Discussion paper on

Data Portability

Personal Data Protection Commission
In collaboration with Competition and Consumer Commission of Singapore

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Disclaimer

The Personal Data Protection Commission Singapore (the "PDPC") commissioned London Economics to conduct a study on benefits and issues which might arise with the introduction of a data portability requirement, including the impact on consumers, businesses and competition should such a requirement be introduced in Singapore.

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Executive Summary

Singapore is studying the introduction of a data portability requirement. As this is a new global development, this paper discusses the impact and benefits of a data portability requirement for business innovation, market competition and consumers.

Data portability enables individuals to request for a copy of their data held by an organisation in a structured, commonly used, and machine-readable format, and for the organisation to transmit the data to another organisation.

The discussion of a data portability requirement and its impact goes beyond the issue of data protection. While providing individuals greater control over their personal data is very much a data protection consideration, the reduction of switching costs is typically argued in the context of competition [1]. Additionally, data portability can create impetus for the development of new products and services that can better utilise historical transactional data that consumers port over, in order to provide a more personalised experience immediately.

Data portability involves an overlap between competition law and data protection law. Both perspectives should be taken into consideration when implementing a data portability requirement and determining the optimal approach to reaping maximum benefits from such a requirement while keeping impact and costs manageable. This discussion paper sets out some of the benefits and issues which might arise in competition and data protection law with data portability.

From a competition perspective, data portability could lead to efficiencies for organisations, as organisations may find it easier to gain access to more varied data sets. This could, in turn, improve their ability to develop and improve product offerings which are better targeted to their customer base, by deriving more insights from an expanded data set. Data portability could also lead to a reduction of switching costs, as a customer can request for his/her data to be transferred to a competitor, without having to re-enter that information. This allows consumers to switch to the supplier with the most attractive offer, thus enhancing competition. Furthermore, in certain circumstances, organisations rely on data as an important, or even essential, input in the creation of comparable products. The inability of an organisation to gain access to such data could thus hinder its ability to effectively enter the market or expand its presence. A data portability requirement could facilitate access to this critical input, and lower the barriers to entry and expansion, thereby enhancing competition.

From a data protection perspective, data portability empowers individuals with greater control by enabling them to move their data more easily and allow their data to be utilised by other organisations. This extends the right of access[2] to its logical conclusion by allowing a copy of one's data to be provided to another service provider at the option of the consumer. Further, data portability boosts data flows in the economy. With access to more data and

[1] See pg. 59 of the Joint Occasional Paper by the Competition and Consumer Commission of Singapore, the Personal Data Protection Commission and the Intellectual Property Office of Singapore published on 16 August 2017, "*Data: Engine for Growth – Implications for Competition Law, Personal Data Protection, and Intellectual Property Rights*" for more details.

[2] The PDPA provides for the right of individuals to request for access to their personal data in the possession or under the control of the organisation, and organisations have the obligation to provide the requested personal data.

more diverse datasets, organisations can develop better insights and develop products and services that are better tailored to their customers. This paper also lays out the benefits of cross-sector portability beyond the traditional benefits of ensuring competition within an established market. Data movement across organisations and sectors can be used and combined in new ways, thereby spurring the development of new business models and innovative services in the Digital Economy. Practically, however, such a requirement may also result in compliance costs which businesses will attempt to pass on to consumers. The net effect is expected to be beneficial since the compliance cost should be incremental to existing obligations to provide access and correction. It is hence important to consider the issues to ensure effective implementation of a data portability requirement. These include establishing the scope of data portability beyond classical definitions of personal data; consumer safeguards and assurances of data recipients' data protection and management practices; and security and interoperability to reduce friction between porting organisations and data recipients.

The issue of data portability and data flows is at a unique crossroad between data protection and competition regulations, and should not be considered in isolation. Both perspectives should be taken into consideration when implementing a data portability requirement, and determining the optimal approach to reaping maximum benefits from such a requirement while keeping costs manageable.

1. What is data portability?

1.1 Data portability addresses some of the fundamental challenges faced by the data economy – making the data mobile and flow where it is most useful, and empowering individuals with more control over their personal data[3].

1.2 Data portability "allows individuals to obtain and re-use their personal data for their own purposes across different services. It allows them to move, copy or transfer personal data easily from one IT environment to another in a safe and secure way, without hindrance to usability[4]." As such, data portability has the potential to overcome the challenges associated with the current practices of data collection and data use.

1.3 Notably, data portability:

- Expands what can be done with the data;
- Empowers individuals with greater control over their own personal data;
- Encourages and facilitates data access and innovation in data use;
- Enables new business models and growth of innovative services with greater flow and access to data; and
- Potentially lowers barriers to entry or expansion in circumstances where data is an important input for competitors to provide comparable products.

1.4 The requirement to port data between service providers has the potential to ease an individual's efforts to switch between different providers as it eliminates the repetitiveness of having to provide their personal data each time they switch between service providers, and thereby lowers switching costs for consumers.

1.5 Portability of historical transactional data is expected to create impetus for competitive offerings for customers to switch service providers as the new service provider can immediately provide more personalised services once it has access to the customer's historical transactional data. Data portability can benefit customers by reducing barriers for competitors who are providing competing services to the extent that such data is important or even essential for competitors to provide comparable products. This is expected to introduce more vibrancy in the competition for customers and provide impetus for innovation in services.

1.6 In this context, the objectives of data portability and competition policy are aligned, in that consumers potentially benefit from having individual rights to data portability while market competition is enhanced by the existence of such rights.

[3] Under the PDPA, "personal data" means data, whether true or not, about an individual who can be identified (a) from that data; or (b) from that data and other information to which the organisation has or is likely to have access.

[4] United Kingdom ("UK") Information Commissioner's Office – Guide to General Data Protection Regulation (GDPR) / Individuals Rights / Right to Data Portability

2. International landscape on data portability requirement

2.1 Several jurisdictions, such as Australia, the European Union ("EU"), India, Japan, Philippines, New Zealand and the United States ("U.S.") (State of California) have either implemented or are considering introducing the right to data portability in their domestic laws. Certain jurisdictions are also implementing data portability for specific sectors (e.g. financial sector in the United Kingdom ("UK") and health sector in U.S.).

Australia

2.2 In 2017, Australia's Productivity Commission[5] recommended that the Australian Government introduce a Consumer Data Right ("CDR") to improve consumer control over the data which businesses hold in relation to consumers' use of their products and services. This entails providing consumers better access to their data and the ability to direct data to be transferred to data recipients, which would make it easier for consumers to find a better deal and share the data only with trusted third parties. For example, consumers could share their data with trusted service providers or comparison services to search for service offerings. In January 2019, the *Treasury Laws Amendment (Consumer Data Right) Bill 2019* was tabled in Parliament to introduce the CDR, which would allow customers access to their banking, energy, phone and internet transactions[6]. The application of the CDR to open banking will adopt a phased implementation approach from July 2019, with all major banks[7] allowing consumers to access and safely transfer their banking data to trusted parties. Data on credit and debit card, deposit and transaction accounts will be made available by July 2019, and data on mortgages will be made available by February 2020[8].

EU

2.3 The EU General Data Protection Regulation ("GDPR") came into force in May 2018 and its right to data portability provides that all data subjects shall have the right to receive the personal data concerning him or her, which he or she has provided to a controller, in a structured, commonly used and machine-readable format. The GDPR also provides that, where technically feasible, the data subject shall have the right to have the personal data transmitted directly from one controller to another[9].

[5] Australian Government Productivity Commission report on data availability and use published on 8 May 2017.
[6] Parliament of Australia, dated 13 February 2019.
[7] ZDNet (10 May 2018) Australia to force "big four" to open banking data by July 2019. The Commonwealth Bank of Australia ("CBA"), the National Australia Bank ("NAB"), the Australia and New Zealand Banking Group ("ANZ") and Westpac currently hold around 95 percent market share of the entire Australian finance industry.
[8] Australian Government Treasury. Government response to review into open banking, dated 9 May 2018.
[9] Article 20 of the GDPR – Right to data portability, and Recital 68 – Right to data portability.

India

2.4 The draft Personal Data Protection Bill, submitted to the Government on 27 July 2018, included the right to data portability, where every Indian citizen can ask companies to share details of his/her personal data that has been generated while he/she was using a service or good[10]. Individuals whose personal data is being used and stored by an organisation will have the right to receive that data in a structured, commonly used format that can be read by technology or machines that any other organisation may be using[11]. Sectors such as insurance are considering the introduction of such rights to enhance continuity of insurance benefits[12].

Japan

2.5 Japan's Act on Protection of Personal Information currently does not provide for a right to portability. However, the Government has announced its intention to study the feasibility of introducing such a right. In 2017, the Ministry of Economy, Trade and Industry ("METI") and the Ministry of Internal Affairs and Communications ("MIC") convened a study group on data portability rights[13] to study the effects brought about by introducing such rights, potential challenges in achieving data portability, and approaches to data portability in the fields of medical care, finance and electricity. The Ministries aim to put up their recommendations on data portability, together with potential revisions to Japan's internet privacy law, by 2020[14].

Philippines

2.6 Section 18 of the Data Privacy Act of 2012 provides that where personal information is processed by electronic means and in a structured and commonly used format, the data subject has the right to obtain from the personal information controller a copy of the data undergoing processing in an electronic or structured format, which is commonly used, and allows for further use by the data subject[15].

New Zealand

2.7 In its report on the current operability of the Privacy Act tabled in Parliament in 2017, New Zealand's Privacy Commissioner proposed introducing a right to personal information portability to support and strengthen the fundamental right of access to

[10] Quartz India (30 July 2018) What Indians should know about the proposed data protection law, Times of India (28 July 2018) Panel gives boost to portability of data.
[11] Times of India (28 July 2018) Panel gives boost to portability of data.
[12] The Hindu Business Line (2 August 2018) Customer data portability to be introduced in insurance sector.
[13] Ministry of Economy, Trade and Industry establishment of study group for data portability announced November 2017, Nikkei Asian Review (6 December 2017) Japan eyes easy consumer access to personal data.
[14] Nikkei Asian Review (6 December 2017) Japan eyes easy consumer access to personal data.
[15] National Privacy Commission – Republic Act 10173 – Data Privacy Act of 2012, IAPP (12 July 2017) GDPR matchup: The Philippines Data Privacy Act and its implementing rules and regulations.

information and to enhance consumer choice[16]. The Privacy Commissioner's report proposes for New Zealand's version of the right to, minimally, entitle the individual concerned to rights comparable to those contained under the GDPR.

U.S. (State of California)

2.8 Exploration of data portability rights in the U.S. began with the Office of Science and Technology Policy's request for information[17] in October 2016 to understand the benefits and drawbacks of increased data portability. The financial sector is increasingly taking note of the impact of introducing such rights. The U.S. Consumer Financial Protection Bureau ("CFPB"), for one, launched a late-2017 inquiry into consumer challenges in accessing, using and securely sharing their financial records[18]. Separately, one state has made some headway on the data portability discussions. California enacted the California Consumer Privacy Act ("CCPA") in 2018 which provides for consumer access and data portability rights. The CCPA's data portability requirement provides that businesses that receive verifiable consumer requests must promptly take steps to disclose and deliver, free of charge to the consumer, the personal information requested by the consumer. The information may be delivered by mail or electronically, and if provided electronically, shall be in a portable and, to the extent technically feasible, a readily usable format that allows the consumer to easily transmit this information to another entity[19].

3. Potential effects of data portability on the market

3.1 Discussions on the impact of data portability[20] in economic terms have focused mainly on two aspects: (i) a reduction in the cost of transferring data; and (ii) the ability to combine data from different sources. As a result of that, a number of effects[21] can be identified[22]:

(a) **Effects on market competition arising from potentially lower switching costs and barriers to entry and expansion,** where portability requirements make it easier for consumers to change service providers, and enhances the ability of new or existing organisations which rely on data as an important input to

[16] Office of the New Zealand Privacy Commissioner report to the Minister of Justice under section 26 of the Privacy Act published on 3 February 2017 – Recommendation 1: A right of personal information portability.
[17] The White House (30 September 2016) Exploring data portability.
[18] Forbes Magazine (11 October 2017) The data portability landscape is changing globally and the U.S financial sector is taking notice.
[19] Norton Rose Fulbright Data Protection Report (29 June 2018) California passes major legislation, expanding consumer privacy rights and legal exposure for US and global companies, The New York Law Journal (13 July 2018) Understanding California's game-changing data protection law and its global impact.
[20] There are potential tensions between competitive benefits from data portability and the implementation aspects of data portability. For example, the impact on lowering switching costs if the scope of data portability covers only a limited range of data. Conversely, an onerous data portability right may result in higher costs to the companies implementing such a right.
[21] Given that data portability is not widely implemented, these key effects depend on a number of assumptions. There is little empirical evidence for the relative importance of different effects or for the cost of implementation and compliance. In-depth market studies are recommended to identify the effects and the likely balance of costs and benefits for specific markets or sectors of the economy.
[22] The effects identified in this discussion paper may differ depending on the type or scope of data which is transferred or combined from different sources.

compete effectively respectively;

(b) **External benefits arising from increased data use** where portability leads to more data being provided by individuals to organisations, and this may bring about value that is not (explicitly) reflected in the benefit received by the individuals themselves;

(c) **Higher productivity** derived from the ease of combining data from different sources, thereby lowering the cost of producing data-enabled products and services; and

(d) **Innovation** from combining data in new ways across organisations and industry 'silos'.

3.2 A key effect of portability[23] is that it could lower the barriers to entry or expansion, as new or existing organisations without an established customer base may be able to acquire data at a lower cost. The impact of these lowered barriers to entry or expansion would be particularly important in circumstances where data is an important (or even essential[24]) input and organisations cannot acquire such data at any cost. That said, where consumers do not exercise their choice to switch to the new organisations or request for their data to be transferred to the new organisations, the ability of new organisations to benefit from a data portability requirement is less clear.

3.3 There are also other benefits derived from increased data use[25] – ranging from economies of scale to positive externalities, to network externalities. These are described in greater detail below.

3.4 Crucially, making the value of data more visible also supports the bringing together of diverse data sources. This creates benefits in terms of productive efficiency (e.g. more precise predictions based on a larger set of variables) and recombinant innovation. In turn, the greater visibility of the value of data would likely beget a more vibrant data sharing environment (within or across industries), enabling businesses to unlock greater value from diverse data sets and derive additional insights for the benefit of consumers.

[23] Note that this effect implies that the net impact of data portability is unclear if consumer privacy is impacted by the amount of data being used. Wohlfarth (2017) presents a model in which providing data imposes a cost on consumers. He finds that the overall welfare is higher if data portability is available, but this arises at a cost. Consumers might be worse off, because data portability may induce organisations to ask for more data than they would if data portability were not available.

[24] See paragraph 3.29 for a more detailed explanation of the circumstances under which data might be considered an "essential facility".

[25] See also generally, the Joint Occasional Paper by the Competition and Consumer Commission of Singapore, the Personal Data Protection Commission and the Intellectual Property Office of Singapore published on 16 August 2017, "*Data: Engine for Growth – Implications for Competition Law, Personal Data Protection, and Intellectual Property Rights*" for more details on the benefits of increased data use and data sharing, as well as the adoption of data analytics.

Better use of data increases output

3.5 Data portability expands an organisation's access to data even if it does not collect the data itself (where, for example, the data becomes cheaper to obtain). At the organisational level, any production process that relies on data to achieve a certain output will benefit from more data being used. For example, data can be used synergistically to determine and automate manufacturing output and reduce material wastage at the same time. Research also suggests that organisations that adopt more data-driven decision-making processes have output and productivity rates 5-6% higher than what would be expected given their investments and information technology usage[26].

Combining data sources to lower costs

3.6 Data portability can also create efficiencies through "economies of scope of inputs"[27]. Organisations relying heavily on analysis of consumer data are unique in the sense that variety of input[28] (i.e. data) can impact business costs. More variety in data – that is, having access to more sources of data – can provide better insight of consumer behaviour, and is an important driver of consumer-data analytics[29]. With better insights, organisations are better positioned to develop and improve product offerings tailored to their customer base. Cost of product development might be reduced as a result, since organisations are better able to understand their customer base and new products are less likely to fail. The cost savings may then be passed to other complementary services, for instance, advertisement campaigns might be cheaper because companies can now better target their marketing efforts to relevant consumers.

3.7 For organisations, data portability might enable these economies of scope of inputs by opening up data collected by different organisations. However, this effect can only arise on the basis that data collected by different organisations is sufficiently, or even distinctly, different. If all organisations collect the same types of information provided in similar structures, then the data which becomes available through data portability would be no more varied than the data already held by each respective organisation.

3.8 Economies of scope of inputs not only benefits organisations. Within data protection law, data portability is often discussed as a consumer right. The individual consumer determines whether his/her data is opened up to other organisations, and which organisations should be receiving his/her data. This allows the consumer to benefit from the cost savings made by organisations. By exercising his/her choice to withhold

[26] More precisely, a one standard deviation increase in their measure of data-driven decision-making increases productivity by 5%. Erik Bryynjolfsson, Lorin M. Hitt Hellen Kim Heekyung (2011) Strength in numbers: How does data-driven decision making affect organisation performance – survey of business practices and information technology investments of 179 large publicly traded organisations.

[27] This concept is different from the established concept of economies of scope. That concept deals with organisations' outputs rather than inputs.

[28] CMO from IDG (15 September 2016) Building customer insights in the data and digital age.

[29] Bean, 2016; Howarth, 2016; Van den Driest, Sthanunathan, & Weed, 2016; Wilson, n.d.

his/her data from organisations that provide 'bad offers' and choosing only to give it to organisations that extend 'good offers', consumers can assert positive pressure on service providers to provide more competitive service or product offerings.

External benefits of data use are increased

3.9 Externalities arise if the actions of an economic agent impact others without this impact being priced into a price mechanism. Negative externalities[30] arise if an economic agent imposes a cost on others without paying for it. Positive externalities[31] arise if an economic agent creates benefits for others without being reimbursed for it.

3.10 Individuals sharing data with organisations can create positive externalities. When an individual shares his/her data with an organisation, he/she receives a product or service in return. The data provided by the individual can be used by the organisation to improve its products and services, or develop new ones. This benefits not only the individual who originally shared the data – the aggregation of such data across a large number of consumers also has the potential to benefit many consumers with similar characteristics.

3.11 In the absence of government intervention (e.g. lack of a data portability requirement), the amount of data shared in the economy depends solely on private benefits and costs and hence may be less than socially optimal. The introduction of data portability can reduce the effort to share data on the side of the consumers due to increased ease in replicating existing data. This may in turn encourage consumers to share more data, achieving the socially optimal level of data sharing. The external benefits might be particularly high in the healthcare sector, certain financial services applications (e.g. better risk assessment), as well as in transport and infrastructure planning.

Recombinant innovation[32]

3.12 An effect that could be very significant, but is presently difficult to analyse in the abstract, is the effect that the combination of data (which is currently being held in silos) has on innovation (i.e. the creation of new products and services). There is clear potential to combine different types of data in novel ways to produce benefits and generate new insights. It is likely that certain data types will be more widely usable than others – for example, location data is an example of data that is likely to have applications across different sectors, as compared to other types of data. This type of 'recombinant' innovation may, over time, become one of the key benefits of portability, as it reduces switching costs of technology adoption, and in the process,

[30] Economics Online UK: A negative externality is a cost that is suffered by a third party as a result of an economic transaction.
[31] Economics Online UK: A positive externality is a benefit that is enjoyed by a third party as a result of an economic transaction.
[32] Strategy + Business Winter 2004 Issue 37 (30 November 2004) Recombinant innovation – the best new product ideas are hatched by collaboration, not soloists. Rachel Griffith, Lee Sok Bae, Bas Straathof (16 November 2016) Recombinant innovation and the boundaries of the organisation.

speeds up technological progress[33].

Price discrimination

3.13 Knowing more about a potential consumer increases the ability of organisations to tailor both the product characteristics and the price of goods and services. That said, price discrimination[34] may result in consumers who are willing to pay more, being charged more, if organisations are able to discriminate on prices. A rough rule of thumb is that price discrimination increases overall economic efficiency if it is associated with greater level of sales.

3.14 However, under certain scenarios, price discrimination may raise issues under section 47 of the Competition Act. For example, an organisation which has substantial market power adopting a discriminatory pricing structure to set predatory prices and/or set discounts which have the effect (or likely effect) of foreclosing all, or a substantial part of market may raise concerns under the Competition Act. Similarly, a vertically integrated organisation which has substantial market power in the supply of an important input for a downstream market in which it also operates could potentially harm competition by using a discriminatory pricing structure to apply a margin squeeze on competitors that distorts competition in the downstream market. The efficiencies and benefits generated from any price discrimination will be taken into account in determining whether the conduct at issue amounts to an abuse[35].

Lower transaction costs and market dynamics

3.15 The immediate economic effect of introducing data portability is a reduction in friction when it comes to transactions involving personal data. Rather than re-entering information (or waiting for data to accumulate), an individual can simply ask for his data to be transferred to another organisation. Depending on the data in question, a large amount of data (for example, an individual's transaction history) may be transferred over a period of time. This has direct benefits in terms of time savings and increased convenience, but also an impact on market dynamics.

3.16 The lowering of switching costs would often be seen as the most direct effect of data portability[36]. However, the indirect effects on competition and innovation need to be considered to gauge the effect of data portability on a particular market. A summary of the impact of data portability on switching, competition and innovation is provided in the table below.

Outcome	Impact of data portability
Switching	▪ Data portability reduces friction involved in moving data for consumers. This lowers the cost of switching[37].
Competition	▪ The reduction in switching costs allows consumers to switch to the supplier with the most suitable offer. This could enhance competition and potentially lower the barriers to

	entry.
Innovation	▪ Data portability is likely to facilitate innovation, particularly in concentrated markets and in adjacent markets where organisations provide complementary products and/or services.

Switching and competition

3.17 The reduction of friction in data movements from data portability may lead to a lowering of switching costs, and result in more competition in the market as consumers can choose to switch and exercise their rights to transfer their data from one organisation to another. For example, if a product relies on data either provided by the individual or generated while using the product, the lack of data portability can make switching costly. Individuals who want to switch would have to re-enter their information, and some data may be lost in the process. High switching costs create a disincentive for consumers to switch to an alternative organisation even if the alternative organisation's deal is better relative to the existing organisation's deal, thus hampering competition. In such scenarios, data portability allows consumers to more easily react to price and quality signals and switch to the supplier offering the best deal. This enhances competition and reduces the barriers to entry for new businesses seeking to enter the market as well as barriers to expansion for existing businesses seeking to compete for more customers[38]. As highlighted at paragraph 3.2 above, such lowered barriers to entry or expansion could have an important impact in circumstances where data is an important (or even essential) for competing suppliers to provide a comparable product.

3.18 In markets where network externalities[39] are strong, data portability could lead to consumers gravitating towards the dominant network to benefit from the network

[33] Koen Frenken, Luis R. Isquierdo, Paolo Zeppini (September 2012) Branching innovation, recombinant innovation, and endogenous technological transitions.

[34] Economics Online UK: Price discrimination is the practice of charging different price for the same good or service. There are three types of price discrimination – *first degree* price discrimination occurs when an organisation charges a different price for every unit consumed. The organisation is able to charge the maximum possible price for each unit which enables the organisation to capture all available consumer surplus for itself. *Second degree* price discrimination means charging a different price for different quantities, such as quantity discounts for bulk purchases. *Third degree* price discrimination means charging a different price to different consumer groups (e.g. peak surcharges).

[35] See paragraphs 11.14 to 11.17 of the CCCS Guidelines on the Section 47 Prohibition 2016.

[36] J. Almunia (26 November 2012) Competition and data protection. Speech to privacy platform event – competition and privacy in the market of data. I. Graef, J Verschkelen, P. Valcke (2013) Putting the right to data portability into a competition law perspective. I. Graef (2016) Data portability at the crossroads of data protection and competition policy.

[37] That said, errant businesses may attempt to include terms and conditions within its contracts with consumers (e.g. impose penalties or hidden costs on consumers who elect to exercise their right to data portability) which may negate the reduction of switching costs.

[38] The enhancement of competition within the market as a result of data portability may depend on the level of countervailing buyer power, which is the ability of a customer to constrain the ability of an organisation to raise its prices. In scenarios where countervailing buyer power is absent or low, given that each individual customer may only constitute an insignificant proportion of the supplier's revenue, the enhancement of competition may be limited.

[39] In markets characterised by strong network externalities, the value of products increases as more consumers use the products. For data-heavy markets, including financial services, e-commerce and entertainment, network externalities can arise because more product usage means that the producer has more data to refine and tailor its product to the individuals. This, in turn, creates more value for the consumers.

effect, leading to increased market concentration. However, where a supplier achieves a dominant position from the merits of its offerings, such conduct would generally not raise competition concerns, unless the supplier engages in exclusionary conduct which foreclose (or is likely to foreclose) markets or weaken competition.

3.19 As such, it would be beneficial to consumers to have lower switching costs, as it enables consumers to switch to a supplier which offers the best deal. This enhances the functioning of markets and potentially lower the barrier to entry.

Innovation and competition

3.20 An indirect benefit of data portability is that it may stimulate innovation. Broadly speaking, more competition due to data portability in an already competitive market may decrease innovation as the incentive to innovate becomes smaller. Conversely, more competition due to data portability in a highly concentrated market is likely to increase innovation[40]. As data-driven markets are more likely to exhibit strong network effects and become concentrated overtime, data portability could increase competition and innovation.

3.21 When organisations provide complementary goods or services, data portability is likely to increase innovation[41]. The reduction in switching costs could encourage new users to enter the market. The organisation providing the complementary goods or services similarly experiences an increase in demand and data flow, which may facilitate innovation. In addition, the reduction in resources required to collect the data implies that the resources could be re-directed to further innovation.

3.22 The effect of data portability on innovation may also depend on the types of data which are subject to a data portability requirement. A data portability requirement which covers a broad range of data might potentially dampen the degree of innovation. For instance, a supplier may be required, at the request of a consumer, to port the consumer's personal particulars, transactional data and data derived from the consumer's interaction with that supplier. The latter may comprise insights drawn from the transaction history as well as additional information from the original supplier. Insights derived can be used to develop new products which are better suited to consumers' needs. That supplier may not be as incentivised to innovate if it is not able to exclusively reap the rewards from such derived data.

3.23 On balance, data portability is likely to facilitate innovation, particularly in concentrated markets and where products and/or services are complementary.

[40] The relationship between competition and innovation is subject to ongoing debate in the economics literature. Aghion et al. (2014) confirm the mechanisms involved in an economic experiment. Tingvall & Poldahl (2006) observe the inverted-U shape but not robustly. Polder & Veldhuizen (2012) observe the inverted-U shape for Dutch industries. However, Hashmi (2013) fails to confirm the existence of the inverted-U shape. Instead, he finds a "mildly negative" relation. Similarly, Correa (2012) does not find an inverted-U shape. Using the same dataset as Aghion et al (2005), but recognising a structural break in the data, he finds a positive competition/innovation relation from 1973 to 1982, and no relation between 1983 and 1994.
[41] Barbara Engel (11 June 2016), Data Portability among online platforms. Internet Policy Review (Journal on Internet Regulation), Volume 5, Issue 2.

Data portability and competition law

3.24 Discussions on the impact of data portability on competition have gained momentum within the competition and regulatory communities, especially the interaction between data use and competition[42]. In 2012, former EU Commissioner for Competition Policy Joaquín Almunia spoke in support of markets relying on data to allow for transfers of data to create effective competition.

3.25 Misuse of data and lack of data portability have been recognised as being potentially subject to competition law. The Study Group on Data and Competition Policy set up by the Japan Fair Trade Commission argues that data can be a major element in competition and that it should be under scrutiny of competition law. Former EU Commissioner Almunia noted concerns about the lack of data portability of online advertisement campaigns in antitrust investigations against Google. A joint report by the French and German competition authorities[43] points out that "collection of data may result in entry barriers when new entrants are unable either to collect the data or to buy access to the same kind of data, in terms of volume and/or variety, as established companies.".

3.26 In this regard, what may be relevant is "third-party data", i.e. data collected by another entity, which is needed to compete effectively against an organisation that collects its own data. The French and German joint report explains that barriers to entry due to data have important consequences for competition "only when the level of market concentration is relatively high or if the market characteristics are favourable to tacit collusion", which the authorities alluded is often true for the most data intensive sectors, such as search engines and social networks. In addition, the characteristics of digital markets make the marginalisation of smaller competitors "self-reinforcing: access to a larger amount of data may support better services, which in turn attract more customers – and more data ('snowball effects')" and ultimately lead towards "monopolisation for data-related markets".

3.27 A further issue highlighted in the joint report, as well as in a 2017 Occasional Paper by the CCCS, in collaboration with the Intellectual Property Office of Singapore and the PDPC[44] (the "Joint Occasional Paper"), concerns the impact of datasets held by different parties in a merger. Combining different data sources might exacerbate the impact of a merger on market structure, even if conventional market share measures do not appear to give rise to competition concerns. Organisations with small market shares might possess valuable data that, combined with an incumbent's data, amplifies the incumbent's market power. However, the potential for increased efficiency from combining datasets as an efficiency-based justification for mergers is also recognised.

[42] The Wall Street Journal (2 January 2018) EU asks: does control of "big data" kill competition?

[43] Autorité de la Concurrence and Bundeskartellamt (2016)

[44] See the Joint Occasional Paper by the Competition and Consumer Commission of Singapore, the Personal Data Protection Commission and the Intellectual Property Office of Singapore published on 16 August 2017, "Data: Engine for Growth – Implications for Competition Law, Personal Data Protection, and Intellectual Property Rights" for more details.

3.28 Finally, both the joint French and German report and the Joint Occasional Paper recognise the potential for abuse of a dominant position at the intersection of competition law and data. Possible scenarios include[45]:

- **Discriminatory access:** Where a dominant organisation discriminates access to critical data for competitors. Discriminatory access may also be achieved through vertical integration (for example, where an organisation discriminates against downstream competitors), or by engaging in bundling/tying;

- **Exclusive contracts:** Where an organisation abuses its dominant position by entering into exclusive contracts with customers, thereby foreclosing the entry of new competitors; and

- **Refusal to supply:** Under limited circumstances where data cannot be replicated and no alternative solution is available, a refusal to supply access to data to competitors by a dominant organisation may constitute an abuse of dominance.

3.29 Generally, many types of data are easily available and/or replicable. It is only in limited circumstances that certain types of data or databases would be objectively indispensable such that the data/database cannot be replicated and no alternative solution is available. As stated in the CCCS Guidelines on the Section 47 Prohibition 2016[46], a facility (such as data) will only be viewed as essential where it can be demonstrated that (i) access to it is indispensable in order to compete in a related market, and (ii) where duplication (of the data) is impossible or extremely difficult owing to physical, geographical, economic or legal constraints (or is highly undesirable for reasons of public policy). As with refusal to supply cases in general, a refusal to allow access will constitute an abuse only if there is evidence of (likely) substantial harm to competition and there is no objective justification for the dominant undertaking's behaviour. In determining whether a refusal to allow access to an essential facility constitutes an abuse, and if so, on what terms access should be granted, care must be taken not to undermine the incentives for undertakings to make future investments and innovations, especially where the product is a result of previous innovation. It is rare that any datasets would be deemed as critical given that companies who require such datasets can either replicate the dataset or collect similar dataset with certain cost. It is only in limited circumstances that certain types of data are only available to certain parties[47].

3.30 In other words, it is only in very limited circumstances that competition law enforcement will achieve an outcome where an organisation is required to share its data. Additionally, any resultant requirement for an organisation to share its data will likely be highly specific, limited in scope and imposed by the Courts or the competition regulator. This should be distinguished from the form of data portability

[45] Autorité de la Concurrence and Bundeskartellamt (2016), p. 17-20; The Joint Occasional Paper (2016), p. 12.
[46] Paragraphs 10.13 – 10.14 of the CCCS Guidelines on the Section 47 Prohibition 2016.
[47] See the Joint Occasional Paper by the Competition and Consumer Commission of Singapore, the Personal Data Protection Commission and the Intellectual Property Office of Singapore published on 16 August 2017, "*Data: Engine for Growth – Implications for Competition Law, Personal Data Protection, and Intellectual Property Rights*" for more details.

requirement which can be established through data protection principles (e.g. the data portability right in the EU GDPR). The data portability requirement is unconditional and applies upon the data subjects' demand.

3.31 Another difference is that a data protection based data portability requirement will apply only to personal data of natural persons, whereas the disclosure of data which might occur through competition law enforcement apply to all data, including non-personal data.

3.32 Data protection law and competition law serve different and complementary purposes in relation to data portability. That said, the competition perspective on data portability could point the way to identifying markets where portability creates the greatest economic benefit. This will depend on how data is used in a particular market, and the competitive environment that might support or hinder the free flow of data.

4. Other considerations relating to implementation of data portability

4.1 Beyond economic terms, other considerations arise when implementing data portability. These considerations invoke two key questions – how data portability should be implemented, and at what cost. Furthermore, impact of data portability on industries and businesses is likely to vary, in addition to differences in methods and costs of implementation. This section of the paper considers these issues in more detail.

Clear definition of data and derogations

4.2 The limits of data portability should be clearly defined to provide certainty to businesses. Clarity should be provided on what types of data are subject to the portability requirement (e.g. electronic or non-electronic data, whether user provided data, observed data and/or derived data are covered). From the consumer's perspective, the data portability requirement will be most beneficial if it extends beyond classical personal data – i.e. information about an individual, including data generated from his activity – to data that is provided by him, for example, emails, photographs and documents. This increases the incentives and benefits to innovation and competition that are expected to accompany a data portability requirement.

4.3 It is likely that data portability is more costly for some businesses than for others[48]. Proportionality will need to be maintained for organisations that do not hold much data in the first place. A de minimis threshold for data volume and cap on the frequency of requests might be contemplated.

[48] See sub-section "Implementation and compliance costs".

Data portability format and technical standards

4.4 While the European Data Protection Board ("EDPB") has clarified in its guidelines[49] that the data ported has to be in a "structured, commonly used and machine-readable format", there remains a lack of clarity over what the format entails and the format specifications to achieve interoperability. Presently, there are no internationally defined or developed standards to address data portability.

4.5 The issue of format and standards needs to be considered both from the viewpoint of the organisation that needs to port the data, and the data recipient. Measures for verifying the identity of the data recipient prior to transmission of data to guard against fraud needs to be considered. In addition, the data provided should be in a format that can be re-used whether portability occurs in a bilateral (between two service providers) or multilateral setting (between multiple service providers). The standards for transmission of data between organisations also needs to be considered, as well as standards for the protection of data during the transmission. Efforts by industry to create some form of interoperability have been slow to date, with the exception of the recently launched Data Transfer Project[50] to create an open source, service-to-service data portability platform.

4.6 The certification of data quality (as well as other value-adding processes such as data cleaning, transcribing into different formats) might be the nucleus of a functioning ecosystem for data. Moreover, such services would allow value creation and would sit on top of a general portability requirement.

4.7 The data portability format and technical standards should be considered not just by the data protection authority, but also the relevant sector regulators and industry players in order to maximise its flow within and across sectors, and the expected economic benefits.

Implementation and compliance costs

4.8 There is only limited evidence on implementation and compliance costs for data portability schemes. Most of the evidence focuses on open banking regimes, such as 2014 estimates by UK's Open Data Institute and Fingleton Associates put the costs of implementation at below £1 million (S$1.8 million) and tended to cluster around low-to-mid hundreds of thousands. These numbers represent the implementation cost per bank. They further found that ongoing compliance costs amounted to around £400,000 (S$ 700,000) per year. This was split evenly between the external cost, such as the cost for software licences) and internal staffing costs.

4.9 It is worth noting that implementation and compliance costs are not limited to maintaining the necessary technology. Business implementation costs could be at

[49] See EDPB Guidelines on the Right to Data Portability.

[50] Data Transfer Project ("DTP") is a collaboration of organisations committed to building a common framework with open-source code that can connect any two online service providers, enabling a seamless, direct, user initiated portability of data between two platforms. Current contributors include Facebook, Google, Microsoft and Twitter.

least as high as technology costs. Separately, the cost of implementation and compliance will depend on the type of organisation that is subject to compliance. "Born digital" organisations will be able to build the necessary infrastructure for compliance from scratch. Businesses relying on legacy systems, however, will be faced with suboptimal systems. This makes compliance costs higher for these "legacy systems".

4.10 Examination of compliance costs needs to factor in the issue of company size and associated concerns. For example, imposing similar compliance requirements on all companies regardless of size may result in disproportionate compliance costs on the smaller enterprises that may not have the requisite level of knowledge or resources to develop systems to allow data portability. This might impede the ability of small and medium enterprises to compete effectively with its larger competitors.

4.11 One possible way is to adopt open, widely-used and established data standards to support portability and reduce the implementation cost for business. Such data standards should be set at a minimum to ensure a de facto baseline that is relatively easy to achieve and access, and to ensure a minimum level of portability across all sectors. This can be complemented with sets of more tailored standards to support specific clusters of businesses.

4.12 On this note, a relevant consideration would be whether organisations may impose a charge for porting data, and if so who determines the reasonableness of the fee in relation to data portability requests.

Cross-sectoral approach and use-cases

4.13 Data portability may yield more immediate, larger benefits in some sectors than in others, depending on public perceptions and trust towards data sharing within the sector. These sectors could be identified and used as demonstrators. Looking at overseas jurisdictions' approaches, the financial sector (e.g. open banking) and utilities are potential candidates.

4.14 The benefits anticipated from combination of data, for example, external benefits and recombinant innovation, are likely to be significant when data is ported across traditional sector boundaries. Portability of data across sectors is expected to support innovation in the Digital Economy, which does not respect traditional sector boundaries when creating new business models, products and services.

Data protection, security and liability

4.15 Data security and managing the ported data is another area of concern, especially when data portability means that the data has to be shared between a group of data stakeholders of diverse company sizes, disparate security and risks management abilities.

4.16 Creating an accreditation system[51] for trusted data recipients may be one way to assuage individuals' concerns over security and protection for ported data. Separately, organisations can develop a secure identity framework to ensure the security and effectiveness of data portability. For instance, unambiguous and secure identification of data subjects is required to assess the legitimacy of the data portability request and to identify the data to be ported.

4.17 There should also be clarity on the limits of liability for the data recipient. The porting organisation cannot be expected to vet all data recipients, so it should be exempted against any claims for damage from any misuse of data by data recipients. The same goes for data breaches suffered by individuals if the data is under their own care. The porting organisation should also not be held liable against any claims relating to the accuracy and quality of the ported data unless it was demonstrated that the data was corrupted while under the care of the organisation.

4.18 The circumstances under which an organisation may refuse to port data and the timeframe within which an organisation should port the data should also be considered. Related considerations are the regulator's powers to review refusals to port data or failure to port data within reasonable timeframes.

Consumer protection

4.19 It is an unfair practice for a supplier, in relation to a consumer transaction, to (a) do or say anything, or omit to do or say anything, if as a result a consumer might reasonably be deceived or misled; (b) to make a false claim; (c) to take advantage of a consumer if the supplier knows or ought reasonably to know that the consumer is either not in a position to protect his own interest or is not reasonably able to understand the character, nature, language or effect of the transaction or any matter related to the transaction; or (d) do anything specified in the Second Schedule to the Consumer Protection (Fair Trading) Act (Cap. 52B) ("CPFTA")[52].

4.20 It is important to highlight that errant organisations which opt to impose hidden charges or mislead consumers in relation to the consumer's right to data portability may attract liability under the CPFTA. Organisations should not engage in practices which might fall foul of section 4 of the CPFTA.

4.21 Consumer safeguards should also be considered, for instance, information that organisations would need to provide to consumers to enable them to exercise their rights under the data portability requirement and to protect their interests. Information extends beyond the nature of the new product or service that they are acquiring or transparency over how their data will be utilised by the data recipient. Equally pertinent is information concerning the track record, reputation and data

[51] An example is the UK implementation of open banking. All participants to open banking in the UK need to be regulated by an appropriate financial regulator and have to be registered with the open banking implementation entity.

[52] The Consumer Protection (Fair Trading) Act (Cap. 52A) ("CPFTA") protects consumers against unfair trading practices by organisations, and empowers consumers to seek civil redress against such unfair trade practices in Singapore. The CCCS is the administering agency of the CPFTA.

management and protection practices of the data recipient. A system for accredited trusted data recipient could extend beyond data security to providing assurance to consumers for these other areas.

5. Concluding remarks

5.1 Data portability has the potential to bring great benefits to consumers and businesses alike through the increased flow of data in the economy. Data movement across organisations and industries can be used and combined in new ways, spurring the growth of new business models and innovative services in the Digital Economy. However, regulators should caution from imposing disproportionate costs to either consumers and businesses, especially where systems are not interoperable. Key to this balancing act is the manner in which data portability should be implemented and the standards that should be adopted.

5.2 Data portability, like any other consumer right, has to strike a balance between affording the consumer control and access to his/her data, and minimising cost to businesses. While it is likely to improve the conditions for competition which would, in turn, improve services provided to consumers, it may also create compliance costs that can be passed onto consumers.

5.3 This paper provides a frame for stakeholders to understand and further discuss the impact and issues in implementing a data portability requirement. Such discussions will generate useful feedback for future consultations to determine an optimal approach to implementing a data portability requirement that will reap maximum benefits from data portability while keeping costs manageable.