmarTone, CSL and China Mobile do not currently have any fixed-line operations in Hong Kong, and are therefore unable to offer meaningful fixed/mobile bundles. They do, however, offer bundles granting their mobile customers access to their (or their affiliates') Wi-Fi broadband networks, thereby replicating some of the features of fixed/mobile bundles.

4.2. The likely effects of the proposed transaction

In this section, we explore the likely effects of the transaction and show that the transaction is unlikely to confer market power on HKT in telecommunications markets other than mobile services. In particular, we show that the transaction does not give the merged party a unique advantage over its competitors (in both the mobile and the fixed network markets) compared to the pre-merger counterfactual. Moreover, we show that the proposed transaction is unlikely to alter significantly HKT's pricing incentives regarding fixed/mobile bundles.

4.2.1. The transaction will not give HKT/CSL a unique advantage over its competitors compared to the counterfactual situation

The proposed transaction will not give the merged party a unique advantage over its competitors compared to the counterfactual situation. This is because the transaction will

[34] See TeleGeography report "*GlobalComms Database - Hong Kong*", 2 January 2014, p. 28

not allow the merged party to offer any additional services or new combinations of bundles that HKT cannot already offer now (pre-merger): acquiring CSL does not add any additional (mobile or fixed) services to the portfolio that the HKT/PCCW group cannot already offer to its customers.

Instead, the transaction may give CSL's mobile customers access to the (very few) fixed/mobile bundles offered by HKT/PCCW. Moreover, HKT/PCCW will in principle be able to offer its fixed customers bundles involving not only HKT's, but also CSL's mobile services post-merger. Put differently, the merged entity will only be able to sell the same types of bundled services as before, but will be able to make these bundles available to a (somewhat) larger customer base.

This change is unlikely to have significant effects or change the competitive balance, however: the current market developments show that fixed/mobile bundles only play a minor role in competition for fixed or mobile customers. After all, if fixed/mobile bundles were able to significantly influence competition and help in transferring market power (or high market shares) from one market to another, HKT (and Hutchison) would surely have geared its marketing efforts much more towards fixed/mobile bundles pre-merger and conversely its market share would have grown significantly (certainly relative to CSL, which currently cannot offer similar bundles). This is demonstrably not the case, however: the evidence [✂]. Equally, if fixed/mobile bundles truly had a significant positive impact on HKT's market share or retention rate in the fixed telephony services market, one would expect that such bundles would play a much more significant role in the market. Instead, the limited number of such bundles sold by HKT (and Hutchison) pre-merger provides clear evidence that being able to offer such bundles does not confer a significant competitive advantage.

Moreover, some of its competitors, in particular Hutchison (but also any other MNO that opts to cooperate with a FNO), will continue to be able to replicate any fixed/mobile bundles that the merged entity will be able to offer post-merger. That is, the planned transaction will not allow the merged entity to combine its services in a unique fashion that cannot be matched by its rivals. In fact, the potential increase in the quality of the mobile network of the merged entity vis-à-vis HKT's current network quality will only serve to put its bundles on par with those that Hutchison can offer, as Hutchison currently has access to a superior mobile network compared to HKT.

In summary, the proposed transaction will not confer any unique advantage on the merged entity over its rivals, compared to the counterfactual situation (i.e. pre-merger).

4.2.2. The transaction is unlikely to alter significantly HKT's pricing incentives in the fixed telephony market

Alternatively, OFCA may be concerned that that the proposed transaction is likely to alter HKT's pricing incentives such that it would be less likely to offer (discounted) bundles of fixed and mobile services post-merger, thereby effectively resulting in a price increase for consumers in the fixed network market.

In order for this concern to hold, however, HKT would have to price its fixed/mobile bundles aggressively pre-merger and offer these to a significant number of (potential) customers. The current market developments, described in detail in Section 4.1 above, show that this is not the case however: [✂]. It follows that there is only very limited, or no, scope for the proposed transaction to further reduce the amount of (discounted) bundles offered by the parties post-merger (compared to the counterfactual situation). The merger is therefore unlikely to change its pricing incentives in a way that makes consumers worse off.

Moreover, and as explained above, the mobile/fixed bundles currently offered by HKT are aimed at promoting mobile services to existing fixed customers, either to acquire additional mobile subscribers or to retain existing fixed line customers by offering additional discounts. The proposed transaction is unlikely to change HKT's incentives in this respect, as it will not lead to a change of the merged entity's market share in the fixed network market. That is, the incentives to acquire additional or retain existing fixed telephony customers will remain unchanged.

5. Conclusions

This report has provided an economic assessment of the likely competitive effects arising from the HKT/CSL transaction, considering in particular whether the transaction is likely to give rise to (i) unilateral effects in the Hong Kong mobile market; (ii) adverse competitive effects through an accumulation of spectrum; and (iii) anticompetitive effects in related markets.

Our main conclusions and findings can be summarised as follows:

- **The proposed transaction is unlikely to give rise to unilateral effects.**
    - Our analysis has shown that the mobile market in Hong Kong is characterised by intense competition. The combined market share of the merging parties will not result (nor be likely to result) in a level of concentration in terms of market share or the number of MNOs remaining post-merger that would justify *a priori* concerns as regards the competitive impact of the transaction. Indeed, the degree of concentration following the proposed merger will remain low as compared to mobile markets in numerous other countries.
    - Our analysis also shows that although the retail offerings of individual MNOs are somewhat differentiated, none of the five MNOs appears to confine itself to any particular customer segment. Moreover, we have shown that there is little to prevent MNOs (or, indeed, MVNOs) in Hong Kong from repositioning their brand(s) and plans or from introducing additional brands, or plans to target additional subscribers in competition with other MNOs. As a result of this ongoing observed market dynamic, it is unlikely that a merger that reduces the number of MNOs in the market from 5 to 4, particularly in the presence of multiple MVNOs and with a combined market share of the merged party of only around 30%, will have the effect of substantially lessening competition.
    - Using available porting data, [35] we demonstrated that the degree of switching between two particular MNOs can (and frequently does) change quickly, either because MNOs reposition themselves by adjusting their voice and/or data plans or by repositioning or introducing a new brand. Given these competitive dynamics, a focus solely on the current (i.e. static) retail offerings of the various MNOs active in the Hong Kong market is inappropriate for assessing the likely competitive effects of the proposed transaction.

[35] We note that the porting data covers only a small (and potentially severely biased) proportion of consumer switching in the Hong Kong mobile market, and therefore cannot capture the full extent of competition prevalent in the market.

- **The proposed transaction is unlikely to result in adverse competitive effects through an accumulation of spectrum.**

    - An analysis carried out by *Network Strategies* at the request of OFCA suggests that under the current spectrum allocation, there is sufficient 3G network capacity to accommodate all demand, while 4G network capacity significantly outstrips demand at present. This analysis evinces that MNOs do not, in aggregate, face capacity constraints in competing for greater share of the market. Furthermore, there is ample opportunity for MVNOs to provide mobile services to their customers.

- **The proposed transaction is unlikely to give rise to anticompetitive effects in related markets.**

    - We have shown that bundled fixed and mobile telephony services do not play a significant role in the Hong Kong market. Moreover, we demonstrated that the proposed transaction will not give the merged party a unique advantage over its competitors compared to the counterfactual situation (or, indeed, offer its customers any bundled services that it cannot offer pre-merger), and argued that the transaction is unlikely to alter significantly HKT's pricing incentives in the fixed telephony market.

- **The proposed transaction is likely to give rise to <u>pro-</u>competitive effects.**

    - Moreover, our analysis has shown that the most likely effects arising from the proposed transaction would be pro-competitive: the combination of their activities will allow both HKT and CSL to improve the network quality for their own customers, and thus provide a more competitive and efficient service relative to their pre-transaction offerings.

    - Finally, we have argued that the upcoming 3G spectrum auction will likely alleviate any current spectrum allocation imbalances without creating binding capacity constraints for any of the 3G incumbents. We have shown that the proposed transaction, including the offered up-front spectrum commitment is likely to create a positive effect for Hutchison, SmarTone and China Mobile (and any potential new entrants), by freeing up additional spectrum as well as funds that can instead be utilised to further upgrade their networks.

A.1 MVNOs active in the Hong Kong mobile market

Table 14 MVNOs in Hong Kong

Licensee	License No.	Host MNO(s)*	Target Segment(s)
China Motion Telecom (HK) Ltd.	908	[✂]	Local HK-PRC roamers
China Unicom (Hong Kong) Operations Limited	922	[✂]	Local HK-PRC roamers
China-Hongkong Telecom Limited	951	[✂]	Local HK-PRC roamers
CITIC Telecom International Limited	1015	[✂]	Carrier VAS services
Telecom Digital Mobile Ltd.	1097	[✂]	Local mass (lower-spend)
IMC Networks Limited	1210	[✂]	Domestic helpers (Phil, Indo, Thai)
Technical Data Limited	1416	[✂]	
New World Mobility Limited	1445	[✂]	Local mass (lower-spend)
Truphone (Hong Kong) Limited	1568	[✂]	Local & foreign international roamers
Telekomunikasi Indonesia International (HongKong) Limited	1604	[✂]	Domestic helpers (Indo)
Future Power International Limited	1609	[✂]	
Airstar Telecom Holding Limited	1633	[✂]	
Delcom (HK) Limited	1650	[✂]	Foreign PRC-HK roamers
Amoeba Limited	1655	[✂]	
GreenRoam Limited	1660	[✂]	
Easycall Limited	1669	[✂]	
China Data Enterprises Limited	1677	[✂]	Foreign PRC-HK roamers
PLDT (HK) Ltd * – "*1528 Smart*"	-	[✂]	Domestic helpers (Phil)

*Source: Internal HKT information. *) [✂] **) [✂]*

A.2 Additional switching data for CSL and HKT

[✂]

A.3 Price comparison of SIM-only 4G (LTE) plans MNOs

MNO / Brand	< 1GB	1GB	2GB	5GB	Contract period (months) (+ compulsory VAS charges and administration fee per month)*
HKT	N/A	Unlimited min: $176	Unlimited min: $198	Unlimited min: $238 (10GB: $298; 20GB $398)	24 (+ $12 p.m.)
1O1O	300MB / 5000 min: $149 500MB / 5000 min: $169	5000 min: $219	5000 min: $259	5000 min: $329	24 (+ $0 p.m.)
O2F	300MB / 2000 min: $117 500MB / 2500 min: $137	3000 min: $187	4000 min: $217	5000 min: $267	24 (+ $12 p.m.)
NWM*	N/A	2500 min: $88	2500 min: $138 (3GB: $188)	N/A	12 (+ $12 p.m.)
SmarTone	600MB / 1000 min: $118	N/A	1600 min: $188	2400 min: $268	24 (+ $12 p.m.)
3HK	500MB / 1400 min: $118	2000 min: $168	2500 min: $198	3500 min: $248	24 (+ $30 p.m.)
China Mobile	N/A	1800 min: $128	N/A	Unlimited min: $218	24 (+ $12 p.m.)

*Sources: HKT, CSL, Hutchison, SmarTone, China Mobile (HK). Based on 4Glte sim-only plans, data & basic voice, including surcharges on the basis of 24-month subscription. SmarTone does not offer Wi-Fi, all other carriers offer unlimited Wi-Fi. *) Note that the NWM brand [✂] offers lower speeds than CSL's other brands.*