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Rebalancing Competition Policy to Stimulate Innovation and Sustain Growth

Chan, Jonathan and Fung, Herbert

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The Competition Commission of Singapore
45 Maxwell Road
#09-01 The URA Centre
Singapore 069118

Email: ccs_feedback@ccs.gov.sg

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Contents

Abstract. Innovation is fundamental to sustainable economic development because input resources are finite. When an economy faces constraints such as land and labour, innovation fuels continued growth through new technologies that utilises the limited resources more productively. Competition contributes to this process by providing a platform for new technologies to replace old ones, but excessive competition may also dampen the incentives to innovate.

We observe that, as innovative businesses are scalable, markets are becoming more concentrated, but product life cycles are becoming shorter, since disruptive innovation takes place in the broader ecosystem of separate but related markets. We also find that innovative products often do not conform to existing regulations.

In order to unleash the full potential of innovation as a driving force for sustained economic growth, we recommend a rebalancing of competition law and policy towards stronger enforcement against lateral anti-competitive activities versus horizontal and vertical ones. We also recommend more emphasis on competition advocacy versus antitrust enforcement.

Keywords: competition policy, antitrust, innovation, sustainable growth, economic development

Introduction

1. This paper explores the relationship between competition policy, innovation and economic growth[1]. Specifically, we discuss how competition policy affects innovation, and how innovation affects the sustainability of economic growth. We illustrate through case studies how innovation poses challenges to the status quo of competition policy and law. Based on our findings, we recommend a rebalancing of competition policy priorities that would stimulate innovation and fuel sustainable economic growth.

The relationship between innovation and economic growth

2. Innovation[2] is fundamental to the sustainability of economic growth because it helps defy the gravity of diminishing returns[3]. During the earlier phase of economic development, a nation can achieve growth through injecting primary resources into its production capacity. This is evident in the cases of the BRICS countries, where economic growth has historically been driven by, respectively, the farmlands in Brazil[4], the energy reserves in Russia[5], the sizeable labour forces in India and China[6], and the mineral resources in South Africa[7]. These

[1] This is primarily a policy research paper. Although economic theories and case laws are cited within the relevant context of competition law and policy, we are not developing any authentic economic model or legal theory in a rigorous manner.

[2] The economic concept of innovation is defined in broad terms. It refers to the development of any new idea, equipment or process that improves productivity, i.e. increases the amount of output per unit of input of production. It captures not only the commonsense understanding in terms of the creation of new products (e.g. premium banking) and the use of machines to automate a process (e.g. automatic teller machines), but also new ways of organising the provision of services (e.g. relationship managers). Similarly, the concept of 'technology' in this paper refers broadly to any idea, equipment or process adopted through innovation.

[3] In economics, the Law of Diminishing Marginal Returns states that, all else equal, the incremental output of production decreases as the amount of input factor of production increases.

[4] "Agribusiness" which includes agriculture and food processing, accounted for 22.54% of Brazil's GDP in 2014.

[5] Energy is the largest sector of Russia's economy, contributing to 20-25% of the country's GDP as of 2015.

[6] The labour forces of India and China amounted to 481 and 793 million respectively as of 2014.

factor inputs have largely contributed to the rapid rise of BRICS into the world's major economic powerhouses of late, even though they are still technically classified as developing or newly industrialised countries[8].

3. Resources are nonetheless finite, and they are subject to diminishing returns. This means that an economy cannot continue to grow indefinitely by 'picking the low-hanging fruit'. At some point, for example, land would become scarce, the quality and quantity of the residual workforce would fall, and natural reserves would either be depleted or become more costly to explore. Even developing countries are not immune to these constraints. For instance, China's working-age population has been shrinking since 2012[9], while deforestation to make way for agricultural land has been an issue in Brazil[10]. In small and developed economies such as Singapore, crossover effects of resource constraints have been observed. The shortage of labour force has led to an influx of foreign workers, which has in turn put a strain on land resources, manifested in housing and transport issues[11].

4. Faced with these resources constraints, it is innovation that catalyses further growth. Through new and better ideas, equipment and processes, the same amount of input resources would be able to yield a higher level of output. In other words, growth continues as productivity[12] increases.

The empirical relationship between innovation and growth

5. We have tested the relationship between innovation and economic development on a cross-sectional dataset of 120 economies worldwide[13], with a multi-linear regression model as follows:

$$\%\Delta\ Real\ GDP_i = \beta_0 + \beta_1\ GDP\ per\ capita_i + \beta_2 \%\Delta\ TFP\ Contribution_i + \varepsilon_i$$

Where,

$\%\Delta\ Real\ GDP_i$ refers to the Compound Annual Growth Rates (CAGR) of Total GDP in 1990 US dollar terms, over the period 2009 to 2014 for Country i

$GDP\ per\ capita_i$ refers to the simple average of GDP per capita in 2014 US$ (converted to 2014 price level with updated 2011 PPPs), over the period 2010 to 2014 for Country i

$\%\Delta\ TFP\ Contribution_i$ refers to the simple average of Total Factor Productivity Growth's contribution to Real GDP Growth, over the period 2010 to 2014 for Country i

ε_i is the residual error term

6. The dependent variable is real GDP growth (Y), which approximates the outcome of an economy's performance. The first independent variable is PPP-adjusted GDP per capita (X_1), which approximates the stage of economic development across countries. The second

[7] The mining industry contributed to 18.3% of the South Africa's GDP in 2013 (8.3% direct, 10% indirect).
[8] Paweł Bożyk (2006) *Globalization and the Transformation of Foreign Economic Policy*
[9] According to the National Bureau of Statistics of China, the working-age population of China (i.e. those aged 16 to 59) fell by 3.45, 2.44 and 3.71 millions in 2012, 2013 and 2014 respectively.
[10] As of 2013, 19.5% of the Amazon rainforest have been lost since 1970.
[11] *A sustainable Population for a Dynamic Singapore, Population White Paper*, January 2013.
[12] Productivity is a measure of aggregate efficiency of production, expressed as the ratio of output to input. It is commonly used as a proxy for the level of innovation of an economy.
[13] Conference Board Total Economic Database, May 2015

independent variable is the contribution to GDP growth by productivity increase (X_2), which approximates the level of innovation of an economy[14]. The hypotheses we are testing are (i) whether growth is slower for higher-income countries (i.e. whether β_1 is significantly negative); and (ii) whether productivity increase drives growth (i.e. whether β_2 is significantly positive). The statistical results[15] are shown in **Exhibit 1**, and a 3D graphical depiction of the ordinary least squares (OLS) plane is shown in **Diagram 2**.

Exhibit 1

```
      Source |       SS       df       MS              Number of obs =     120
-------------+------------------------------           Prob > F      =  0.0000
       Model |     375.096     2     187.548           R-squared     =  0.3679
    Residual |  644.421364   117  5.50787491           Adj R-squared =  0.3571
-------------+------------------------------           Root MSE      =  2.3469
       Total |  1019.51736   119  8.56737281

------------------------------------------------------------------------------
  rGDPgrowth |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
GDPperCapPPP |  -.0000179   9.33e-06    -1.92   0.057    -.0000364    5.56e-07
TFPcontrib~n |   .7353745   .0914651     8.04   0.000     .5542327    .9165162
       _cons |   3.665453   .3036078    12.07   0.000     3.064173    4.266732
------------------------------------------------------------------------------
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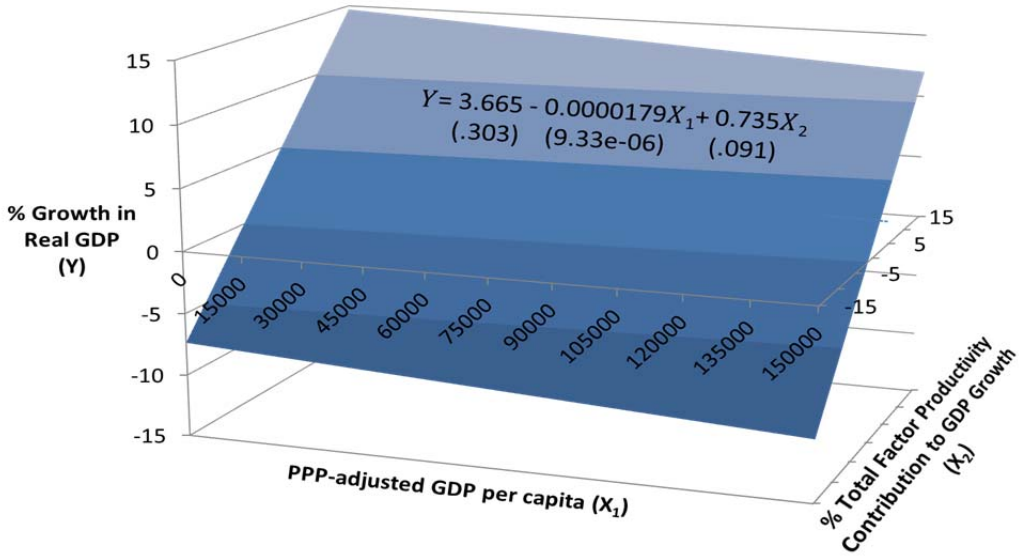
Diagram 2



7. We interpret the results as follows: first, the coefficient for GDP per capita is negative, small and weakly significant[16] (with the OLS plane sloping slightly downwards along the X_1 axis), meaning that there is some diminishing return for more advanced economies but not

[14] In this paper, 'productivity' refers to total-factor productivity (TFP), as opposed to factor-specific, i.e. labour or capital productivity. In practice, TFP is derived as a residual figure of growth decomposition, i.e. the portion of GDP growth unexplained by growth in factor input (labour and capital). We caution the use of TFP to measure innovation, as other non-technology factors will also be picked up by the residual, including adjustment costs, scale and cyclical effects, as well as measurement errors.

[15] We tested the model further and confirmed that neither endogeneity nor multicollinearity exists.

[16] Statistically significant at the 10% confidence level.

obvious; second, the coefficient for productivity is positive, relatively large and strongly significant[17] (with the OLS plane sloping steeply upwards along the X_2 axis), confirming that economic growth relies on productivity improvement; third, the coefficient for productivity is significant with or without controlling for GDP per capita, suggesting that innovation drives growth for both developing and developed countries.

8. The modelling results can also be illustrated through specific examples. During the period, real GDP of the BRICS countries grew by 4.6% on average versus 1.5% of the G7[18] countries. However, TFP contributed 0.33% to BRICS's GDP growth, which was comparable to 0.34% for G7. This shows that while BRICS's are still in the high-growth phase of developing economies, they are also catching up on productivity. The Mediterranean European economies[19] contracted by 1.7% in real GDP, of which 0.99% was contributed by productivity decline. The Scandinavian countries[20] grew a modest 1.2%, upon a negative contribution of 0.35% in TFP, as some of these economies were adversely affected by the replacement cycle of telecommunications technologies. It is clear that the more productivity increases, the further the economy grows, and vice versa, for both developing and developed countries.

Policy implications

9. Innovation can be a viable solution to the problem of resource constraints on economic growth. As innovation improves productivity, more growth can be achieved with fewer incremental resources. The social and economic implications are equally profound. For instance, if an economy could continue to grow without needing a lot more land and labour, immigrations could ease and deforestation could moderate.

10. In recent years, there has an emerging phenomenon of 'de-globalisation' of trade[21]. As more countries are facing tighter resource constraints, policymakers are increasingly tempted to retain more of their own resources for their domestic use. However, as we observed above, protectionism merely postpones the problem of diminishing returns on resources rather than tackling it. In contrast, an open trade policy would not only allow a country to sustain growth through importing global innovation to boost productivity, but also through exporting home-grown innovation.

The relationship between competition and innovation

11. The relationship between competition and innovation has been much debated. On the positive side, competition provides a platform where innovation is effected through a replacement cycle of goods and services. With the advent of new technologies, newer and better products are produced at lower costs. Through competition, these products are afforded an opportunity to win customers on merit, eventually displacing old and inefficient players from the market. The most prominent example in recent times is the replacement of

[17] Statistically significant at the 1% confidence level.
[18] Canada, France, Germany, Italy, Japan, United Kingdom and the United States
[19] Greece, Italy, Portugal and Spain
[20] Denmark, Finland, Norway and Sweden.
[21] *KOF Index of Globalization: Globalization Is Stagnating*, 5 March 2015

the older generation of mobile handsets by smart phones[22]. This process of "creative destruction"[23] increases productivity, hence economic growth.

On the other hand, competition can also be antithetical to innovation in some ways. When competition is intense, the expected profits to be earned from an act of innovation would diminish, in which case the incentives to innovate would be weakened. As the US Supreme Court[24] puts it:

> *The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system.* ***The opportunity to charge monopoly prices – at least for a short period – is what attracts "business acumen" in the first place; it induces risk taking the produces innovation and economic growth****. To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive conduct.* (emphasis added)

12. It is often argued as well, that too much competition results in a "race to the bottom". When competition is too intense, there would be little room for product differentiation. It follows that market players would only focus on 'cut-throat' price wars. As profitability deteriorates, firms seek to cut costs by compromising their quality of goods and services. They would also have fewer resources to spare for research and development (R&D) activities, leading to less innovation. The manner in which budget carriers compete in the aviation industry is often cited, rightly or wrongly, as such an example[25].

The empirical relationship between competition and innovation

13. In the literature, economists have identified empirically an "inverted-U relationship" between competition and innovation[26] (see **Diagram 3**). When competition increases from a low level initially, innovation increases, as firms start to feel the pressure to innovate in order to stay ahead of competitors. However, as competition continues to intensify towards a higher level, the prospect of incremental profits from innovation diminishes, and as a result, the level of innovation begins to fall. In Singapore, for example, the fragmentation of the construction industry with too many competitors has been identified as a reason for its low productivity growth[27]. It follows that there is an 'optimal' level of competition[28] where innovation is maximised.

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[22] Between 2007 and 2014, Nokia's global market share of mobile phones declined from 51% to 3%, while that of Apple increased from 3% to 20%, and that of Samsung increased from 3% to 20% (Statista).

[23] Joseph Schumpeter (1942) *Capitalism, Socialism and Democracy*

[24] *Verizon Communications v Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004)

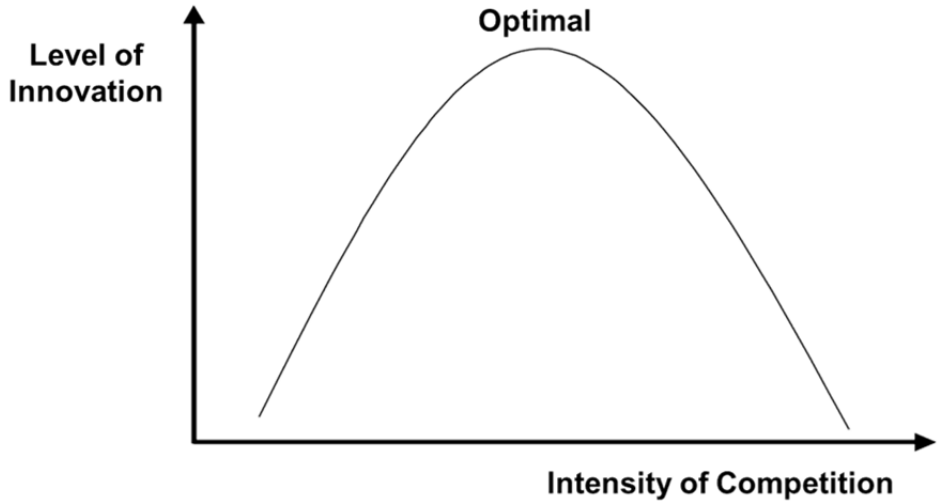
[25] For example, see articles from the Economist (http://www.economist.com/blogs/gulliver/2015/04/airlines-america), Bloomberg (http://www.bloombergview.com/articles/2015-03-29/low-cost-airlines-are-high-stress-for-pilots), and Harvard Business Review (https://hbr.org/2006/12/strategies-to-fight-low-cost-rivals).

[26] Aghion et al (2002) *Competition and Innovation: An Inverted U Relationship*

[27] *Report of the Economic Review Committee Sub-Committee on Domestic Enterprises, Part 3.5: Construction Working Group Report*, 1 December 2010.

[28] It should be noted that "competition" in this context refers to the *static* form of competition, which takes place between players in the same existing product market based on existing technologies. In Aghion et al (2002), competition is measured by the Lerner Index (i.e. profitability), while innovation is measured by the amount of patents filed.

Diagram 3: the inverted-U relationship between competition and innovation



Policy implications

14. Given that innovation does not always increase with more competition, policymakers must not pursue competition for its own sake, without having regard to market outcome and performance. Instead, competition policy should be designed carefully, so as to create a competitive environment that is the most conducive to innovation. To the extent that innovation contributes meaningfully to sustainable growth, making the right choice on competition policy is crucial to the economic development of a nation.

15. In particular, the inverted-U relationship between competition and innovation justifies the co-existence of antitrust (which protects competition) and intellectual property rights (IPR) law (which protects innovation through granting monopolies). It should be noted that IPR protections are typically limited in terms of product scope and duration, so as to strike a balance between preserving incentives to innovate, and preserving the competitive discipline upon the right holders.

The competitive landscape of innovative sectors

16. Before discussing the designs and options of competition policy, we first seek to understand the competitive landscape of the 'innovative' sectors, i.e. where innovation most probably and frequently occurs, and where it makes the most impact. These include, amongst others, industries involving R&D (e.g. pharmaceuticals), technology standards (e.g. electronic devices), hardware (e.g. payment networks) and software (e.g. e-commerce).

Higher market concentrations

17. Innovative businesses tend to be *scalable*. They exhibit increasing return to scale up to a very large size of production[29]. One reason is the substantial amount of sunk cost involved, such as R&D spending or capital investments in equipment and networks. Lower unit cost can be achieved through sharing sunk costs over a larger customer base. Another reason is the lower cost of distribution achieved through online channels, including marketing,

[29] Berry et al (2006) *Creating New Markets Through Service Innovation*

transaction, payment and delivery. The incremental cost of geographic expansion is much reduced as a result. A further reason is the strong network effect between users, driven by enhanced modes of information communication. For example, demand for a product nowadays is often influenced significantly by online user comments and ratings[30].

18. In particular, online distribution allows businesses to scale up cost-effectively at an international level. For example, someone living in Singapore is able to shop online from Taobao in China[31], and ship the product to Singapore seamlessly[32]. Alternatively, he/she may purchase a product from Amazon[33] in the US, and call a customer service representative located in South Africa[34]. Even the most local industries such as lodging and ground transport are now internationalised by companies such as Airbnb[35] and Uber[36].

19. Traditionally, international markets are often associated with higher degrees of competition, as these tradable markets are accessible by *more* players (the 'tradability effect'). However, the scalability of innovative businesses has 'raised the bar' considerably for being an effective competitor at the international level, to such a degree that the minimal efficient scale (MES) becomes an entry barrier in itself to many firms[37]. In this sense, international markets are accessible by *less* players (the 'scalability effect'). The emergence of online 'champions'[38] in various industries mentioned above seems to suggest an increasing domination of the scalability effect over the tradability effect.

20. The inevitable consequence of the scalability of innovation is that markets become naturally more concentrated[39]. Even in the absence of artificial barriers to entry, it becomes less realistic to expect strong and effective competition to take place in the market. Furthermore, as noted above, there is an optimal amount of product market competition beyond which innovation would be reduced. It follows that the traditional focus of competition law and policy on liberating an existing market to facilitate *horizontal* competition *within the same market* becomes less effective.

Shorter replacement cycles

21. Another implication of the scalability of innovation is that product replacement cycles become shorter, because new technologies can scale up rapidly. Take the mobile communications industry as an example: 6 generations of Samsung Galaxy S[40] and 8 generations of iPhones[41] and have been released since 2007; the average handset

[30] O'Connor (2008) *User-Generated Content and Travel: A Case Study on Tripadvisor.Com*
[31] Taobao (www.taobao.com) is the largest online retail shopping website in China, owned by the Alibaba Group.
[32] https://rule.tmall.hk/helper/knowledge.htm?spm=a312a.7762693.2015080302.19.syc4ZE&kid=6669523.
[33] Amazon.com is a multinational online retailer, headquartered in Seattle, USA
[34] *Entrepreneur* magazine, Issue 1 February 2012, Page 35
[35] Airbnb is an online platform for lodging rental, with listings from 190 countries.
[36] Uber is a mobile app platform for vehicle trip rental, with services available in 58 countries.
[37] Martin (2003) *Globalization and the Natural Limits of Competition*
[38] 'Champions' here refers market players who are sizeable themselves, and with clear leading market positions that are distant from the next largest player. They may or may not be 'dominant' as per antitrust principles.
[39] Noam (2003) *The Internet: Still Wide Open and Competitive?*
[40] http://www.samsung.com/us/aboutsamsung/samsung_group/history/
[41] www.apple-history.com

replacement cycle is around two years in the US, UK, Korea and Singapore[42]; it took about 10 years each for mobile networks to migrate from 1G to 2G, 3G and 4G[43].

22. The rises are as fast as the falls: Amazon was founded in 1994, and surpassed Wal-Mart as the largest retailer in the US by market capitalisation in 2015[44]; Alibaba was founded in 1999, and completed the largest IPO in history in 2014[45]. Other notable examples in the BRICS countries include Gumtree[46] which was founded in 2000, VK[47] in 2006 and Flipkart[48] in 2007.

23. The significance of shorter replacement cycles is that, while competition *in* the market occurs less often due to higher market concentrations, competition *for* the market occurs more often. In other words, while *static* competition becomes weaker, *dynamic* competition becomes stronger[49]. As mentioned above, if competition law and policy becomes less effective in promoting static competition in the market, then it is logical for competition authorities to devote more resources in promoting dynamic competition for the market.

Broader competitive ecosystems

24. Disruptive innovation[50] occurs when a new product, idea or process creates a new market, unsettles the existing order of an old market and eventually replaces the latter. While incumbent players from an existing market also innovate, their innovations tend to be evolutionary, i.e., pertaining to incremental improvements on their existing products. This is mainly because incumbent players are driven by incentives to protect their existing revenue streams from being cannibalised by their own inventions[51]. In contrast, new entrants are more inclined to innovate disruptively, as they are purely driven by incentives to reap the rewards of creating a new market, without having to suffer from any financial loss of destroying an old one.

25. Disruptive innovation seldom comes from remote outsiders either. This is because innovation requires good knowledge and experience on the existing market, customers and technology, their limitations and rooms for improvement. The most likely case is that the disruption comes laterally, i.e. from a separate but related market within a competitive 'ecosystem'. One classic example is the market of operating systems (OS).

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[42] Entner (2011) *International Comparisons: The Handset Replacement Cycle*
[43] Qualcomm (June 2014) *The Evolution of Mobile Technologies: 1G ⇨ 2G ⇨ 3G ⇨ 4G LTE*
[44] Bloomberg, *Amazon Passes Wal-Mart as Biggest Retailer by Market Value*, 24 July 2015
[45] Reuters, *Alibaba IPO ranks as world's biggest after additional shares sold*, 22 September 2014
[46] Gumtree is an online provider of classified ads, based in UK. According to Alexa, it is the 7th most visited site in South Africa, 14th in Australia and 47th in Singapore.
[47] VK is a social network primarily for Russian-speaking users. It has over 300 million users and is the 2nd most visited website in Russia, and 21st globally.
[48] Flipkart is an online retailer of consumer electronic products, registered in Singapore and based in India. According to Alexa, it is the 5th most visited site in India, and 80th globally.
[49] Sidak and Teece (2009) *Dynamic Competition in Antitrust Law*
[50] Christensen (1997) *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*
[51] Ibid. Page 47.

26. Up until the mid-2000s, Microsoft used to be regarded as "super-dominant"[52] in the OS market with its Windows product series, when personal computer (PC) was the main hardware device on which an OS operates. Indeed, Microsoft has never lost its leading position *on the PC platform*. Statistics as of August 2015[53] shows that Windows still accounted for 88% of the OS for desktops and laptops. However, it is the PC platform that is losing its supremacy, due to disruptive innovation on electronic devices, with the emergence of tablets and smartphones. When all these devices are taken into account, Windows only retained a market share of 14% of OS in 2014[54]. In this case, the disruptive innovation came mainly from Google (through Android) and Apple (through iOS which is integrated with its iPhone and iPad devices). Neither were direct competitors to Microsoft before the disruption[55].

27. If competitive forces come more often from a broader ecosystem than within an existing product market, then the potency of antitrust enforcement based on the assessment of *relevant markets* becomes dubious. If dynamic competition takes place *laterally* in a broader ecosystem, then the traditional focus of antitrust enforcement on *horizontal* and *vertical* restraints of trade becomes questionable as well.

Legacy regulations

28. Disruptive innovation, by definition, does not conform to existing norms. The new products and services created seldom resemble the old ones entirely, and therefore may not be compatible with existing rules that were designed to regulate the *modus operandi* of existing products and services. For example, the short-term vacation rentals offered by Airbnb are not exactly hotel rooms, Netflix is not exactly pay-TV, and the Uber sedans are not exactly taxis. Ironically, there is no clearer indication than the reported protests worldwide by taxi drivers[56] that Uber is indeed a serious competitive threat to taxis.

29. Sometimes, there are legitimate safety factors, such as insurance coverage[57], that these newly created products may not comply with. At other times, the new products may enjoy an unfair competitive advantage by falling outside certain regulatory requirements upon existing players, such as taxes and license fees[58]. However, in many instances, there are simply legacy regulations that prevent products from being offered in new forms[59].

30. Given the matrix of considerations above, it is not always clear whether one should adjust existing regulations to accommodate new products and services, or for the new players to adjust their business practices to comply with regulations, or both. In any case, competition policies that rely solely on antitrust enforcement against commercial activities would not be sufficient to promote innovation, since barriers to entry also come from

[52] Neelie Kroes (1997), then European Commissioner for Competition Policy, *Introductory remarks on CFI ruling on Microsoft's abuse of dominant market position* (SPEECH/07/539)
[53] Statcounter (gs.statcounter.com).
[54] www.gartner.com
[55] Even though Apple's Mac OS operated on its own MacBooks, it is a closed and integrated system. Mac OS has never competed directly against Windows on open-platform PCs.
[56] For example, see *Taxi drivers in European capitals strike over Uber*, The Guardian, 11 June 2014.
[57] See, for example, *A Liability Risk for Airbnb Hosts*, New York Times, 5 December 2014
[58] See, for example, *Airbnb: Let us pay hotel taxes in New York*, CNET, 15 April 2015
[59] See, for examples, *NYC Judge Rules Airbnb Rental Is An "Illegal Hotel"*, Time, 21 May 2013

regulation. To the extent that the domain regulators do not always have the expertise to fully appreciate the competition issues, stronger advocacy efforts by competition agencies would be apt.

31. In particular, some industries may have been natural monopolies in the past, and have been regulated as such. In some cases, the incumbent supplier may even be a state-owned enterprise or government-linked company, especially when the private sector did not have the capacity to invest in these industries during the early stage of economic development. With disruptive innovation, however, competition may become viable at a later stage through the adoption of new technologies at lower costs. At that juncture, it would be opportune to modernise the regulatory framework, so as to reap the benefits of competition and innovation. One example was the liberalisation of the electricity generation market in Singapore in 2000[60].

Some caution

32. In this section, we made a number of observations on the changes of competitive landscape brought about by disruptive innovation. We caution that these findings should not be taken to the extreme, as if static competition cannot happen, disruptive innovation is always ready to displace monopolies, or that existing regulation must be overhauled. For example, the product life cycle of pharmaceuticals is still very long, and the entry of generic drug into an existing market upon the expiry of a patent can still bring about substantial benefits. Nevertheless, the *trend* is still that the pharmaceutical industry is becoming more concentrated[61], and accordingly, there is still a need to adjust competition policy in response to the trend.

Rebalancing competition policy

33. In the previous section, we observed some important trends in the competition dynamics of innovative sectors. Based on these observations, we recommend that competition policy be rebalanced in response. Our recommendations include (1) strengthening antitrust enforcement against lateral anticompetitive activities relative to horizontal and vertical ones; and (2) strengthening competition advocacy in addition to antitrust enforcement. In this section, we will first review the status quo of competition policies worldwide, and then use some case studies to illustrate the limits of the status quo and the need for rebalancing.

The status quo of competition policies worldwide

34. There are hundreds of competition jurisdictions around the world[62]. While it is difficult to generalise them all, we do observe some international norms in dealing with various types of anticompetitive activities:

- ***Horizontal anticompetitive activities***: horizontal agreements are typically

[60] Energy Market Authority of Singapore, *Introduction to the National Electricity Market of Singapore, Version 6*, October 2010, at Section 3.1 – The Industry Reform Process

[61] Danzon (2006) *Economics of the Pharmaceutical Industry*

[62] There are currently 133 members to the International Competition Network (ICN). Some countries may divide themselves into multiple jurisdictions along geographical, functional and sectoral dimensions.

treated as the most serious form of anticompetitive activity[63]. In particular, 'hardcore cartels'[64] are often prohibited *per se*[65], by object[66], or even criminalised[67]. In terms of mergers, it is noted that the vast majority of significant competition issues associated with mergers arises in horizontal mergers[68].

- ***Vertical anticompetitive activities***: unlike horizontal agreements, vertical restraints are usually civil matters[69] that are subject to the rule of reason[70] or effects-based assessments[71]. Analysis of market power is often required[72], but alternative rules with lower thresholds of proof exist in many jurisdictions[73]. In terms of mergers, it is noted that non-horizontal mergers are generally less likely to impede competition than horizontal ones[74].

- ***Lateral anticompetitive activities***: unlike horizontal and vertical conduct, there is generally less guidance from competition authorities on lateral conduct. Those agencies who publish guidelines on market definition often discuss product differentiation, chains of substitution, aftermarkets and cluster markets, but usually in the contexts of horizontal and vertical theories of harm[75]. In terms of mergers, conglomerate mergers are often deemed "rarely" anticompetitive[76].

- ***Regulations***: antitrust agencies do not usually possess the power to pursue anticompetitive regulatory activities, save for a few exceptions, including Russia's provision on State and Municipal Procurement[77], China's provision against Abuse of Administrative Monopoly[78], and EU's provision on State Aids[79]. In any case, these rules pertain to the prohibition of government activities that positively injure competition, rather than those that passively inhibit competition. It is the latter that we shall focus upon.

[63] http://www.oecd.org/competition/cartels/
[64] According to the ICN Unilateral Conduct Working Group, in some antitrust jurisdictions, certain types of cartels (e.g. price fixing, market sharing, bid rigging and production or sales quotas) are regarded as particularly serious violations. These types of cartels are generally referred to as "hardcore cartels".
[65] http://fas.gov.ru/files/30021/Russia.pdf
[66] http://cci.gov.in/images/media/statutoryform/anticarteltemplate.pdf
[67] http://www.cade.gov.br/upload/Brazil_ICN%20Cartel%20Template_April%202009.pdf
[68] ICN Merger Guidelines Workbook, April 2006, paragraph 1.6
[69] ICN Unilateral Conduct Working Group Questionnaire, Proposed Questions Relating to Objectives, South Africa
[70] ICN Unilateral Conduct Working Group Questionnaire, Answers Prepared by Federal Antimonopoly Service of Russia
[71] BRAZIL, ICN Unilateral Conduct Working Group Questionnaire
[72] Section 47 of the Competition Act of Singapore
[73] Examples include FTC Section 5 in the US, Market Investigations in the UK and Abuse of Superior Bargaining Power in Japan and South Korea.
[74] ICN Merger Guidelines Workbook, April 2006, paragraph 3.2
[75] OECD Policy Roundtables, Market Definition (2012)
[76] CCS Guidelines on the Substantive Assessment of Mergers, paragraph 4.4
[77] Federal Law № 44-FZ "On the contract system in state and municipal procurement of goods, works and services"
[78] Anti-monopoly Law of the People's Republic of China, Chapter 5
[79] Article 107 of the Treaty on the Functioning of the European Union (TFEU)

35. In short, the present hierarchy of antitrust enforcement priority is clear: horizontal activities are on top; vertical ones come next; lateral ones are often downplayed; and regulation is usually left alone. Against this backdrop, we now explore through case studies whether this 'ranking' of antitrust priorities works well for innovative sectors.

Horizontal case study – payment cards

36. Electronic payment is an innovative sector. The use of plastic cards for payment, in combination with an electronic network interface and backend processing, is historically a disruptive innovation that obviated the need for notes and coins in certain types of retail transactions. Several major payment networks such as VISA, MasterCard, Amex and Diners have also internationalised their card acceptance. Over the years, the incumbent players have made progressive and evolutionary innovations, especially in terms of authentication technologies[80]. However, *disruptive* innovation is yet to take place in any grand scale that could, for instance, displace plastic cards and point-of-sale (POS) terminals ultimately.

37. There have been a number of antitrust matters concerning payment cards in various jurisdictions[81]. Many of these proceedings relate to the setting of interchange fees[82]. In addition to antitrust, some jurisdictions even regulate interchange fees directly[83]. These antitrust and regulatory proceedings targeted only the 'open-loop' systems (e.g. VISA, MasterCard) where interchange fees are collectively determined by the issuing and acquiring banks, as opposed to 'closed-loop' systems (e.g. Amex, Diners) where issuing and acquiring are proprietary to the network provider without the need for interchange.

38. In these proceedings, payment cards are generally defined as a distinct product market from other payment methods[84]. This implies that the antitrust and regulatory authorities were primarily concerned about, and sought to ameliorate the conditions of, *intra-modal* competition within the same brand of payment cards, rather than *inter-modal* competition between different payment methods. In addition, as noted above, closed-loop systems have not been targeted, because there is no 'collusive' element in the setting of interchange fees. This further suggests that the authorities' objections were chiefly *horizontal* in nature, i.e. pertaining to the restriction of competition between players of the same payment mode.

39. The narrow scope of competition concerns identified by the authorities contrast sharply with the industry narratives. For example, as VISA Inc. stated in its annual report[85]:

> "**Competition**
>
> We compete in the global payment marketplace against all forms of payment.

[80] For example, from the use of magnetic stripes to smart cards and then to contactless chips, and from signature to security codes and personal identification numbers (PIN).
[81] For example, The European Commission's Decision on MasterCard (COMP/34.579), 19 December 2007.
[82] Interchange fee is a payment by an acquirer, who process transactions for merchants, to an issuer, who process transactions for cardholders. Interchange fees are typically expressed as a percentage of the dollar value of a retail transaction.
[83] For example, the Reserve Bank of Australia (RBA) regulates interchange. See http://www.rba.gov.au/payments-system/legal-framework/current-regulations.html
[84] See paragraph 329 of the EC MasterCard decision.
[85] VISA Inc., Form 10-K filed on 11/21/14 for the period ending 09/30/14, to the US Securities Exchange Commission

These include:

- paper-based payments, principally cash and checks;
- card-based payments, including credit, charge, debit, ATM, prepaid and private-label products;
- eCommerce and mobile payments; and
- other electronic payments, including wire transfers, electronic benefits transfers, automated clearing house ("ACH"), and electronic data interchange.

[…]

The global payments industry continues to undergo dynamic change. We may face increasing competition from emerging players in the payment space, many of which are non-financial institution networks that have departed from the more traditional business model. The emergence of these potentially competitive networks has primarily been via the online channel with a focus on eCommerce and/or mobile technologies. PayPal and Alipay are examples. These providers compete with us directly in some cases, yet may also be significant partners and customers of ours."

40. According to the horizontal theory of harm postulated by the authorities, the collusion between banks is supposed to have resulted in excessive interchange fees[86], and the reduction of interchange fees through antitrust remedies or direct regulation is supposed to make the market more competitive[87]. However, evidence is mixed in terms of the effects of lower interchange fees. First, with or without regulation of interchange fees, proprietary acquirers in close-loop systems typically charge higher merchant fees[88] than their open-loop counterparts[89]. This seems to contradict the theory that collusion on interchange fees leads to higher merchant fees. Second, data from Australia showed that after the regulation of interchange fees, the unregulated closed-loop systems gained market share against the regulated open-loop systems[90]. This suggests that the reduction in interchange fees has not made open-loop card products more competitive than before.

41. These mixed results from the regulation of interchange fees seem to corroborate with our earlier observation that it is less realistic to intervene and promote static competition within an innovative market. In this regard, there are other antitrust authorities such as Singapore[91] who decided that there were no appreciable adverse effects on competition arising from a collective setting of interchange fees.

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[86] For example, the Financial System Inquiry Final Report (Stan Wallis et al, 1997) in Australia states that *"ad valorem interchange fees on credit cards mean that the cost of providing this payment mechanism can be very high."*

[87] For example, the EC stated that *"the MasterCard decision will support the creation of a [Single Euro Payments Area] by fostering greater competition in the cards market and preventing an artificial increase of merchant fees due to an illegal pricing mechanism such as MasterCard's [multilateral interchange fee]."* (Press Release IP/07/1959)

[88] Merchant fee is a per-transaction charge paid by merchants to acquirers. Interchange fee is a main cost component to merchant fee.

[89] http://time.com/money/2962417/amexs-battle-with-the-feds-visa-mastercard-credit-card/

[90] Statistics from the RBA.

[91] CCS Decision number CCS400/001/06, Paragraph 11.2

42. In the US, private class actions have been brought against both open-loop[92] and closed-loop[93] systems pertaining to, amongst others, the 'no surcharge rule' (NSR), where a payment card network seeks to prevent merchants from imposing a surcharge against its credit-card brand or product. The theory of harm postulates that NSR is an attempt to exclude or inhibit the usage of other payment modes by suppressing the reflection of merchant fees to cardholders. Unlike the theory of harm on interchange fees, NSR distorts *inter-modal* competition, including *lateral* competition from cash, mobile and other modes of payment in the broader ecosystem.

43. These cases have been (or are expected to be) settled[94] [95]. While the terms and conditions of these settlements include lifting the ban on merchant surcharging of credit card transactions versus more traditional forms of payment such as cash, cheque, ATM and debit cards[96], there are certain 'escape clauses' that continue to allow the card networks to limit the flexibility of merchant surcharging on credit card transactions against newer payment modes such as mobile and online payment[97]. Incidentally, a number of merchants have opted out of the class settlements[98].

44. In this regard, we query whether these settlement agreements are sufficient to address the dynamic competition concerns relating to the possible foreclosure of innovative payment modes in the future. We also query whether, in additional to tackling the horizontal issues surrounding interchange fees, competition and regulatory authorities should also take a stronger enforcement stance on the *lateral* issues involving NSR and other anti-steering practices, in addition to allowing these matters to be resolved through private action and settlement[99].

Vertical case study – middlewares

45. Middleware is a computer software that acts as an intermediary between an operating system (OS) and an application. It runs on an OS platform and facilitates application development. One important example of a middleware is a web server program, which processes user requests based on the Hypertext Transfer Protocol (HTTP) for the distribution of internet contents[100].

46. Middlewares contributed significantly to the disruptive innovation which eventually came to be known as 'cloud computing'[101]. The significance of cloud computing is that the processing and storage of information is moved away from devices towards web servers, resulting in a reduced importance of devices, and thus the underlying OS for these devices. For example, users used to edit documents using Microsoft Word, which is run on Microsoft Windows, and save the document on the hard drive of their PCs. Nowadays, it is possible to

[92] *In re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation* (05-md-01720).
[93] *In re American Express Anti-Steering Rules Antitrust Litigation (II)*, No. 11-MD-2221 (NGG)(RER)
[94] https://www.paymentcardsettlement.com/
[95] http://www.amexmerchantsettlement.com/
[96] Class Settlement Order and Final Judgment, Case No. 11-MD-2221 (NGG)(RER), Paragraph 6
[97] Definitive Class Settlement Agreement, Case No. No. 05-MD-1720 (JG) (JO), Paragraph 1 (u)
[98] Reuters, *Merchants seek to void $6 bln Visa, MasterCard, AmEx settlements*, 29 July 2015.
[99] *USA v American Express Co.* (No.15-1672) is currently in front of the US Court of Appeals, 2nd Circuit
[100] https://httpd.apache.org/ABOUT_APACHE.html
[101] *The NIST Definition of Cloud Computing*, National Institute of Standards and Technology, 24 July 2011.

edit documents using Google Doc[102], which is run on Google's web server, and accessed through the Google Chrome browser, which can be installed on a tablet. One can also save the document on Google Drive[103], and retrieve it from another device such as a smart phone.

47. Before the arrival of this revolution, Microsoft's "super-dominance" [104] in its OS platform had attracted a number of antitrust charges against its business practices. Amongst those, the *Media Player* case brought by the European Commission (EC) [105] and the *Internet Explorer* case brought by the US DOJ[106] were often viewed as very similar in nature, in that both cases involved the tying of a Microsoft application to Microsoft Windows. However, as we shall discuss below, there is a fundamental difference between the theories of harm of these two cases.

48. In the *Media Player* case, the EC found that Microsoft had abused its dominant position in tying its Windows Media Player (WMP) to the sales of Windows. Accordingly, the EC directed Microsoft to avail an unbundled version of Windows without WMP pre-installed. In essence, this remedy sought to improve the ability of third-party application developers to compete in the downstream market of media players within the realm of the Windows platform. In other words, the *Media Player* case is entirely *vertical* in nature. It was not envisaged by the EC that the remedy would enhance competition in the upstream market against the Windows platform itself.

49. In response to EC's direction, Microsoft has availed an 'N' edition, which does not have WMP pre-installed, for every version of its Windows product series, from Windows XP onwards. However, sales of the 'N' version has been negligible[107]. In our opinion, this remedy has not made a material difference to the competitive dynamics of either the narrow market of media players, or the broader ecosystem of devices, OS and Apps.

50. In the *Internet Explorer* case, the US DOJ also took issue with the tying of Microsoft Internet Explorer to the sales of Microsoft Windows. However, the theory of harm was postulated quite differently from the *Media Player* case in Europe. Unlike the standard textbook theory on tying, the DOJ was not primarily concerned that Microsoft gained an unfair advantage in the secondary *tied* market of web browsers. Instead, it identified certain product features of Netscape, then the main competing browser to Internet Explorer, that would allow it to perform the function of a middleware, which might eventually challenge Microsoft's dominance in the primary *tying* market of operating systems[108].

51. The threat of Netscape as a middleware to Microsoft is best illustrated by an internal memorandum circulated by Mr. Bill Gates, then the Chairman and CEO of Microsoft, titled *The Internet Tidal Wave*, on 26 May 1995, in which he said:

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[102] https://docs.google.com/
[103] https://www.google.com/drive/
[104] Neelie Kroes (1997), then European Commissioner for Competition Policy, *Introductory remarks on CFI ruling on Microsoft's abuse of dominant market position* (SPEECH/07/539)
[105] Case COMP/C-3/37.792 Microsoft
[106] *United States v. Microsoft Corporation* 253 F.3d 34 (D.C. Cir. 2001)
[107] *FACT SHEET: Windows XP N Sales*, Microsoft, April 2006
[108] *US v. Microsoft: Court's Findings on Fact*, November 5 1999, Section IV. The Middleware Threats

> *"A new competitor "born" on the Internet is Netscape. Their browser is dominant, with 70% usage share, allowing them to determine which network extensions will catch on.* ***They are pursuing a multi-platform strategy where they move the key API into the client to commoditize the underlying operating system****. They have attracted a number of public network operators to use their platform to offer information and directory services. We have to match and beat their offerings including working with MCI, newspapers, and other who are considering their products.*
>
> *One scary possibility being discussed by Internet fans is whether they should get together and* ***create something far less expensive than a PC which is powerful enough for Web browsing****. This new platform would optimize for the datatypes on the Web. Gordon Bell and others approached Intel on this and decided Intel didn't care about a low cost device so they started suggesting that General Magic or* ***another operating system with a non-Intel chip is the best solution****."* (emphasis added)

To paraphrase, Mr. Bill Gates was not worried about Netscape as a web browser per se. Instead, he was worried about the potential disruptive innovation brought about by Netscape, in shifting the Application Programming Interface (API) layer away from the OS, thus causing Windows to lose its gatekeeping status for application development. In such a scenario, users would no longer require the high-end features of a PC such as processing power and memory space, rendering it feasible for a low-cost device to act as a substitute. This, in turn, would obviate the need for a powerful OS, such as Windows, on these devices.

52. The theory of harm for the *Internet Explorer* case was *lateral* in nature. It was not about static competition between web browsers, but dynamic competition in the broader ecosystem of devices, operating systems and middlewares. The case was settled in 2002[109], in which the DOJ did not require Microsoft to unbundle its Internet Explorer from Windows. Within a few years, Netscape had lost almost all its market share to Internet Explorer[110]. However, this did not prevent the "internet tidal wave" envisaged by Mr. Bill Gates some 20 years ago from eventually happening. As mentioned earlier, 'cloud computing' is thriving today, the API has largely been shifted away from the OS, PC is losing ground to tablets and smart phones, and Google Chrome is now the leading browser[111].

53. In this sense, the DOJ's 'counterfactual' has ultimately come true. Yet, we query whether cloud computing would have thrived sooner, had the DOJ taken a stronger enforcement stance against Microsoft's *lateral* foreclosure of Netscape, rather than settling the case without securing the crucial remedies.

Merger case study – pharmaceuticals

54. Pharmaceuticals is an R&D-intensive sector[112] with an exceptionally long payback period for developing a drug. As such, a very high degree of economies of scale is required to

[109] *US v. Microsoft: Final Judgment*, November 12 2002
[110] Netscape 89%, IE 4% in April 1996 (GVU WWW user survey); Netscape 1%, IE 95% in 2003 (OneStat).
[111] Google Chrome 50%, Internet Explorer 13% (StatCounter June 2015).
[112] Danzon (2006) *Economics of the Pharmaceutical Industry*

carry a drug from the research phase through regulatory approvals to commercialisation. For this reason, there have been plenty of M&A activities in the industry[113], including horizontal mergers where competing firms merge to increase scale, and vertical mergers where larger firms buy over the research pipelines of smaller firms, such that the smaller firms can cash out over a shorter payback horizon, while larger firms can leverage on their superior scale to commercialise the pipeline products more efficiently.

55. In a major M&A transaction announced in 2014, global pharmaceuticals manufacturers GlaxoSmithKline PLC (GSK) and Novartis AG (Novartis) reached an 'asset swap' deal[114], whereby GSK acquired the vaccines business from Novartis, and Novartis acquired the oncology business from GSK. A number of antitrust authorities worldwide had reviewed the transaction. Some granted unconditional clearance[115], while others accepted various divestment and/or licensing commitments from the merging parties in relation to some specific vaccines, anti-smoking and skin cancer drugs[116].

56. These antitrust reviews were performed on a 'piecemeal' basis. For instance, the EC treated the transaction as two separate cases[117], one for each direction of the asset swap, while a few others did not review both directions[118]; relevant markets were typically defined at the level of specific drugs[119]; competition concerns were identified based on the horizontal overlap and combined market shares of overlapping products[120]; and accordingly, commitments were made by the parties to address these *horizontal* concerns. In this regard, we query whether these piecemeal reviews have answered the broader question – whether *dynamic* competition is injured when two of the largest global players 'divide turfs' between themselves within the ecosystem of pharmaceuticals.

57. As part of the asset swap deal, GSK and Novartis also reached a pair of mutual 'non-compete and non-solicit' agreements for a period of three years upon completion[121], in which GSK undertakes not to compete in the oncology business or to solicit Novartis's oncology customers, while Novartis undertakes not to compete in the vaccines business or to solicit GSK's vaccines customers. GSK also granted a 'right of first negotiation' to Novartis for 12.5 years[122], in relation to the development and commercialisation of oncology drugs.

58. We query whether the two companies would continue to compete *laterally* against each other in the R&D and commercialisation of vaccines and oncology drugs in the long run, not just in terms of individual pipeline products, but in terms of their capacity and scale in general. We also query whether the antitrust remedies, i.e. the divestment of individual

[113] The Economist, *Pharmaceutical M&A: Invent it, swap it or buy it* (15 November 2014)
[114] GlaxoSmithKline Plc, Proposed Major Transaction with Novartis AG, Circular to Shareholders and Notice of General Meeting, 20 November 2014
[115] China (MOFCOM 2015/33), India (CCI C-2014/07/188) and New Zealand (2014 NZCC 37)
[116] BRAF/MEK inhibitors (Australia, Canada, EU, US), nicotine tablets and patches (Australia, Brazil, US) and meningitis vaccines (Australia, EC, Pakistan)
[117] M.7275 and M.7276
[118] For example US FTC 141 0141 C-4510 C-4498
[119] US FTC, *Analysis of Agreement Containing Consent Orders to Aid Public Comment, in the Matter of Novartis AG*, File No. 141-0141, Section II. The Relevant Products and Markets
[120] European Commission, Press Release (IP/15/3841 and IP/15/3842)
[121] GlaxoSmithKline Plc, Proposed Major Transaction with Novartis AG, Circular to Shareholders and Notice of General Meeting, 20 November 2014, Part 3, paragraphs 7.7 and 8.7
[122] Ibid., Part 3, paragraphs 8.1 and 8.8

products, would be sufficient to restore the *dynamic* conditions of competition pre-merger, given that the potential buyers may not have comparable scales of operations to GSK and Novartis, and in any case, they would only be buying individual products rather than the underlying R&D capacity. These questions could only be answered if competition authorities take a stronger enforcement stance on lateral mergers.

Regulatory case study – taxis

59. Taxi services had not traditionally been viewed as an innovative sector, until the arrival of mobile booking applications. These applications provide matching services for passengers and taxis to find each other, thus providing an efficient alternative to street-hailing and phone booking. Electronic maps and global positioning system (GPS) are usually built in for passengers to indicate their pickup and/or drop-off locations, and to assist taxi drivers in identifying the shortest routes to these locations. Some of these applications can also process payments at the backend. Significantly, it is feasible for the application to be a third-party provider that is not affiliated to any physical taxi operator, and instead competes *laterally* with them on booking services.

60. Taxi, being an important mode of transport for the general public, is typically regulated for a variety of safety and quality reasons. These regulations were often designed and implemented years ago based on the traditional mode of taxi operations. The disruptive innovation brought about by mobile booking applications thus poses some challenges to these regulations. Some rules may render the booking applications illegal[123]. In other circumstances, some 'legacy' rules may only apply to conventional booking services provided by taxi operators, thus affording an unfair competitive advantage to third-party application providers that are not subject to the same rules.

61. In Singapore, for example, phone booking services provided by taxi operators are subject to quality-of-services (QoS) regulation by the Land Transport Authority (LTA)[124]. Amongst others, a small taxi operator[125] must answer at least 90% of calls, within 20 seconds for at least 90% of times, match at least 80% them successfully with taxis, within 5 minutes for at least 90% of times. With the introduction of mobile applications, some taxi drivers would accept third-party bookings instead, thus affecting the taxi operators' ability to meet the QoS standards for phone booking. In such a scenario, it is not an easy decision whether to amend the QoS standards for taxi operators, or to impose similar standards upon the third-party applications.

62. Another element of disruptive innovation brought about by the taxi booking applications that has created tension between social and economic considerations is the practice of 'surge pricing'. Since the application provider possesses real-time and location-specific information on the demand and supply of taxis, it is possible to adjust the level of booking fees dynamically to balance the demand and supply at particular locations and

[123] For instance, some jurisdictions may regulate taxi fares including booking fees, only allow booking fees to be charged by taxi companies, and limit the number of licensed taxi companies. In such circumstances, a third-party application that is not a licensed taxi company would not be able to impose booking fees for its matching services.

[124] http://www.lta.gov.sg/content/dam/ltaweb/corp/PublicTransport/files/QoS.pdf

[125] Large taxi companies are subject to higher standards

times. This is economically efficient because taxi drivers are better incentivised to provide services when in demand (e.g. when it rains), and those passengers who are willing to pay more can find a taxi. However, from a social point of view, surge pricing may be seen as a form of 'profiteering'. There is also a concern that some taxi drivers may game the system by artificially distorting supply to induce a price surge. Furthermore, surge pricing may be seen as favouring the richer commuters who can better afford a price surge, rather than those who genuinely need a taxi at any particular moment.

63. In November 2014, the LTA introduced the *New Regulatory Framework for Third-Party Taxi Booking Services to Protect the Safety and Interests of Commuters*[126], in which it says:

> *"To ensure that taxi services remain equally accessible to all members of the public, bidding and pre-trip tipping for taxi services will not be allowed. In addition, the booking fees charged by third-party taxi booking services cannot exceed the booking fees charged by taxi companies."*

In other words, surge pricing for taxi booking is universally prohibited in Singapore. While there are clear social reasons to support the decision, there could still be some room for economic considerations to be partially incorporated. One such possibility would be for surge pricing to be prohibited for regular taxi services, and permitted for premium/limousine taxi services[127].

64. There are also some competition risks associated with the capping of third-party booking fees at the level charged by taxi companies. Firstly, third-party provider may be discouraged from providing more efficient and more innovative booking services than the taxi operators, because they could not be rewarded with a higher price. Secondly, taxi operators may potentially adjust their fee structure, such as reducing booking fees and increasing flag-down rates, to squeeze the margins of third-party providers, thereby justling them out of the market.

65. In this regard, we note that the LTA worked closely with CCS to assess the competition impact of these third-party taxi booking apps on the taxi industry, as well as how to encourage innovation within the market while preserving the fundamental tenets of LTA's taxi regulatory policies[128]. In our view, stronger collaboration between regulatory and antitrust authorities of this kind would help regulatory frameworks to become more conducive to innovation.

Rebalancing competition policy

66. Through the case studies above, we have illustrated the multifaceted challenges that innovation poses on competition law and policy. In our view, there is presently an imbalance of antitrust enforcement priorities in favour of protecting static competition vis-à-vis dynamic competition. There is also scope for antitrust and regulation to be better aligned in

[126] http://www.lta.gov.sg/apps/news/page.aspx?c=2&id=a63138fa-6cf7-4fa4-8979-a1d1613b9ae5

[127] According to LTA website, *"apart from the regular saloon-car taxis, taxi operators also provide taxi services at premium rates. These services are specially catered to accommodate more people or luggage, while others add touch to luxury"*. (http://www.lta.gov.sg/content/ltaweb/en/public-transport/taxis/types-of-taxi-services.html)

[128] CCS Media Release, *CCS's Work on Third-Party Taxi Applications Recognised by the International Competition Network and the World Bank Group*, 26 June 2015

promoting innovation. In this regard, we advocate (1) strengthening antitrust enforcement against lateral anticompetitive activities relative to horizontal and vertical ones; and (2) strengthening competition advocacy in addition to antitrust enforcement.

67. In relation to antitrust enforcement, we note that there are many kinds of anticompetitive activities in the marketplace. While we have set out the principle of putting more emphasis on lateral restraints of trade, we refrain from naming specific categories of anticompetitive activities that would warrant special attention. As illustrated in the *middleware* case study, the same category of conduct (tying) by the same company (Microsoft) could give rise to static competition issues in one instance (media players), and dynamic competition issues in another (web browsers). It should be the substance rather than the form that determines the antitrust priority.

68. In terms of competition advocacy, we recognise that it is relatively rare for a competition authority to possess the power to act on regulatory matters. However, there is still room for competition policy considerations to be reinforced in the regulatory domain, such as imposing a duty upon regulators and policy makers to consult and seek advice from the antitrust authority for a competition impact assessment when they conduct regulatory reviews and reforms.

Conclusions and caveats

69. In this paper, we established that innovation contributes positively to sustainable economic growth, and that competition law and policy needs to be rebalanced in order to unleash the maximum potential of innovation in fueling sustainable growth. In this connection, we recommend strengthening antitrust enforcement in protecting dynamic competition rather than static competition. We also recommend strengthening competition advocacy on top of antitrust enforcement.

70. In drawing these conclusions, we need to caveat that the recommendations are made relative to the status quo of competition policy. We recognise that there are still important economic sectors that are not innovation-driven. We also recognise that static competition remains important for some innovative sectors, and that there are horizontal and vertical competition issues that antitrust authorities need to deal with. We further recognise that innovation is only one of the factors that regulators and policy makers consider. As such, our views expressed in this paper must not be taken to the extreme.

71. We also acknowledge a concern that growing an economy through innovation might aggravate inequality[129]. Fundamentally, innovation reduces the need for labour, particularly the unskilled workers. Although innovation also provides an equal opportunity for entrepreneurs to create markets, the success rate is low. Concentrated markets means that the 'winner takes all', and shorter replacement cycles causes more transitional unemployment. This paper has not dealt with the relationship between innovation and inequality in depth. More policy analysis is required in this respect.

72. Lastly, while we have set out a conceptual framework why competition law and policy needs to be rebalanced for fostering innovation, we have not explored the practical

[129] Saint-Paul (2008) *Innovation and Inequality: How Does Technical Progress Affect Workers?*

implications of implementing our recommendations. For instance, literature[130] cautioned that "*the practical value of proposals to increase the use of dynamic analysis must be evaluated with an eye to the institutional limitations that antitrust agencies and courts face when engaged in predictive fact-finding*". Further research on the practical aspects of dynamic competition assessment is therefore necessary.

[130] Ginsburg and Wright (2012) *Dynamic Analysis and the Limits of Antitrust Institutions*