Digital Single Market and the Global Financial Stability

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CONTENTS

I. Introduction ............................................................................................................. 1

II. The European Digital Single Market Strategy ...................................................... 7
   1. Basic Pillars of the Regulatory Changes ............................................................. 10
   2. The Digital Single Market and its Implications on Financial Stability .............. 15

III. The Current State of an Asian Digital Market ..................................................... 22

IV. The Asian Digital Initiative and Big Data 4.0 ...................................................... 31

V. Conclusion .............................................................................................................. 39

References .................................................................................................................. 46

Abstract ...................................................................................................................... 52
I. Introduction

Digital technologies are changing the way we interact with other participants in markets here and abroad. All players of the financial services industry are indeed being challenged and disrupted by new entrants in every aspect of financial services from payments to crowd-funding via ICO (Initial Coin Offering). Depending on how things evolve in the future, substantial untapped disruption potential can possibly change the way banking services are delivered and monitored. The thrust for change is positively related with the pent-up demand that left unmet by ubiquitous regulatory restraints. As it happens, the host of changes that have dominated the financial ecosystem has a common feature of allowing open competition with less barriers for entry. It increasingly becomes clear that the direct link between suppliers and consumers gets strengthened while the traditional intermediation based economy is on the decline. This type of direct interactions among various market participants that take place across national borders is a natural evolution from a segmented, silo-type of centralized system toward a more open and decentralized, distributed system as digital mobile network increasingly assumes larger share of value creation and transfer. More changes are on their way with the advent of new agile innovative Fintech players with new business models, user-friendly consumer
interfaces, peer to peer services, or advanced automated Internet of Things (IoT) devices. The expected change is foundational, not just disruptive among existing players. The evolution will even create new ecosystems, interlinking consumers to providers (Penker, 2015). So profound is the expected change that a new form or institutional structure is emerging and the trend will only get strengthened. For instance, a newly launched Kakao bank is becoming a huge sensation in Korea, prompting existing banks to change their strategy as well as improve their services with several Fintech partners.

In this vein, the rationale for the European Digital Single Market needs to be laid out carefully. Given the tepid performance of a monetary integration across the Europe, the recent set of legislative initiatives seem enough to jolt the sagging European economy from the doldrums of previous decades. Nothing seems better than the conditions for a revitalized digital economy that can fully exploit the data potentials through protecting data privacy and encouraging a better use of tightly protected data among new and existing entrants in the single market. Creating new grounds for economic value creations makes sense with the backdrop of increasingly ubiquitous digital network, where the connectivity among people and devices seems to dictate the newly emerging digital economy. As shown, the tremendous success of Google, Apple, Uber, and Airbnb is attributed to network effects that determine innovation opportunity, value creation, and growth.
in digital markets. This also applies to Netflix, Github, and Alibaba as well as the IoT that all rely heavily on network effects as an innovation resource (Schrage, 2016).

By turning the sagging productivity area into highly lucrative opportunities, the ICT network remains a bedrock for the multi-sided platform economy, where diverse interactions can propel scalability (Parker, Van Alstyne & Choudary, 2016). Specifically, the core of the proposed European Digital Single Market remains the data-driven value discovery on a digital network. Without data, this newly developed digital market cannot be analyzed and utilized properly. Big data allows us to see the things that could not be observed via naked eyes and the network effect has visible scalability to justify a large network. Similarly, we can decipher interesting connections among all things connected and come up with value propositions which we could not have been dreamed about. This is a cutting-edge frontier where money-balling can be combined with soft-nudges based on behavioral science and predictive analytics (Kahneman, 2011).

Given the enormous benefits, some issues related with financial stability need to be examined in a different setting. This is because of the potentially disruptive impact on financial stability that comes from an increasingly digitized network. While best efforts would ensure that the newly emerging digital markets provide all the benefits without incurring undue concerns for financial stability, the rest of
the world’s concern for endogenous financial vulnerability is justified. Research by Acemoglu, Ozdaglar, and Tahbaz-Saleh (2015) summarized two features of the financial network, incompleteness and interconnectedness, which may easily result in its instability and fragility. The incomplete nature of the financial network may cause individual banks to be overly exposed to the liabilities of a handful of financial institutions, and the highly interconnected feature would facilitate the spread of financial distress and solvency problems from one bank to the rest (Acemoglu et al., 2015). Given that the European initiative begins to take shape, it would trigger similar movements in other parts of the world and the stability concerns are sure to be on the rise. Above all, the equivalent Asian initiative is in order and some preliminary checks for the region are relevant. In fact, Asia has serious shortcomings in terms of securing the basics of the digital revolution. Asia is highly interconnected with supply chains, yet is has incomplete financial infrastructure with a lopsided dominance of the banking system. Also, Asia has a long tradition that favors top-to-bottom control in a centralized system, run by bureaucrats. With this type of setup, it would be extremely difficult to allow foundational innovations translated into economic value. Simply, any seeds for innovation can hardly survive the segmented governance and hierarchical processes. This means that Asia would find it difficult to transform and reform its system to accommodate changes that
occur across the expanded network in a horizontal manner.

The questions naturally arise because Europe is adapting to a new environment with a new set of legislation and directives, while Asia is grappling with new advances with legacy infrastructures and recalcitrant legal and regulatory framework. In contrast, the European initiative based on the General Data Protection Regulation (GDPR) and the Second Payment Services Directive (PSD2) is a very delicately and skillfully designed strategy based on incentives and market functioning. If Asia ever tries to emulate something similar, it would be a gargantuan task to change the mindset, governance, legal and bureaucratic system to accommodate changes that come from somewhere outside.

In this paper, we try to identify some of the obstacles when pursuing digital initiative in Asia in response to their European counterpart and lay out the best feasible roadmap for a Digital Single Market. It is our conjecture that this kind of forward-looking efforts is more important than immediate adjustment and responses to get ready for a digital catapult. The suggestions would take into account vital elements of a new digital market in terms of securing financial stability and consumer protection in a different setting. The so-called indicative forward guidance would eliminate market uncertainties and create proper conditions for participants to prepare themselves for the future. Instead of illuminating and coercing participants to follow leadership, the strategy for maximum
voluntary interactions among participants seems relevant. The rest of this paper consists of chapters on the breakdown of the European push for the digital economy and its broad-based implications, which is followed by a review on Asian economies and suggestions for the Asian Digital Single Market Initiative,
II. The European Digital Single Market Strategy

In this chapter, we delve into investigating the rationale for the European Digital Single Market Strategy. The initiative is targeted to create an ecosystem for many participants to engage on a bigger platform for maximum interactions within the realm of data privacy. In fact, the thorny issue of European economic integration has been given a new meaning after the European authorities embarked on their Digital Single Market initiative in the European Commission (2015). While monetary integration with fiscal adjustment failed dramatically during the past decade, the authorities remain vigilant and insightful to charter the future course of Europe in the right direction. In recognition of the fact that new innovations can only enhance human welfare after a rigorous consensus built among social constituents, the European Union’s approach to utilize legal and regulatory guidelines to foster a favorable ecosystem for a digital economy is the coup de grace. When data and technology-driven growth seems the only choice for most economies, the European Union’s strategic endeavor showcases the crucial pillars for economies to prosper in a digital economy. Data, regulation and governance remain the core elements to accommodate changes triggered by technology, innovation and openness.

As published in the European Commission (2015), the Digital
Single Market Strategy follows three main objectives: First, it is essential to provide better online access for consumers and businesses to digital contents across Europe via providing standardization. Accordingly, interoperability enhancements are necessary. In order to lower barriers to cross-border online activity and achieve better access for purchases of digital goods and services, eliminating the gap between the online and offline market would be required. Second, the European Commission aims to establish the favorable conditions and a level-playing field where digital networks and innovative services can flourish. These include 5G, secure and trustworthy infrastructures and content services, relevant regulatory conditions for innovation, investment, fair competition and a level playing field. Lastly, the Digital Single Market Strategy is established to enhance the growth potential of the digital economy by promoting further investments in ICT infrastructures and technologies such as big data and cloud computing. In addition, the strategy plans to increase industrial competitiveness and offer better public services and inclusiveness by forming an inclusive e-society and building a data economy (see Table 1). Such efforts for harmonizing rules and regulations on contracts and consumer protection would facilitate cross-border e-commerce market, which would contribute to further growth of the European digital market.
### Table 1: Summary of the European Digital Market Strategy

<table>
<thead>
<tr>
<th>Main Objectives</th>
<th>Strategy</th>
</tr>
</thead>
</table>
| Cross-border e-commerce rules that consumers and businesses can trust:  
  - A common set of rules  
  - A proposal to review the Regulation on Consumer Protection Cooperation | Affordable high-quality cross-border parcel delivery |
| Providing better online access for consumers and businesses across Europe | Preventing unjustified geo-blocking |
| | A Competition Sector Inquiry focusing on the application of competition law in the e-commerce area |
| | Better access to digital content – A modern, more European copyright framework |
| | Reducing VAT related burdens and obstacles when selling across borders |
| Creating the right conditions and a level playing field for advanced digital networks and innovative series | Making the telecoms rules fit for purpose |
| | A media framework for the 21st century |
| | A fit for purpose regulatory environment for platforms and intermediaries |
| | Reinforcing trust and security in digital services and in the handling of personal data |
| Maximizing the growth potential of the Digital Economy | Building a data economy |
| | Boosting competitiveness through interoperability and standardization |
| | An inclusive e-society |

1. Basic Pillars of the Regulatory Changes

Among hosts of regulatory changes, the Second Payment Services Directive (PSD2), General Data Protection Regulation (GDPR), and MiFID2 (Markets in Financial Instruments Directive) are a core set of regulatory guidelines to create a Digital Single Market in Europe. By preserving data privacy via severe penalty for unsolicited use, it would provide strong incentives for the public to let data service providers make better use of their data. The adoption of opt-out methods and authentication procedure would pretty much take care of data privacy issues, but some technical issues remain on interoperability across the borders such as the challenges caused by the conflicting requirements of diverse data protection policy around the world (Bruening, 2012).

The PSD2, which is a revised version of the original Payment Services Directive (PSD), enforces consistent application of regulations on payment services across Europe. It is designed to increase market efficiency and integration, provide enhanced consumer protection and security, and promote fair competition in the payment services industry (Payments UK, 2016). Especially in terms of boosting competition, the PSD2 allows new market entrants to have easier access to the market. This can be revealed from a Payment Initiation Service (PIS) that permits merchants to link directly to their customers’ bank
account by bypassing a series of traditional intermediaries, and an Account Information Service (AIS) that allows services dependent on customer information to operate without bank account passwords (see Figure 1). These may threaten to disintermediate payment networks by mandating banks to allow open and secure connections between merchants and user accounts (World Economic Forum, 2017). The PSD2 will apply to one-leg transactions, where one of the payment service providers is located outside of the European Economic Area (EEA) in any currency, as well as non-EEA currency payments between EEA-domiciled payment service providers (Payments UK, 2016). Therefore, it is expected to improve consumer protection for payments which are made both outside of the European Union and in non-European Union currencies (SEPA for Corporates, 2015). By providing congruous guidelines and technical standards, new Fintech start-ups, which are known as third-party payment service providers, would be able to enhance their understandings on laws and regulations and contribute to boosting innovation in the payment industry.
The GDPR, replacing the Data Protection Directive (DPD), is proposed to strengthen consumer’s rights in the digital age and facilitate the European data market by unifying rules. The adoption of the GDPR would contribute to building “trust” in the Digital Single Market as the new set of rules makes clear on responsibilities in case of breaching data privacy: you can outsource your risk, but you cannot outsource your responsibility (Geater, 2016). The GDPR includes some onerous obligations for companies to prepare such as ‘privacy by design’ requirements and heavy fines for a breach of the GDPR. According to the report by EY (2016), organizations now need to design data protection into the development of business processes and new systems and they must undertake Privacy Impact Assessments (PIA) when conducting risky or large scale processing of
personal data, Implementation of the GDPR would bring about the enhancement of data security, acknowledgement of value of 'privacy on the ground' by requiring designation of a Data Protection Officer (DPO), and encouraged pseudonymization of personal data (Heimes, Maldoﬀ, & Myers, 2016). Even non-EU established organizations will be subject to the GDPR and cross-border data transfers may be also allowed to outside non-EU states under certain circumstances, such as by use of standard contractual clauses or Binding Corporate Rules (BCRs; Heimes et al., 2016; Lund, 2017). This is a very important piece of legislation on a grand scale to prepare the grounds for the Digital Single Market in Europe and possibly the rest of the world. Likewise, the MiFID2 are also geared to better protect consumers and enhance transparency and stability of financial markets by requiring asset management companies to pay for the research services provided by investment banks and other intermediaries, This set of strengthened regulations oversee all the corners that would affect consumer welfare and financial stability by eliminating any possible shady corners in the financial markets.

As shown, the key pieces of legal and regulatory preparation would help foster favorable environment and underpin much of the efforts to prepare for the future. For instance, non-European Union countries such as Norway and Switzerland are obliged to adopt all relevant single market rules that were legislated among European Union member nations (Darvas, 2016).
However, as many European nations are continuously building relationships with various countries in other regions, regional approach within the boundary of Europe to establish financial stability would not show any impact in the interconnected world. In the case of the U.K., the international trade recorded a surplus of £28 billion with non-European Union countries in 2014, compared to a deficit of £61 billion with other European Union countries (Walker, 2016). On the other hand, the trend towards financial globalization is being challenged due to the complexity of differing regulatory priorities and solutions around the world (World Economic Forum, 2017). These current situations imply that the existing type of effort may have difficulty in reinforcing inter-regional integration among countries and individual approach would fall short of any meaningful efforts to gain grounds in this fast-moving environment. Region-wide approach toward a Digital Single Market underscores the need to coalesce efforts on a grand scale to achieve a maximum network effect from digitally interconnected markets. In this regard, cross-border issues are likely to grow in importance and steps have been taken by some authorities to establish more structured cross-border collaboration arrangements such as memoranda of understanding and co-operation agreements (e.g. Australia, France, Indonesia, Singapore and the U.K.; FSB, 2017).
2. The Digital Single Market and its Implications on Financial Stability

Since the European Digital Single Market Strategy should have significant implications for financial stability, some suggestions based on thorough and comprehensive studies can be made to mitigate negative impacts. In order to improve price transparency and regulatory oversight, the European Commission proposed a strategy, which includes a common European Union-wide simplification measure, VAT threshold, and the expansion of the single electronic registration. These would reduce the legal and technical barriers for small start-up e-commerce businesses. In this context, banks could be considered as important strategic partners and may contribute to further growth for the European digital market through cooperation. With increasing significance of digital transformation in the financial services industry, banks are actively investing in not only IT solutions but also Fintech start-up companies as European banks’ annual investment in IT innovation is amount to $700 billion (European Banking Federation [EBF], 2016). Therefore, Fintech can prove to be a useful tool for the incumbents to survive in a more integrated environment by enabling them to be equipped with proper tools to reach a connected market. Through cooperation and partnership with banks, Fintech start-up companies would be
able to gain bank’s financial expertise on risk assessment, evaluation and management, and capture bank’s large customer base. In a sense, they have become quintessential frenemies.

Technology-based innovation in financial services yields benefits for economic growth and financial stability (see Table 2). At the same time, the development of Fintech and technology has the potential to undermine financial stability as well. Potential risks consist of micro-financial risks, which make individual firms, financial market infrastructures (FMIs) or sectors particularly vulnerable to shocks, and macro-financial risks, which amplify shocks to the financial system and thereby raise the likelihood of financial instability (see Table 3 and Table 4).

(Table 2) Potential for Technology to Support Financial Stability

<table>
<thead>
<tr>
<th>Potential benefit</th>
<th>Link to financial stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decentralization and diversification</td>
<td>- Dampen the effects of financial shocks in some circumstances.</td>
</tr>
<tr>
<td>Efficiency</td>
<td>- Supports stable business models of financial institutions,</td>
</tr>
<tr>
<td></td>
<td>- Contributes to overall efficiency gains in the financial system and the real economy.</td>
</tr>
<tr>
<td>Transparency</td>
<td>- Reduces information asymmetries,</td>
</tr>
<tr>
<td></td>
<td>- Enables risks to be more accurately assessed and better priced.</td>
</tr>
<tr>
<td>Access to, and convenience of, financial services</td>
<td>- Supports sustainable economic growth,</td>
</tr>
<tr>
<td></td>
<td>- Provides a diversification of exposure to investment risk.</td>
</tr>
</tbody>
</table>

### Table 3: Micro-financial Risks to Undermine Financial Stability

<table>
<thead>
<tr>
<th>Potential risk</th>
<th>Link to financial stability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial sources</strong></td>
<td></td>
</tr>
<tr>
<td>Maturity mismatch</td>
<td>- Causes systemic impacts if the sector provides critical functions or services,</td>
</tr>
<tr>
<td>Liquidity mismatch</td>
<td>- Results in &quot;run risk&quot; and the need to liquidate quickly relatively illiquid assets (fire sale), disrupting markets,</td>
</tr>
<tr>
<td>High leverage</td>
<td>- Implies less equity available to absorb any losses materializing from the realization of market, credit, or other risks,</td>
</tr>
<tr>
<td><strong>Operational sources</strong></td>
<td></td>
</tr>
<tr>
<td>Poor governance/ process control</td>
<td>- Leads to increased risk of direct disruption in provision of financial services or critical infrastructure,</td>
</tr>
<tr>
<td>Cyber risks</td>
<td>- Financial activity is more vulnerable to cyber-attack when more systems of different institutions are connected,</td>
</tr>
<tr>
<td>Third-party reliance</td>
<td>- Systemic risks may arise when systemically important institutions or markets are reliant on the same third parties,</td>
</tr>
<tr>
<td>Legal/regulatory risk</td>
<td>- Risks become greater when activities are evolving, or where regulatory arbitrage is sought,</td>
</tr>
<tr>
<td>Business risk of critical FMIs</td>
<td>- FMIs may be vulnerable to external factors that could adversely impact its balance sheet, and lead to a withdrawal of financial services,</td>
</tr>
</tbody>
</table>

### Table 4: Macro-financial Risks to Undermine Financial Stability

<table>
<thead>
<tr>
<th>Potential risk</th>
<th>Link to financial stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contagion</td>
<td>Distress experienced by a single financial institution or sector can be transmitted to other institutions or sectors.</td>
</tr>
<tr>
<td>Procyclicality</td>
<td>Market participants can act in a way that exacerbates the degree and impact of fluctuations in economic growth and market prices over the short and/or longer term.</td>
</tr>
<tr>
<td>Excess volatility</td>
<td>The financial system can overreact to news, which leads to adverse outcomes if any such overreaction creates solvency or liquidity problems that can spiral through the financial system.</td>
</tr>
<tr>
<td>Systemic importance</td>
<td>Entities that are viewed as being systemically important (or too highly connected to fail) may amplify risks through moral hazard.</td>
</tr>
</tbody>
</table>


As indicated, the past growth paradigm is fundamentally different from growth drivers of the Fourth Industrial Revolution as a digital economy is based on extreme network connectivity (Colin, Landier, Mohnen, & Perrot, 2015). A digital economy based on a distributed network is expected to be more stable and have more tolerance to external shocks than the traditional financial system as risks would be speeded out throughout the network (Goyal, 2015). In addition, the newly emerged technologies, such as platform and distributed ledger technology, are based on the horizontal, distributed and decentralized system. Hence, a silo type of laws and regulations to mitigate risks may be inappropriate to those technologies, and the vertical system of network may restrain
industries from forming a cohesive and collaborative ecosystem.

Given the expected changes in risk profiles among network connectivity, the traditional risk management governance and tools may turn out to be less relevant and can be the sources of endogenous systemic risk. In addition, it is unclear whether existing studies can shed light on the issue of financial stability because the nature of digital network is different with the premises that these studies have relied upon (Figure 2).

(Figure 2) New Sources of Systemic Risks

By all accounts, it is clear that a new risk profile is too complicated to monitor and respond on the basis of sovereign institutional arrangements. If clearer picture emerges from
this evolving risk profiles, smarter suggestions for the governance and policy measures can be devised. Currently, a region-wide response seems to be the only proper way to tackle challenging tasks of dealing with integrated risk factors. This does not mean that Asia needs to remain patient and passive about the digital initiative. Rather, the stability concern is a global issue and the balanced growth among regions to discuss issues on the more equal terms would be beneficial to work out something that contributes better toward the global financial stability. Different stages of development among nations make policy responses fragmented and their effect hard to measure. The choice variable for financial stability in an integrated environment calls for collaboration beyond national borders, yet proper governance and institution are hard to formulate since consensus cannot be reached, Regional initiatives for a Digital Single Market could be good for financial stability within the perimeter, yet bad for other regions, if they do not seek for global stability. Going forward, more transparent and comprehensive analyses on the Digital Single Market’s impact on financial stability are required.

With a digital single market strategy realized in practice, the European Union has shown the full possibility of an increasingly global digital economy. Allegedly, the creation of a connected digital single market will give opportunities to new start-ups and existing companies to access a 500 million people market (Stephanou, 2017). However, even Europe has not
fully utilized potential of the digital single market due to fragmentation and barriers, which is indicated by the complex rules to cross-border transactions including 28 different national consumer protection and contact laws. This reemphasizes the necessity of simplified digital cross-border rules that can apply across all borders (see Figure 3). The key characteristic involved in the creation of a digital single market is likely to raise the risk of fraud. Removing barriers between related states and encouraging cross-border transactions imply that risk exposure is universal across the countries. Threats will increase across the entire regions connected, as well as individual merchants, and unlike merchants’ selling practices, consumer behaviors are hardly normalized (Eaton-Cardone, 2017).

(Figure 3) Responses of EU Merchants to Cross-border Rules

III. The Current State of an Asian Digital Market

Given the current state of highly segmented policy environment, i.e. the European Union engages in relaxing and the U.S. begins tightening, etc., there are visible trends in Europe that can potentially disrupt the global financial stability with a different context. Arising from a situation that Europe engages in creating a Digital Single Market, while Asia has no sign of cooperation or collaboration, there is a concern that different policy initiatives across the region would create a mounting tension over different regulatory stances, creating huge uncertainty that stifles and discourages innovation incentives of private citizens. The digital preparedness is expected to drive the next phase of growth in the global economy and there are increasing gaps among nations.

It is easy to conjecture that the governments in the region may seek to form a single, unified agenda (or a strategic initiative) to foster digital transformation in the region. It would be similar with the European Commission’s effort to establish a Digital Single Market (e.g. GDPR, PSD2). This is more or less of an educated guess since it is obvious that sizable value creation comes from a new foundation that is interlinked with technology and network. In line with the Fourth Industrial Revolution movement, a unified ecosystem with the Digital Single Market Strategy would enhance linkages
among different industries and accelerate the development of the digital economy. For instance, it is anticipated that the Digital Single Market would contribute 415 billion euros per year to the European economy. In addition, small businesses would be able to save 9,000 euros per market on expenses related to regulation and translation with harmonized laws in the European Union (European Commission, 2015; European Commission, 2016; see Figure 4). In a similar context, without even considering crowding-out effect or hollowing-out effect from a newly formed Digital Single Market, there would be an insurmountable gap between the mega digital markets and the conventional type of traditional markets. Unless the Asian economy deliberately endeavors to make that transition, changes in other places would rid the Asian economy of value creating jobs going forward. It also needs to be highlighted from the outset that the European endeavor to create a Digital Single Market hinges on the well-established groundwork for coordinated efforts among member countries in the region. Given the imperative needs to do something similar for the region, sequencing and speed issues emerge, and serious coordination and collaboration among interested parties seem crucial in bridging the gap for the Asian digital catapult. Asian nations need to cooperate with one another to forge efforts for an expanded digital market.
This bold initiative reflects the fact that digital transformation requires revisions of relevant regulations and legal framework. Lack of proper legal and regulatory framework for markets beyond national borders discourages any incentive for creating a bigger market, especially a digitally driven e-commerce market in the region. This aspect of the lack of preparation for an integrated digital market in the region is overshadowed by the digital ubiquity of Alibaba and Tencent, which also raises some concerns for fair competition and consumer protection. As such, we live in an environment that is already showing signs of excessive red-tapes and fragmentation amid megatrends for the Fourth Industrial Revolution.

We cannot deny that there exists a fundamental mismatch between the way governments work and the way technology manifests itself. This difference makes policy responses
increasingly ineffective and cumbersome, especially in preparing for the financial stability in an increasingly integrated environment. While a super-connected environment forces us to think in a collaborative manner, Asia collectively is far behind in fostering coordinated efforts to make this trend as a catalyst for innovation and renewed growth in the region. Despite the increasing importance of big data analytics, big data is still regulated under a silo type of laws and regulations. In case of Korea, laws related to data and privacy are complicated as every sector is separately regulated under different acts. The finance and credit sector has five detailed acts, which are Credit Information Use and Protection Act, Act on Real Name Financial Transactions and Confidentiality, Electronic Financial Transactions Act, Insurance Business Act, and Financial Investment Services and Capital Markets Act (Korea Economic Research Institute, 2015). Similarly, other public and private sectors have complex regulatory frameworks in regards to data and privacy (see Table 5). Moreover, in networked readiness index, which shows how countries are doing in the digital world, only 5 Asian countries were on top 20 countries list. The related index which indicates how much each country’s laws relating to the use of ICT are developed demonstrates that many Asian countries are far behind in establishing appropriate regulatory framework and applying it to the fast-changing digital environment (see Table 6). In a nutshell, Asia is missing out the golden opportunity to jump
- start the economy to make a transition toward a more balanced one lest their assets be mostly held in foreign currency denominated assets for financial stability concerns.

(Table 5) Complexity of Laws related to Data and Privacy in Korea

<table>
<thead>
<tr>
<th>General Law</th>
<th>Act on the Protection of Personal Information Maintained (Ministry of Interior (MOI))</th>
</tr>
</thead>
</table>
| Public Sector | • Electronic Government Act (MOI)  
• Resident Registration Act (MOI)  
• Official Information Disclosure Act (MOI)  
• Public Records Management Act (MOI)  
• Civil Petitions Treatment Act (MOI)  
• National Intelligence Service Korea Act (National Intelligence Service (NIS)) |
| Information and Communication | • Act on Promotion of Information and Communications Network Utilization and Information Protection, Etc, (Korea Communications Commission (KCC))  
• Act on the Protection, Use, Etc, of Location Information (KCC)  
• Protection of Communications Secrets Act (Ministry of Science, ICT and Future Planning (MSIP))  
• Act on the Protection of Information and Communications Infrastructure (MSIP)  
• Telecommunications Business Act (KCC, MSIP)  
• Framework Act on National Information (MSIP) |
| Private Sector | • Framework Act on Electronic Documents and Transactions (MSIP, Ministry of Justice (MOJ))  
• Act on the Consumer Protection in Electronic Commerce, Etc, (Korea Fair Trade Commission)  
• Digital Signature Act (MSIP) |
| Commerce | • Credit Information Use and Protection Act (Financial Services Commission (FSC), MOJ)  
• Act on Real Name Financial Transactions and Confidentiality (FSC, MOJ)  
• Electronic Financial Transactions Act (FSC, MOJ)  
• Insurance Business Act (FSC, MOJ)  
• Financial Investment Services and Capital Markets Act (FSC, MOJ) |
### The Current State of an Asian Digital Market

**Health and Medical Service**
- Medical Service Act (Ministry for Health and Welfare (MOHW))
- Pharmaceutical Affairs Act (MOHW)
- Prevention of Acquired Immunodeficiency Syndrome Act (MOHW)
- Infectious Disease Control and Prevention Act (MOHW)
- Food Sanitation Act (MOHW)


#### Table 6: Top 20 Countries in Networked Readiness Index

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Rank</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Singapore</td>
<td>1</td>
<td>Luxembourg</td>
</tr>
<tr>
<td>2</td>
<td>Finland</td>
<td>2</td>
<td>Estonia</td>
</tr>
<tr>
<td>3</td>
<td>Sweden</td>
<td>3</td>
<td>Qatar</td>
</tr>
<tr>
<td>4</td>
<td>Norway</td>
<td>4</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>5</td>
<td>United States</td>
<td>5</td>
<td>Singapore</td>
</tr>
<tr>
<td>6</td>
<td>Netherlands</td>
<td>6</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>7</td>
<td>Switzerland</td>
<td>7</td>
<td>Norway</td>
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<tr>
<td>8</td>
<td>United Kingdom</td>
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<td>Malaysia</td>
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<tr>
<td>9</td>
<td>Luxembourg</td>
<td>9</td>
<td>Iceland</td>
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<td>10</td>
<td>Japan</td>
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<td>Finland</td>
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<tr>
<td>11</td>
<td>Denmark</td>
<td>11</td>
<td>United States</td>
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Other types of index or ranking also imply comparable status quo of Asian countries, showing that they need corresponding support by authorities to maximize the chances of digital economy. The Digital Evolution Index, created from a collaboration between the Fletcher School at Tufts University and Mastercard, demonstrates the discrepancy between what digital evolution has required and how regulatory policies and governance have responded (see Figure 5). Break Out countries, containing the most number of Asian countries such as China, Malaysia, Philippines, Vietnam, and Indonesia, have the potential to become highly digitally advanced but their low-scoring in their current states is held back by relatively weak infrastructure and poor institutional quality (Chakravorti, Bhalla, & Chaturvedi, 2017).

(Figure 5) Digital Evolution Index 2017

![Digital Evolution Index 2017](source: The Fletcher School at Tufts University and Mastercard (2017).)
The real problem for the traditional policy framework that hinges on sovereignty and jurisdictional oversight is a serious agenda to tackle, and this fragmented governance, if not the bureaucratic system itself, restricts the use of data to create values for exchange. Data can flow freely across borders for the benefit of citizens with adequate protection, yet governance is missing and the regulatory framework is not ready to allow this from happening. Even with dire needs to get things done for financial stability to meet the tougher challenges imposed by the increasingly connected environment, no serious proposals emerge on a global scene. Specifically, it is important that consumer protection and financial stability need to be maintained in all circumstances. Rather than touching on the core governance and regulatory issues, almost all interested parties engage in short-termism on fragmented political base that increasingly shortens policy horizon. Accordingly, there are many gaps in the governance of the digital economy, which in fact require expansive international collaboration to fill. This is especially a serious issue in Asia, where a sovereign system remains dominant in every aspect of economic and social interactions. Asia nations are faced with the choice between following a precedent of the European Union market and maneuvering respectively. However, under a global discussion, it is more desirable to aim continuous financial stability, regarding the world as a single network.
a part of this effort, existing regulations such as the GDPR and PSD2 are suggested to be modified to fit a global standard.
IV. The Asian Digital Initiative and Big Data 4.0

It is important to highlight the needs to improve the system with the incumbents taking up open attitude toward technological advances with disruptive effects. One suggestion is to promote transparency in the evaluation of costs and risks related to many projects. Moreover, it is important to note that we need to have relevant metrics to check the trustworthiness and security of the financial ecosystem. Most of these require fundamental changes as new entrants make heavy use of big data. Therefore, data-driven policy-making is becoming obligatory rather than an elective exercise. Fortunately, Europe has put on stage the most compelling agenda for the next chapter of the global economy. In order to seize the opportunities in the face of rapid technological change, the European Commission initiated the Digital Single Market Strategy, which would bring further connectivity in the market and foster innovation for the market growth. This initiative is not only very bold and comprehensive but also touches on the most important aspect of policy-making. Instead of demanding the participants in the Eurozone to do something forcefully, the European Union authority projects the future roadmap with specific guidelines on data privacy and open data initiative so that potential players can figure out the necessary changes themselves as they need to prepare.
for the future. Specifically, the European Commission amended a proposal, which includes the harmonized European Union rules for the e-commerce market and a set of key mandatory European Union contractual rights that will be applied to domestic and cross-border online transactions.

Big data is regarded as a major growth driver for the digital economy. Hence, many countries have shown their efforts to promote various applications of big data analytics in the industry by forming an institution that is sorely designated for big data. In the case of the United Kingdom, even with considerations for the Brexit, the government established a non-profit organization called the Open Data Institute (ODI) to lead innovation and achieve economic growth by exploiting open data. In a similar context, the Open Banking Working Group (OBWG) launched the Open Banking Standard to explore ways to create, share and use open banking data among market participants. The Open Banking Standard suggests that securely sharing or publishing data through open APIs (Application Programming Interfaces) would help new industry participants (e.g. Fintech start-ups) build applications and new products and services, which would contribute to foster innovation in the market (see Figure 6). At the same time, customers will be able to save on current accounts by comparing products and finding out the most suitable one to their needs. When they share their transaction data through an open API, lenders could offer borrowers better terms for
loans and third party fraud detectors could support customers better for monitoring accounts (Open Data Institute, 2016).

(Figure 6) Open Banking Framework


Similar to UK’s Open Banking Standard and the European Digital Single Market Strategy, Asia needs to establish coherent laws and regulations for big data and privacy, which promote open data policy as well as the protection of privacy. It should be recognized that public policy is essential to the success of the digital economy (Chakravorti et al., 2017). As we have realized from the case of the European Union, countries with high-performing digital sectors typically have had strong government and policy involvement in shaping the digital economies. Having robust data privacy laws and regulations would build profound trust in the market, and as
a result, facilitate the use of data in the industry. A region-wide data policy would allow market participants to operate business actively in the region and lead further development of the market. Special laws on big data including an opt-out framework, de-identification of personal or sensitive information and re-use of data could be introduced through social consensus to promote the big data industry in the region.

Asian countries, especially the ASEAN Economic Community, expect that digital can further promote integration of regional states. Pirie (2017) has reported five ways that digital can contribute to growth and development in Southeast Asia (see Figure 7). Making the digital transformation work will require inclusive, coherent and well-coordinated policies, reflecting a multi-stakeholder and whole-of-government approach to policy making (OECD, 2017). The policy response to the digitalization has been mixed across countries, not only in Asia. The OECD report (2017) pointed out that many policies and public sectors' processes are a legacy of an analogue era and tend to be ill-adapted to the digital era. Regulatory authorities lack an enough understanding of the transitions underway and only try to make minor alterations to existing policies rather than establishing new approaches, which can be more suitable for the digital future. In the globally interconnected digital economy, the less integrated approaches would lead to the risk that policies in one region can have unintended adverse impacts on another as well as that opportunities for positive
improvements can be missed. Instead, governments are required to reach across traditional policy silos and across different levels of government to develop a whole-of-government approach for policymaking. With collective action, relevant ministries and governmental bodies should cooperate in the policymaking process to assure that all schemes are mutually reinforcing and aligned with one consistent digital agenda (OECD, 2017).

(Figure 7) Contribution of Digital to Development in Asia

Source: Pirie (2017).

In line with the Asian Digital Single Market Initiative, other issues including ethical and responsibility concerns could be included when reforming laws and regulations. For instance, the role of National Human Rights Commission of Korea would include, but not be limited to, providing digital privacy and protection, reviewing potential ethical issues (e.g., right to be forgotten), and defining moral responsibilities in the digital era. This is largely in line with similar efforts to deal with privacy and equity issues in an increasing data and Artificial Intelligence (AI) driven system. There are rising concerns for digital cartel, where algorithms assume the role of collusive managers to interfere with fair competition at the expense of
average customers. The development of AI and powerful algorithms may create more durable cartels that are able to maintain higher prices at consumers’ expense, which result in the evaporation of the digital economy’s promise of lower prices and plentiful choice for consumers (Lynch, 2017). For protection of humanity which can be threatened with ubiquitous digital layers and interfaces, some serious ethical questions need to be discussed so that our added convenience does not lead to more reliance on the system, which cannot be controlled by anyone but except for a few. To prepare for this, digital citizens need their own bill of rights to choose the digital would

(Figure 8) Potential Benefits of Financial Integration in the ASEAN Region

way. With such effort, the Asian Digital Single Market Initiative be able to form a unified ecosystem where digital transformation would flourish, and lead further financial integration in the region (see Figure 8).

In contemplating the possible modus operandi for the Asian economies in the context of preparing for the digital economy, it needs to be emphasized at the outset that Asia is as fragmented as Europe with very strong bureaucratic tradition, which could not bear well with increasingly decentralized paradigm associated with digital transformation. The most baffling aspect of government policy response is that individual response is mostly an isolated effort with a silo perspective, such as Digital Thailand, Digital Korea and etc., while requisite actions expect coordinated efforts beyond national borders or jurisdictional constraints. This is a fundamental problem that resides with the current global governance in the digital age. In essence, governance and regulation are the two most important legacy pillars that should be overhauled and revamped earnestly. Given the interoperability and transparency of digitally driven services, there cannot be Asian-specific responses against the European initiative, but it is recommended that authorities reach a consensus on the future before hammering out regulatory guidelines that apply to the region or the global community. In fact, the increased emphasis on interoperability of regulations in a digital economy should be
reflected in forging a response to create an environment and ecosystem for inclusive participation of global citizens. Private initiatives need to be emphasized and promoted before setting the tone for the future paradigm. Unfortunately, the current digital transformation is currently facing backlashes since a large group of people are still being isolated or marginalized, contrary to the general prediction about this trend. Specifically, more and more citizens around the world are polarized on financial access and other digital exposure, despite expanding efforts to enhance financial inclusion. These circumstances result from a growing gap between technological possibilities and regulatory preparedness in the increasingly seamless world. Interestingly, regulatory capacity is being emphasized or underscored in the age of technology.
V. Conclusion

In conclusion, regional reinforcement of the single market drive based on sovereign perimeter is going apart from the reality and it would fail to raise the global financial stability, since the world is increasingly interconnected as a single digital network. As an effort to improve the stability of the network, regulatory and legal frameworks need to be discussed within a global bond of consensus, beyond the European Union market. Even risk factors of financial stability in one country are not dissimilar from those in distant nations. The importance of more general and globalized approach needs to be emphasized, since regional responses against financial instability would not draw optimum solutions. To make this effort more effective and feasible, existing global institutions need to embrace a more open governance and should be able to coalesce around a creating a potential global institution or a body of enhanced global governing bodies.

A European Digital Single Market drive is a great experiment on financial stability in the sense that greater market perimeter cuts financial stability in both ways, increasing risk factors and benefits simultaneously. Given that risks are handled in a decentralized manner, some of the concerns that are relevant in a silo-type situation may not be serious. However, the Digital Single Market without pertinent
regulatory oversight would bring about systemic risks that remain unmitigated. In addition, the lack of coherent legal and regulatory framework for cross-border issues as well as limited interoperability among a disparate set of standards among member countries is a big concern. To ensure consumer protection and financial stability in a bigger framework, it is important to support an expanded market with proper infrastructure for monitoring and supervising. Since European countries have relevant institutions in place, the European Digital Single Market initiative would put a lot of pressure on the Asian side, where there is neither governance body nor relevant legal and regulatory support as member countries are sharply divided among themselves for political reasons. Simply, it is very difficult to assess financial stability implications of the European initiative on global financial stability, if not Asian financial stability. Essentially, the issue of financial stability may not be such a great concern for Europe, but it is a greater concern for Asian counterpart. The impossible trinity among financial stability, innovation and regulation can hardly be reconciled where the deadlocks among nations prevail and stifle private market participants. Even with globalization for decades, our responses indicate that border considerations are still there even when borders have lost their meaning in a digital environment.

Currently, Europe is concerned with the possible problems with financial stability if the Digital Single Market takes hold,
given that periphery countries can impose possible threats to financial stability in one way or the other. It is not all clear the Digital Single Market would also provide a better background for financial stability since the interconnected, distributed, and decentralized system of the digital network without the central drive or initiative may provide robust background for financial stability. This ecosystem itself would be a departure from the fragmented system where each country is responsible for maintaining financial stability under the authority of the European Central Bank. It is a contrasting view from the traditional system since most of the disruptions can be autonomously mitigated or can spill over to the entire system in a short period of time. As such, the particular aspect of the Digital Single Market in terms of financial stability perspective is not fully examined. If the combination of environment and responses determines the degree of financial stability, it cannot be surmised in one way or the other whether the state evolves toward a particular equilibrium since none of the region in the world is prepared to tackle the shocks from a nascent digital economy, which cannot even be identified properly.

   Further, if Asia is left as fragmented in its governance as is now, its role in the world economy cannot be enhanced, or even not be maintained. The natural outcome of the European Digital Single Market would surely pose a serious challenge to Asia, which a predominant market platform run by China,
Moreover, its survival imperatives would force member countries to tackle only minor issues that can be effectively monitored and administered by national authorities. The incentive for voluntary coordination would find it very difficult to take root in Asia since fair competition cannot be taken for granted given the disparities among member countries. However, the current state of affairs would not bear well for the future either. The emerging Digital Single Market would pose not only an economic threat in terms of a bigger pie of neighbors but also a cause of concern for maintaining financial stability in the region that would be increasingly exposed to external shocks. The expected regulatory burden should be an onerous task for existing authorities. However, given the decentralized nature of open platform that could exist in a Digital Single Market framework, the increased burden would be a different nature and dimension with the existing one. Picking up the low-hanging fruits would not be adequate to prepare for the future.

After comprehensive understanding of regulatory conditions in Europe, extensive research on the problem of regional regulatory environments within Asia and improvement plans should be carried out. The multi-sided market induces radical changes that deviate from the definitely separated framework of regulations and the decentralized trend emphasizes alterations in governance structure. Referring to the report on the ASEAN Economic Community in the digital economy by
Deloitte (2016), the whole Asian countries are recommended to cooperate in implementing following specific actions, Asia needs to identify the digital economy as a core priority for its economic community and concentrate on a new initiative to make digital Asia ready across every sector. The laws and regulations in each country should be identified and harmonized by undertaking a gap analysis. Given the importance of data flow and usage in a digital framework, Asian countries are encouraged to adopt a cross-border framework that allows data to flow while protecting the privacy and security of data for regional consumers. Since Asian governments have a high level of digital engagement compared with other countries with similar GDP per capita, they can act as various types of

(Figure 9) Role of Governments to Drive Digital Opportunities in Asia

Source: Deloitte (2017),
roles, such as facilitators by providing policy incentives to support digital infrastructure development or directly investing in digital to increase the use of digital in their own operations (see Figure 9; Deloitte, 2017).

In short, the comprehensive regulatory framework and big data policy are required for the enhanced financial stability in a more digitalized economic setting. The core value creation is only possible because the data clients provide for various analyses and applications, Data propels the digital economy via AI and deep learning upon a decentralized and distributed system. Therefore, it is an ultimate challenge for the society at large to devise ways to fuse both the traditional system and the newly evolving one so that constituents can enjoy without being subjugated to a super-intelligence and governance. More checks and balances would be carried out at the local end on a voluntary basis because of the nature of the decentralized and distributed system that would prevail in a digital single framework. As it happens, the sheer requirements for pursuing future agenda call for cooperation, coordination, and collaboration among all the participants of the greater ecosystem both horizontally and vertically. We need a truly global recognition and response toward evolving threats against global financial stability and individual privacy. In this vein, the European Digital Single Market is only a partial solution toward the global financial stability and could potentially pose externality that cannot be identified and
handled in other regions. We truly need a coordinated and harmonized global guideline that accommodates the connected nature of transactions across the borders. In conclusion, all the directives and regulations need to go through a global consensus and peer reviews before being deployed in Europe. Regional choices cannot remain within the jurisdiction and global cross-check and validations should remain essential input.
References


Penker, M, (2015), Industry 4.0 – disruption or just a logic extension of WWW?, Retrieved from https://innovation360.com/industry-4-0-disruption/


Abstract

Current drive to formulate a Digital Single Market in Europe has many implications for the global financial stability. First, it creates an intra-regional interoperability issue as member nations still grapple with different sets of local rules and conditions. Providing equal access would fall short of securing equivalent services for potential clients. Second, it would create unexpected pressure for other regions in terms of spillover effects. Reconciling innovation and stability remains a serious challenge among different regions. Third, the global financial stability may be even harder to achieve because of a disparate set of regulatory requirements and different market backgrounds for single-unified markets vs. multiple-segmented markets. If left unaddressed, regional directives to streamline and harmonize various legal and regulatory issues would enhance within boundary stability, while hurting the stability of the rest of the world. In short, the current and future drive for the European Digital Single Market needs to undertake the global aspect of directives in an increasingly integrated environment. If left as a regional drive, it would create even bigger tensions that cannot be reconciled in the increasingly fragmented global financial system.

*Key words:* Digital economy, financial stability, Digital Single Market, Big data

JEL Classification: F30, F36, F62, G18
Digital Single Market and the Global Financial Stability