

금융산업 구조 선진화 방안 연구
- 디지털 혁신과 금융중개 효율성 제고

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금융위원회

손희경

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국외 훈련 개요

1. 훈련국 : 프랑스
2. 훈련기관 : 경제협력개발기구
(OECD, Organisation for Economic
Cooperation and Development)
3. 훈련분야 : 금융
4. 훈련기간 : '19.12.31 ~ '20.12.30.

훈련 기관 개요

1. 기관 개요

- 훈련기관 : OECD
(Directorate for Financial and Enterprise Affairs, Insurance, Private Pensions and Finance Markets Division)
- 인터넷 주소 : <http://www.oecd.org>
- 주소 : 2, rue André Pascal - 75775 Paris Cedex 16, FRANCE

2. 기관 소개

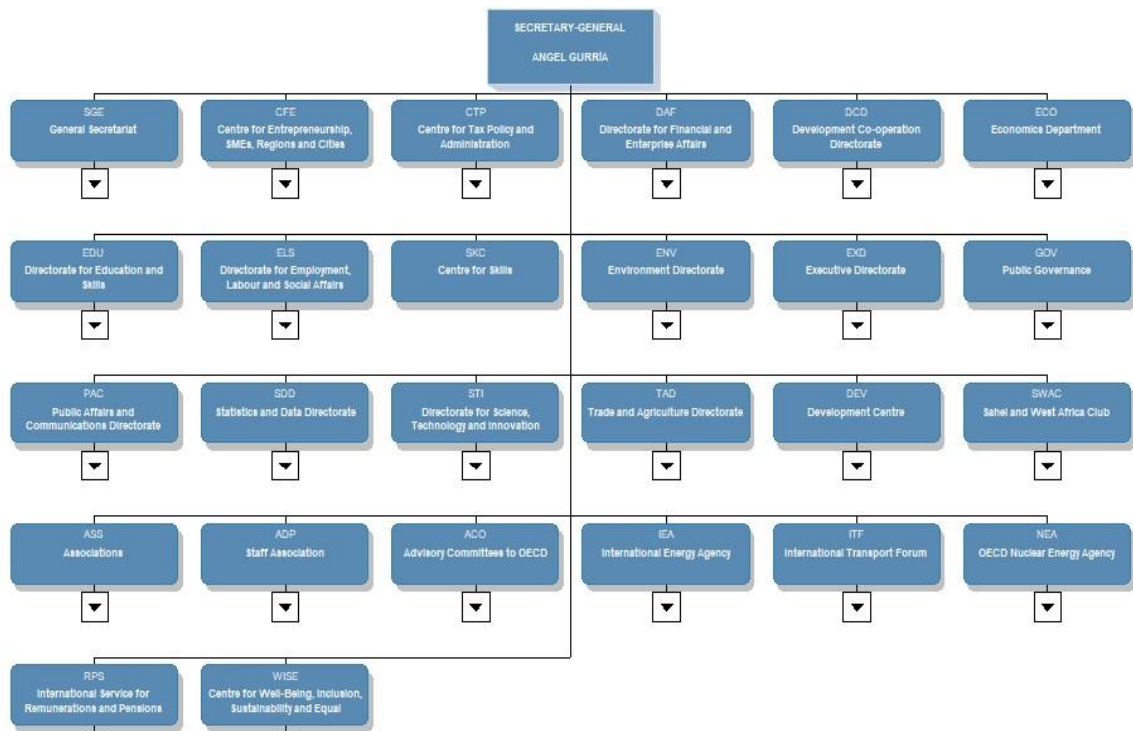
- 설립목적 : 회원 국가 간 정책조정 및 협력을 통해 회원국의 경제 사회 발전을 공동으로 모색하고, 나아가 세계 경제 문제에 공동으로 대처하기 위한 정부간 정책연구·협력 기구
- 연혁 : 1948 년 2 차 세계대전으로 몰락한 유럽경제 재건을 목적으로 발족한 유럽 경제협력기구(Organisation for European Economic Cooperation)를 모태로, 개발도상국 원조 문제 등 세계정세에 대응하기 위해 1961 년 9 월 30 일 파리에서 발족
- 회원국 : 37 개국('20.11 월 현재 기준)
- 미션
 - 회원국의 경제성장과 금융안정을 촉진하고 무역 자유화 증진
 - 개발도상국 개발 원조를 촉진하여 건전한 경제성장 도모
 - 환경, 기후변화, 고용 및 근로환경 변화에 따른 정책 등 지속가능 발전

○ 조직

- 최고의사결정기구인 이사회(Council), 정책채널기구인 26 개 전문 위원회(Committee), 사무국(Secretariat)으로 구성되며, 상호간 긴밀하게 공조하고 있음

- 사무국은 국제개발, 경제, 규제, 환경, 과학, 노동 등 분야별 정책국과 부서로 구성되어 있으며, 약 2,500 여명이 근무 중

- 사무총장 : Angel Gurría(前 멕시코 외교 및 재무장관, 5 년 임기로 '06.6 월 취임하여 현재 3 연임 중)
- 사무차장 : Masamichi Kono(前 일본 금감원 차관, '17.8 월 취임), Mari Kiviniemi(前 핀란드 총리, '14.8 월 취임)



- 독자적 의사결정체계를 갖춘 부속기구로는 원자력기구(NEA), 국제에너지기구(IEA), 교육연구혁신센터(CERI), 유럽교통장관회의, 사헬 및 서아프리카 클럽이 있음

○ 주요 업무

- 각종 국제기구와 밀접한 관계를 구축하고, 경제정책, 에너지, 국제무역, 식량, 환경, 과학, 노동 등과 같은 사회분야 정책 전반에 걸쳐 수시 논의 및 협력을 추진
- 각국 정상급 인사, 각료, 국제기구 대표, 석학 등이 모이는 OECD 최대 규모 회의인 OECD 세계 포럼 개최
- 국제 에너지 기구(IEA), 개발센터(DEV), 교육연구혁신센터(CERI) 등 직속기구 운영
- UN, UNEP, WHO, WTO 등 각종 국제기구와 밀접한 관계를 구축하고, 경제정책, 규제, 에너지, 국제무역, 환경, 과학, 노동, 보건 등 사회분야 정책 전반에 걸쳐 수시 논의 및 협력을 추진

○ 소속부서 업무

- 금융소비자 보호를 위한 G20/OECD Task Force 운영 및 금융시장행위감독 네트워크인 FinCoNet 지원
- 핀테크, 빅테크 등 4차 산업혁명에 대응한 금융산업 선진화 및 소비자보호체계 구축 등 신규 감독 이슈 등
- 온라인 및 모바일 결제시스템, 약탈적 대출의 디지털화, 디지털 시대에 요구되는 시장행위 규제 및 감독, 금융소비자 보호원칙 이행을 위한 가이드라인 개발
- 금융소비자 보호 관련 이슈 분석 보고서 작성 및 정책 입안
- G20/OECD Task Force 연례회의, FinCoNet AGM, 상임위 준비 및 로지스틱, 각국 감독기관과의 협력 등

훈련결과 보고서 요약서

성 명	손희경	직급	통계주무관
훈련국	프랑스	훈련기간	'19.12.31. ~ '20.12.30.
훈련기관	OECD	보고서 매수	115 매
훈련과제	금융산업 구조 선진화 방안 연구 - 금융 데이터와 금융서비스 확대 중심으로		
보고서제목	금융산업 구조 선진화 방안 연구 - 디지털 혁신과 금융중개 효율성 제고		
내용요약	<p>1. 서론</p> <p>금융위기 이후, 높은 금융중개비용과 저수익으로 어려움을 겪고 있던 금융업은 금융시장 활성화 정책의 일환으로 혁신과 경쟁정책을 시장에 도입했다. 디지털 경제로의 전환과 함께, 기술기업들이 급성장하게 되었고, 핀테크 및 빅테크 기업들은 선진 기술과 혁신을 통해 금융 시장에 진출하여 다양한 서비스를 제공하고 있다. 특히, 구글, 아마존, 알리바바 등 빅테크 기업은 그들의 핵심 사업을 기반으로 축적한 국제적 인지도, 견고한 고객 기반, 방대한 고객 데이터, 네트워크 효과 등의 비교우위를 십분 활용하여 금융 서비스 분야에서 신속하게 시장점유율을 확대하고 있어 금융당국의 관심이 집중되고 있다.</p> <p>2. 핀테크</p> <p>금융안정위원회(FSB)에 따르면, 핀테크는 기술 기반의 금융서비스 혁신으로, 금융 서비스 제공과 관련된 새로운</p>		

비즈니스 모델, 응용 프로그램, 프로세스와 관련된 제반 사업을 다루는 기업으로 정의하고 있다. 핀테크 기업은 디지털 및 고객 친화적인 금융환경을 기반으로 한 인터페이스, 컴퓨팅 및 데이터를 핵심 사업 요소로, 소비자, 기업 그리고 정부를 위한 새로운 금융서비스를 제공함으로써 그에 따른 이용자 편익을 증가시키고 있다.

핀테크 기업의 금융활동을 분류하는 방법은 다양하나, FSB 분류법에 따르면, 핀테크 혁신은 경제적 기능과 혁신적 기능으로 분류되며, 주로 지급결제, 수신 및 여신, 보험, 투자업 그리고 시장 지원업에서 금융활동이 이루어지고 있다. 혁신적 기능에는 핀테크 크레딧, 디지털 화폐, 블록체인, 원장기술(DLT), 인공지능(AI), 머신러닝(ML) 등이 있으며, 대체 가능한 금융서비스 제공자(alternative financial service providers)로 대두되고 있다.

금융업의 높은 진입 장벽에도 불구하고, 핀테크기업은 디지털 혁신을 통해 금융시장에 진입하여 다양한 금융 서비스를 제공하고 있으며, 금융산업의 혁신을 도모하기 위한 정부 정책의 도움으로 start-up 기업으로서, 금융시장에서 금융업을 영위하기 위한 규제적 지원을 받고 있다. 또한 핀테크 기업은 온라인 상 금융서비스를 제공하고 있어 영업점 등 고정적으로 지출해야 하는 운용 코스트를 낮추어 기존 금융기업들보다 경쟁력 있는 가격으로 금융서비스를 제공할 수 있고, 산업분류 상 비금융 기업으로 분류되어 규제차익도 실현할 수 있다. 그리고 핀테크 기업들은 유연하게 신기술을 적용할 수 있어 사업 다각화도 용이한 반면, 기존 금융기관들은 이미 구축된 IT legacy 시스템에 신 기술을 적용해야 하므로 핀테크 기업보다 경직적이고 비용이 많이 들어 부담이 될

수 밖에 없는 상황이다. 게다가 핀테크 기업은 온라인 비즈니스 영업으로 인해 고객(소비자 및 사업자) 편의성 및 접근성이 높고, 우수한 빅데이터 처리 능력을 이용하여 기존 금융기관보다 더 많은 고객들(금융소외계층, 영세 기업 등)에게 금융서비스를 제공하여 시장의 불완전성을 완화하고 포용적 금융을 실현할 가능성이 높다.

금융당국 또한 핀테크 기업의 기술인 SupTech 나 RegTech 를 활용하여 시장행위를 감독하거나 규제할 수 있다. AI 나 ML 을 통해 수상한 거래를 감지하고, 빅데이터와 클라우드를 이용하여 리스크를 관리하며, Robotic process automation 을 통해 시장 효율성을 증진하기 위한 컴플라이언스 프로세스를 자동화할 수 있어 금융시장 안정화에 기여할 수 있다.

이와 같이 핀테크 기업은 주로 비교적 수익성이 좋은 부문에 특화하여 금융 서비스를 제공하는 형태로 금융시장에서 자리매김하고 있다. 그러나 대부분의 핀테크 기업들은 자본이나 규모 측면에서 영세한 스타트업 기업이기 때문에 고객기반이 취약하고, 기존 금융기관들이 제공하던 서비스를 언번들링하여 특정 서비스에 국한하여 제공하고 있어 금융시장에서 기존 금융기관들의 보완적 역할을 수행하고 있다.

3. 빅테크의 금융진출

3.1. 빅테크 비즈니스 모델 및 특징

FSB 는 빅테크 기업을 광범위한 고객 네트워크를 통해 기존의 금융 상품과 유사한 금융 상품 및 서비스를 직접 제공하는 대형 기술 회사로 정의했다. GAFAM(Google, Amazon, Facebook, Apple and Microsoft), BAT(Baidu,

Alibaba and Tencent)로 대표되는 빅테크 기업들은 디지털 플랫폼을 통해 검색엔진, 전자상거래, SNS 등 기존 핵심 사업영역에서 다양한 사업 영역으로 다각화하고 있다. 핵심 사업 업무를 통해 수집한 이용자 정보 및 디지털 활동 데이터를 기반으로 자사 플랫폼 이용 고객들에게 저비용의 금융서비스를 제공하는 방식으로 금융 분야에서 시장 지배력을 확대하고 있어, 現 금융 기관의 강력한 경쟁자로 급부상하고 있다.

기술 기반의 금융 서비스 혁신이라는 측면에서 빅테크는 핀테크의 하위 개념으로 볼 수 있지만, 대부분의 핀테크 기업은 스타트업으로 시작하는 반면, 빅테크 기업은 주력 사업의 성공을 기반으로 확보한 기술, 풍부한 자본력과 글로벌 인지도 그리고 자사가 보유한 고객 네트워크 및 빅데이터를 적극 활용하여 금융서비스 시장에서 빠르게 성장하고 있다는 점에서 핀테크와 차별된다.

빅테크 기업은 자사 디지털 플랫폼으로부터 확보한 고객 데이터를 가공 및 분석하여 고객 맞춤형 서비스를 제공함으로써 자연스럽게 네트워크 효과를 일으킬 수 있다. 그 과정에서 새로운 데이터를 생성하는 선순환 구조를 조성할 수 있으며, 동시에 고객 잠금효과(lock-in effect)를 극대화할 수 있다.

3.2. 빅테크의 금융활동

빅테크 기업은 금융업 라이선스를 취득하여 직접 금융회사를 소유하거나 또는 기존 금융회사와 제휴를 통해 금융업을 영위할 수 있다. 기본적으로 금융업은 대표적인 규제 산업으로 인허가, 지배구조, 건전성 등 금융당국의 규제를 받기 때문에, 빅테크는 라이선스를 취득하기 보다는

기존 금융기관과 파트너십을 통해 금융서비스 영역으로 진출하고 있다.

빅테크는 지급결제를 시작으로, 신용공여(소액 대출), 보험 그리고 자산관리 등의 금융서비스를 제공하며 영업 범위를 확대하고 있다. 지급결제는 전자상거래 플랫폼의 일부로 제공되고 있으며, 신용공여는 기존 고객의 디지털 활동 정보 및 빅데이터 분석 기술을 활용하여 기존 금융기관보다 상대적으로 저렴한 비용으로 서비스를 제공되고 있다. 특히 데이터 기반 평가 방식의 빅테크 대출은 금융소외계층의 금융의 접근성을 제고할 수 있는 반면, 경기 침체 시 대출 축소로 금융안정성을 저해할 수도 있다. 보험의 경우 기존 금융기관의 보험상품을 빅테크의 플랫폼에서 중개하거나, 직접 상품을 개발하여 판매하고 있으며, 자산관리의 경우 결제 서비스와 연계된 고객계좌 잔고를 MMF 등으로 운용하고 있다.

지역적인 측면에서는 중국과 미국에서 빅테크 기업이 괄목할 만한 성장을 보이고 있으며, 특히 아시아에서의 확대가 두드러진다. 미국 등 선진국에서는 결제서비스 중심으로 성장하고 있는 반면, 아시아 신흥국에서는 하나의 금융거래 플랫폼에서 다양한 금융서비스를 제공하고 있다. 이와 같이 지역에 따라 빅테크의 발전 양상이 상이한데, 이는 규제 강도, 경제적 및 사회적 여건, 금융인프라 발전 정도 등의 차이에 기인한다.

3.3. 빅테크의 장점 및 잠재적 리스크

빅테크의 금융업 진출은 플랫폼과의 연계를 통해 다양한 금융상품 및 서비스를 개발하고 제공해 줌으로써 금융 혁신을 유도하고, 금융산업 내 건전한 경쟁을 통해

저비용으로 혁신적인 금융서비스를 제공해 주어 소비자 편익을 증진할 수 있다. 또한 빅테크의 디지털 기술 혁신은 정보의 비대칭성을 완화하여, 금융의 선별 기능과 모니터링 기능 개선을 통해 금융거래의 효율성 및 투명성을 제고할 수 있다. 그리고 IT 기술과 빅데이터를 활용한 고객 맞춤형 서비스 제공을 통해 소비자 경험을 개선할 수 있으며, 네트워크 효과, 풍부한 자본 및 저비용 자금조달을 통해 신속하게 범위의 경제 및 규모의 경제를 달성할 수 있다. 게다가 금융소외계층 및 영세 기업들에게 금융의 접근성을 향상시켜 줌으로써 포용적 금융 실현 및 시장의 불완전성을 개선할 수 있는 기회요인이 될 수 있다.

그러나 빅테크는 라이선스 취득 없이도, 기존 금융회사와의 제휴를 통해 금융업을 영위할 수 있기 때문에, 그림자 금융(shadow banking) 기관으로서 규제 차익(regulatory arbitrage)을 악용할 수 있고, 금융 상품의 불완전 판매 원인이 될 수도 있다. 또한 빅테크 기업의 주력사업(비금융사업)과 금융업 간의 복잡한 interlinkage 가 있어 시스템 리스크에 노출될 위험이 있다. 그리고 이미 거대 IT 기업인 빅테크가 금융업에 진출하여 과도한 지배력을 행사할 경우, 기존 금융회사를 퇴출시켜 금융시장 내 경쟁을 제한하게 되고, 오히려 금융거래의 효율성을 저해할 수도 있는 잠재적 리스크가 있다.

4. 규제

핀테크 및 빅테크의 금융시장 진입으로 금융생태계 패러다임이 변화하고 있다. 특히 빅테크의 디지털 플랫폼을 이용한 금융중개는 금융거래의 효율성을 개선할 수 있지만, 시장 집중도가 과도하게 높아질 경우, 경쟁 제한과 금융의

효율적 배분 실패를 야기할 수 있으므로, 각국 정부는 규제 마련에 노력을 기울이고 있다.

4.1. 금융규제

현행 규제 및 감독 프레임워크 하에서 빅테크는 건전성 규제 대상이 아니므로, 규제차익을 누리고 있다. 금융회사와 비금융회사가 금융시장에 동일한 서비스를 제공하고 있음에도 불구하고 서로 다른 규제를 받는 것은 공정한 경쟁을 저해할 수 있으므로, 시장 참여자 간 건전한 경쟁질서 확립을 위해 금융당국은 공평한 경쟁의 장을 마련해 주어야 한다. 따라서 금융회사와 동일한 리스크를 유발하는 동일한 행위에 대해서는 동일한 규제(Same activity, same regulation) 원칙을 적용해야 하므로, 현재의 사업체 단위별 규제 방식인 개별 사업체 (entity-based) 규제 방식에서 행위별(activity-based) 규제 방식으로 접근방법을 변경할 필요가 있다.

4.2. 경쟁 규제

공정경쟁을 위한 경쟁 규제는 시장 발전을 위한 중요한 요건이지만, 혁신을 저해할 가능성이 상존하므로 금융안정과 혁신 간의 적절한 균형을 유지해야 한다. 금융안정과 경쟁은 trade-off 관계이므로, 대표적인 금융규제인 건전성 규제는 경쟁 규제와 적절한 균형과 조화를 이뤄야 한다.

디지털 혁신은 단기적으로는 금융시장의 경쟁을 촉진할 수 있으나, 장기적 효과는 금융시장구조에 따라 달라질 수 있는데, 이는 반독점 경쟁 행위 등의 리스크에 기인한다. 특히, 빅테크 기업이 디지털 플랫폼을 기반으로 소비자의 인터페이스를 독점하거나, 금융기관에게 클라우드 서비스를

제공함으로써 발생 가능한 플랫폼에 의한 과점 폐해가 우려된다. 이에 금융서비스 경쟁 및 혁신 촉진과 공평한 경쟁의 장을 마련하기 위해 규제당국의 데이터 공유 움직임이 포착되었고, 은행의 금융 거래정보 통제를 완화하기 위한 노력으로 EU 의 결제서비스 지침 개정안(PSD2)와 영국의 Open Banking initiative 가 도입되었다.

그러므로 금융 안정성을 저해하지 않으면서 경쟁을 촉진하고 금융 시스템에 혁신의 혜택이 확산될 수 있도록 정책수단을 강구해야 한다. 건전성 규제와 경쟁 정책의 조화를 통해 시장 실패를 사전에 예방하고, 시장 경합성 및 포용적 금융을 증진해야 한다.

4.3. 데이터 프라이버시

디지털 경제에서 데이터는 가장 핵심적인 요소 중 하나이며, 신규 금융시장 참여자인 핀테크와 빅테크 모두 기존 시장 참여자인 금융기관들과 달리 데이터에 비교우위가 있다. 따라서 데이터 권리 이슈와 데이터 보호에 있어, 금융회사와 신규 금융시장참여자 간의 비대칭적인 데이터 공유를 해결하기 위한 데이터 접근 이슈는 시급히 해결해야 할 문제이다.

그러므로 데이터 프라이버시, 소비자 데이터 주권 및 금융서비스 공급자 간 데이터 공유(상호이동성) 확보가 필요하다. 데이터 프라이버시를 위한 EU 의 General Data Protection Regulation (GDPR)과 미국의 California Consumer Privacy Act(CCPA), 비대칭적 소비자 정보 공유 규정을 고려한 EU 의 PSD2 와 영국의 Open Banking initiative 이 대표적이다.

EU에는 금융회사와 신규 금융시장 진입자간의 데이터 공유 규정에서 상충되는 부분이 존재한다. EU의 은행은 PSD2에 근거하여 모든 금융시장 참여자에게 고객 데이터를 무료로 제공해야 하는 반면, GDPR은 데이터 공유가 가능한 경우에만 빅테크가 고객 데이터를 제공할 필요가 있다고 명시하고 있어 기존 금융기관들은 역차별이라며 반발하고 있는 실정이다. 이에 FSB는 시장 참여자 간 데이터 공유와 권한에 관한 불공정성을 인식하고, 금융 서비스 경쟁을 도모하기 위해 은행이 데이터를 공유한 사례와 같이, 빅테크 또한 금융시장의 경쟁 및 혁신 촉진을 위해 데이터를 공유하도록 금융당국의 규정 재정립이 필요하다고 촉구했다.

4.4. 금융소비자 보호 규제

핀테크 및 빅테크의 금융업 진입으로 인해 금융과 여타 산업 간 경계가 모호해 지면서 시스템 리스크 발생 가능성과 빅테크의 플랫폼 및 데이터 독점이 야기할 잠재적 리스크 등을 감안해 본다면, 금융소비자 보호 규제는 가장 중요한 과제 중 하나이다. 금융소비자는 금융상품 구매 시 금융서비스 제공자 보다는 금융상품 자체에 관심을 가지고 금융서비스를 이용하는 경향이 있고, 금융판매사에 상관없이 기존 금융기관이 제공하는 동일한 금융 소비자 보호를 받을 수 있을 것이라고 기대하는 측면이 있다.

그러나 비금융 기업의 금융서비스 제공으로 인해 금융 시장 참여자들의 책임 및 권리가 복잡해짐에 따라, 소비자 피해 발생시 책임 소재 등 금융 소비자보호의 문제가 심각해 질 수 있다. 주로 금융상품 중개 및 판매 역할을 하고 있는 금융 플랫폼의 경우 불완전 판매가 남용될 소지가 높으며, 문제 발생시 책임회피의 우려가 있다. 또한 빅테크의 경우, 고객의

디지털 활동을 고객맞춤형 서비스 제공에 사용하고 있기 때문에, 알고리즘 담합이나 소비자 편향(bias)에 기반한 가격 차별 등 빅테크에게 유리한 방식으로 정보를 제공하여 소비자에게 불리하거나 왜곡된 소비행태를 조장할 가능성이 있다. 그러므로 소비자의 제한된 합리성과 정보의 비대칭성으로 야기되는 소비자 행태에 기반한 차별 그리고 소비자 행동 편향 및 후생 감소를 최소화하기 위해, 디지털 금융 환경 속에서 금융소비자 보호에 대한 불확실한 부분을 명확하게 개선 할 필요가 있다.

5. 금융소비자보호원칙에 입각한 리스크 경감 검토

핀테크 및 빅테크 기업들의 금융시장 참여로 금융서비스가 분화(unbundling)되고, 비금융기관의 다양한 금융상품 및 서비스 제공이 확대되면서 금융시장 참가자 간 경쟁이 심화되고 있다. 금융시장의 효율성 및 투명성은 개선되고 있지만, 이로 인한 금융 서비스의 급격한 변화 및 디지털 금융으로의 전환에 따른 새로운 리스크가 대두될 가능성이 상존한다. 그러므로 금융혁신이 신속하게 진전되는 금융시장 환경 속에서, 새로운 시장 참가자들의 금융시장 진출로 인한 장점을 극대화하고, 리스크를 최소화하기 위한 노력이 요구된다.

특히 대규모 자본과 견고한 고객 기반을 갖추고 있는 빅테크의 경우 현재 금융시장에서 재빨리 시장 점유율을 확보해 가고 있지만, 아직까지는 빅테크의 금융 서비스가 기존 금융시장 체계를 근본적으로 변화시킬 정도의 파괴력을 가지고 있지 않은 것으로 평가되고 있다. 그러므로 현행 OECD 의 금융소비자보호 일반 원칙(Financial Consumer Protection Principles, FCP)과 연계하여 기존

리스크 및 향후 발생 가능성이 있는 리스크를 점검해 보았다. 특히 금융 혁신을 기반으로 한 신규 시장참여자들의 금융서비스 제공으로 인해 발생할 가능성이 있는 리스크를 기존의 리스크 드라이버 요인 들 중 혁신 및 사업 운영 측면에서 리스크 체크해 보았다.

그러나 디지털 혁신으로 인한 금융시장 변화는 높은 진입 장벽과 엄격한 수준의 건전성 규제가 이루어져 왔던 전통적인 금융시장과는 현격한 차이가 예상된다. 그러므로 금융당국은 금융시장 변화에 예의주시하고, 면밀한 모니터링을 통해 금융시장의 안정성을 유지해야 한다.

6. 결론

디지털 기술혁신이 향후 금융시장에서 미칠 영향은 더욱더 강력해 질 것으로 예상되므로, 금융시장 참가자들은 금융시장에서 디지털 혁신이 야기할 금융시장 구조 변화에 사전적으로 대비하여 금융시장 안정을 도모할 필요가 있다. 기존 금융기관들은 선진 디지털 기술을 적극적으로 수용하고, 고객 친화적인 비즈니스 모델로 변경하여 경쟁력을 제고해야 하며, 금융기관 특유의 전문성(상품 개발 등)을 보다 강화해야한다. 디지털 금융의 확산으로 업종의 경계가 점점 모호해짐에 따라, 금융당국은 기존의 금융규제만으로는 급변하는 금융시장을 규제 또는 감독하기 어려우므로, 공정거래위원회 및 데이터 관련 규제 당국과 긴밀히 협조하여야 한다. 또한 국경을 초월한 문제가 지속적으로 제기되고 있으므로, 국제기구 및 전세계 금융당국이 공조하여 금융시장 변화를 면밀히 검토하고 공동 대응책을 마련해야 한다.

Executive summary

With the advent of the digital economy, the impact of technology in the financial industry has changed the way financial service providers operate and interact with their customers. Innovative applications and new digital technologies applied to financial services bring many opportunities for both financial service providers and consumers, though it may also encompass new risks and challenges.

FinTech start-ups has emerged with new digital technologies and innovation and have been extremely transforming financial services and markets through a wave of digitalisation. However, they have not had destructive influences on financial industry since they do not have the entrenched customer base and abundant market capitalization vis-à-vis financial incumbents technology-enabled innovation in financial services

Unlike Fintech, however, BigTech whose core business is technology and data, has had a much more significant impact on the financial market. It can naturally create a network effect through its digital platform by incorporating customer information into the service and concurrently build a circular structure that generates more data by making users engage in new activities in the process. A tech giant is more likely to become a strong competitor to financial incumbents in a short time since they can optimize customers' user experience by providing customised financial products or services for their loyal customers, based on the large amount of data accumulated on their platforms, but at the same time, increases its market share as well.

BigTech firms diversifies their business models since they can engage in their economic and financial activities at almost zero marginal cost for customers due to their digital nature, particularly providing a wide range of financial offerings including payments, credit provision, investment services and insurances for customers. BigTechs have made a significant progress in financial services in a disparate way across regions due to differences in regulatory and

economic conditions and financial infrastructures. Large platform players in Asia have laid the groundwork for digital finance and made a success of a wide bundle of financial offerings, while tech giants in America has yet to establish themselves in the financial market, just focusing on payments.

New entrants' entry into finance may well be a boon to financial incumbents and customers; this can improve operational and cost efficiencies through the innovative technology and digital platform and ease asymmetric information by fostering competition and innovation in the market. This also can enhance financial inclusion by facilitating access to credit to consumers and small companies who were not well served by financial incumbents for lack of a credit record. Tech giants can easily achieve economies of scale and scope in financial services through their digital platforms by exploit comparative edges including network, big data and abundant resources to the fullest. They, however, may pose potential risks related to regulatory arbitrage, competition and data privacy such as the viability of the business models of financial incumbents given interlinkages with, and competition from, BigTech firms and anti-competitive behaviour.

Financial activities of new entrants in the financial need to be considered across multiple policy competencies; the overriding principle of "the same activity, same regulation" should apply to both financial incumbents and new market entrants in order to weed out regulatory arbitrage and establish the competitive environment among market participants. Moreover, to eliminate market failure stemming from asymmetric information and externalities, competition in finance is more likely to increase, eventually having the benefit of increasing competition and contestability, as well as financial inclusion. Prudential regulation must be coordinated with competition policy due to a trade-off between competition and financial stability. It also should be considered that issue of data rights and access to resolve asymmetric data sharing with respect to data protection and data sharing regulations in the financial services sector; data privacy, data ownership and data value. Policy makers, thus, have to put in place well designed regulation by keeping a level playing field that strikes

a right balance between fostering competition and preserving financial stability, along with consumer protection issues.

Financial consumers expect to relish an equivalent level of financial consumer protection as with traditional financial services firms, when they use financial products and services provided by new entrants. However, FinTechs and tech giants may not take the responsibility for failures and issues related to consumer protection, since there are the regulatory arbitrage and the complex interconnectedness between financial incumbents and new entrants. In this regard, regulators and supervisors must monitor and identify current and emerging consumer protection risks to reduce harms in the market, ultimately influencing a more positive consumer-focused culture in the financial service providers. To that end, Innovation and business contexts of “financial consumer protection risk drivers” were explored so that financial authorities can prevent or mitigate relevant risks aligned with the financial consumer protection principles.

As technology continues to shape the future of financial services, new entrants, particularly large platform players will play a significant role in the financial market now more than ever by engaging in areas of finance where their competitive advantages and regulatory arbitrage allow them to reap profits and further take advantage of their network. Therefore, traditional financial incumbents have to put more efforts to do new business models and embrace new technology in the finance in order to increase their profitability in this challenging financial ecosystem and facilitate convenience and accessibility to financial products and services.

In addition, along with empowering customers to benefit from technology, financial authorities have to work together with relevant regulators and put market development into scrutiny and additional financial regulations and oversights in place, along with giving increased guidance to new entrants around consumer protection in a comprehensive and deliberate manner. They also should cooperate with all the countries in the world at an international level

by setting rules and standards to grapple with issues arising from new entrants' entry into finance.

1. Introduction

In the wake of the financial crisis, the novel approach to competition in the financial industry was introduced carefully due to high costs of financial intermediation and low profitability, to ensure that financial markets function well and to regain trust in the market by stimulating competition and innovation in an efficient and effective manner. With the economy going digital, technology firms have grown rapidly by yielding enormous profits and at the same time, digital banking in finance has been accelerated dramatically through underlying technology and big data.

FinTech start-ups has emerged with new digital technologies and innovation and has benefited from an uneven playing field in that they are less regulated than banks. The innovation brought by FinTech start-ups is providing more options in the delivery of financial services for consumers that may be either less expensive, faster or more personalised. The emergence of FinTech companies and underlying technologies, have been extremely transforming financial services and markets through a wave of digitalisation since mid-2010s. However, they have not had destructive influences on financial industry since they do not have the entrenched customer base and abundant market capitalization vis-à-vis financial incumbents.

Unlike Fintech, however, the entry of BigTech players, such as Google, Amazon and Alibaba, into online banking may have a much more significant impact on competition in banking. A BigTech firm which is a giant IT firm with its own digital platform, has some comparative advantages that banks cannot easily emulate, and therefore present a much stronger challenge to established banks in consumer finance and loans to small and medium sized enterprises(SMEs). A tech giant, in fact, has been aggressively penetrating financial market through its network effect¹ and

¹ It refers to the effect of consumer-centered economies of scale in the Internet economy. The more participants gather on the platform, the higher the average value per transaction is.

customer data collected from their core business, bringing a tremendous change to the existing financial intermediation by gradually gaining their market share. In this regard, BigTechs, rather than FinTechs which start their own business as start-ups, are likely to be much more disruptive to the traditional banking business burdened by legacy systems through heightened competition in a certain area of finance including payments.

BigTech's entry into financial services can be a double-edged sword in the financial industry. This, although it has enormous benefits including greater innovation, accessibility, efficiency in the provision of financial services and opportunity for financial inclusion, could bring probable risks in relation to viability of banks' business models, operational interconnectedness between financial incumbents and large platform players and potential anti-competitive behaviours. Thus, BigTech' developments in finance has raised concerns about issues related to the adequacy of existing financial regulations, competition, data privacy and financial consumer protection, eventually leading to additional financial regulation and oversight for financial authorities to keep financial stability and make the financial market sufficiently competitive along with consumer protection.

This paper is to better understand what kind of the role FinTechs and BigTechs play in finance and how they have implications for the financial market and to examine how risks may be considered and addressed in a comprehensive way in advance. The second section considers the FinTech landscape in the financial market. The third section takes into account how BigTech incumbents can engage in financial activities across regions and be well positioning in the financial market with their comparative advantage along with the potential risks that may arise. The fourth section explores considerations and regulations related to financial stability, competition, data privacy and financial consumer protection, including how they may relate and apply to BigTechs. The fifth section reviews financial consumer protection risk drivers in the context of innovation and business, aligned with financial consumer protection principles, in order to prevent potential risks arising from the entry of FinTech start-ups and tech giants in advance. The final section concludes consideration for future work.

2. FinTech in finance

The financial industry has looked to a breakthrough to make the financial market more lucrative and regain trust in the market, since it suffered from low profitability and high operating costs in the aftermath of the financial crisis. As a result, competition approach has been employed to enhance efficiency in finance and improve financial products and services offered to its customers by adopting technological innovations in the digital economy and the financial industry is going through radical transformation and restructuring, as well as a move toward a customer-centric platform-based model.

2.1. Business models and financial activities

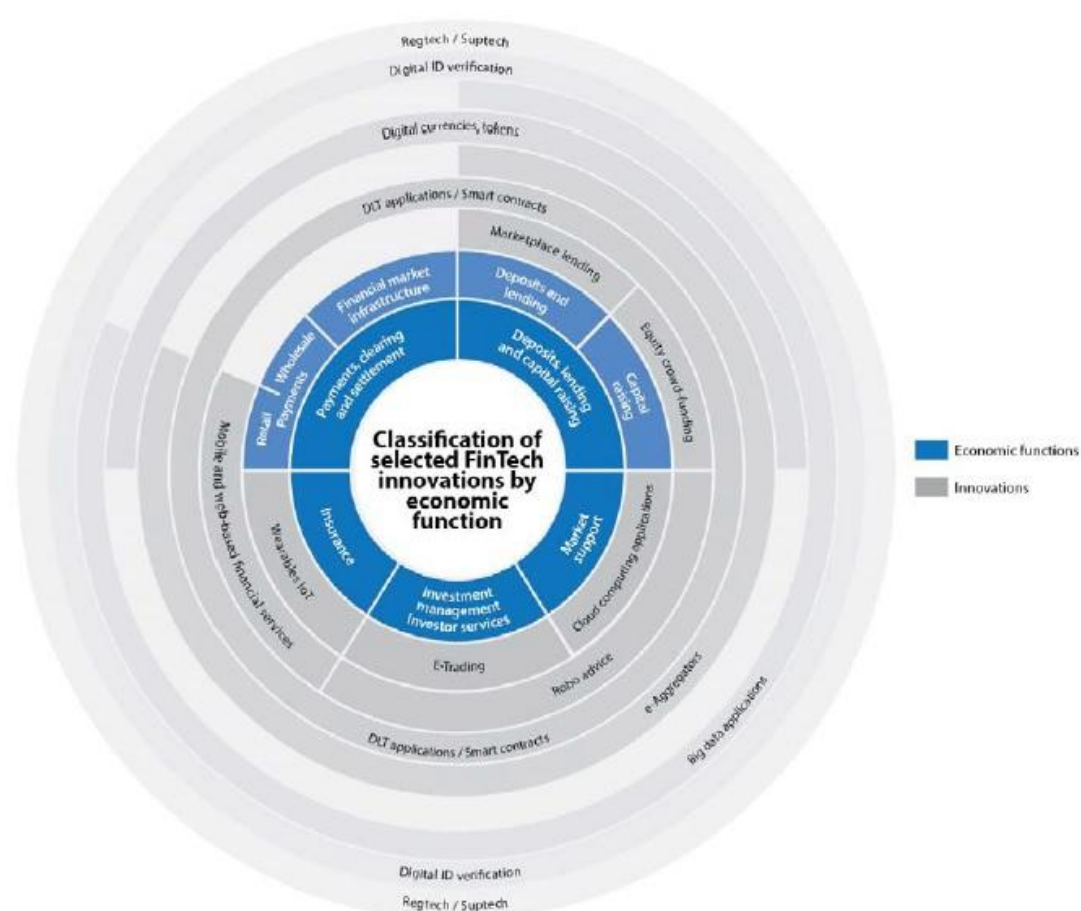
FinTech is defined as technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services. (Financial Stability Board, 2017) Its key attributes are data, computing and interface based on the digital and user-friendly environment. It, thus, presents consumers, businesses and governments with new financial products and services that may disrupt the financial industry.

Notwithstanding a high barrier to entry, FinTech innovations which were small and digital-native start-ups, made inroads into many different areas of financial services and now have provided new products and services which are subject to a less stringent regulatory framework and not capital-intensive or show higher returns on equity such as payment or applications that help customers manage their finances. These start-ups take advantage of state-of-the-art technology and facilitate the unbundling of financial services that have traditionally been offered by banks, eventually delivering fully digital products and services so that they do not have to have the burden to maintain a physical distribution network and can reduce operating costs.

FinTech innovation, as seen Figure 2.1, have the economic function and innovation function. As a substantial financial activities by Fintechs, FinTechs can be categorised into five categories of the

bank-like-financial intermediation activities²: (i) payments, clearing and settlement; (ii) deposits, lending and capital raising; (iii) insurance; (iv) investment management; and (v) market support. (Financial Stability Board, 2017) As such, FinTech start-ups tend to focus on a particular innovative technology or process in everything from mobile payments to market support and have been attacking some of the most profitable elements of the financial services value chain.

Figure 2.1 Stylised classification of selected FinTech innovations by economic function



Source : Financial Stability Implications from FinTech, (Financial Stability Board, 2017)

² Classifications of FinTech activities vary, but they tend to have similarities. S&P Global in its 2018 US FinTech Market Report divides FinTech activities into six types: payments, digital lending, digital banking, digital investment and personal finance, blockchain, and insurtech. Insurtech is the FinTech for the insurance sector. (René M. Stulz, 2019)

Innovations include FinTech credit, digital currencies, distributed ledger technology, artificial intelligence and machine learning and have stimulated all these categories of financial services by improving their digital capabilities at a significantly faster pace, leading to emerging alternative financial service providers. Consequently, Fintechs have provided some of the most prominent applications such as robo-advisor, cryptocurrency, online lending businesses and crowdfunding platforms for consumers and companies and then technologically advanced ways to make financial processes more efficient by competing or cooperating with traditional financial incumbents.

FinTech companies have strived to make financial services more accessible for both consumers and businesses with innovative technologies, ultimately leading to becoming more competitive financial markets than ever. They, at the same time, could elicit traditional financial incumbents to readily embrace the digital transformation and new and advanced technologies into financial industry. By connecting customers to a digital world, FinTechs enhance customer experiences, making them efficient, economical and convenient. As such, this great efficiency of new financial service providers can enhance the efficiency of financial services in the longer term by exploiting the uneven playing ground to the full in the current financial ecosystem.

Figure 2.2 indicates that technological innovation can improve the ability to provide a wide range of financial offerings for customers and companies, particularly small and medium sized companies by increasing market access and convenience and at the same time, lowering costs. These financial services including credit, payment and insurance can contribute to reducing information asymmetries and adverse selection in the financial market and ramping up efficiency. In particular, Cryptocurrency like Bitcoin and Ethereum which is a form of digital currency and based on blockchain networking, also can have the potential for the financial inclusion by giving more opportunity to access to finance for those who have been not well served due to lack of financial records or excluded from the existing financial institutions.

Figure 2.2 Example of FinTech business models

CATEGORY	SUBSECTOR	CURRENT MODEL	EMERGING MODEL	EXAMPLE
Banking	Retail	Debit card	E-wallet	PayPal
Banking	Retail	Current account	Direct bank	ING Direct
Banking	Retail	Education loan	Education crowd lending	Prodigy Finance
Banking	Retail	Personal loan	Crowd lending	Zopa
Banking	Corporate	Business loan	Crowd lending	Funding Circle
Banking	Corporate	Invoice factoring	Invoice trading	Platform Black
Banking	Alternative assets	Bonds	Bond platforms	UK Bond Network
Banking	Corporate	Property loan	Crowd lending	Proplend
Insurance	Personal	Questionnaire	Telematics	Automatic
Insurance	Personal	Legacy infrastructure	Software-as-a-service	Guidewire
Asset management	Financial advice	FA consultants	Robo-advisors	Betterment
Asset management	Brokerage	Broker	Online trading accounts	TD Ameritrade
Asset management	Brokerage	Broker	Trading social networks	eToro
Asset management	Alternative assets	Venture capital	Crowd investing	Crowdcube
Capital markets	Securities	Human traders	High-frequency or algorithmic trading	HRT Europe
Capital markets	Research	Financial market data terminals	Streaming data sites	LSE Real Time Data
Capital markets	Research	Research reports	Peer-to-peer information	Stocktwits
Capital markets	Currencies	Opaque pricing	Low-cost aggregators	Currency Cloud
Capital markets	Currencies	Sovereign currencies	Digital currencies	Bitcoin
Charity	Corporate and personal	Gifting	Rewards and donations platforms	CrowdShed

Source : FinTech Futures, (UK Government Chief Scientific Adviser, 2015)

2.2. FinTech landscape

With the advent of the digital economy, the impact of technology in the financial sector has changed the way financial service providers operate and interact with their customers. In particular, advanced digital technologies such as digital currencies, distributed ledger technology, artificial intelligence and machine learning, enabled FinTech companies to force their way into finance and play an

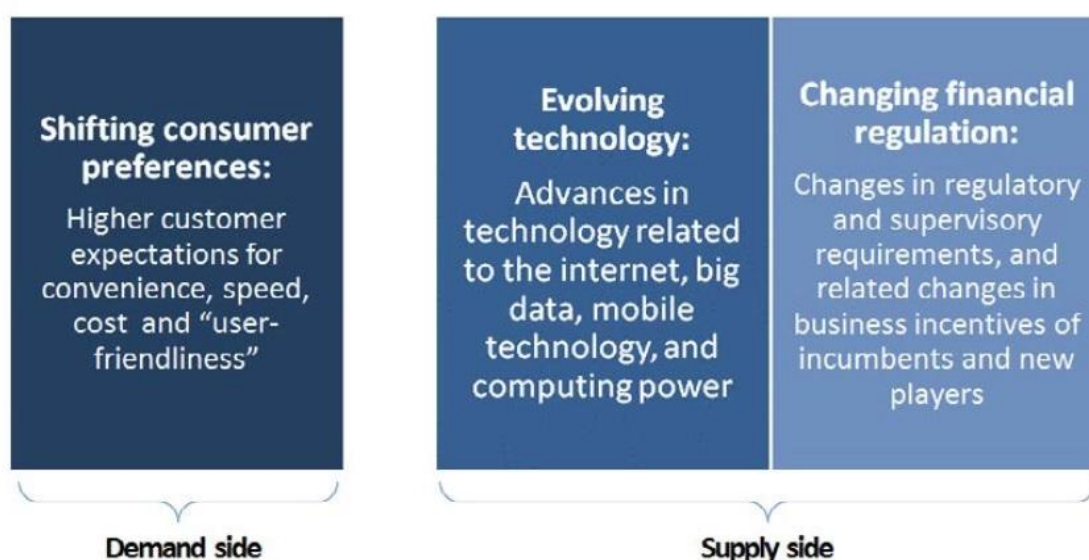
important role in the provision of various financial services. In addition, the emergence of new financial service providers appear to make the financial market become more fragmented or more concentrated.

Drivers of financial innovation

As FinTechs have evolved in significant ways, consumers in both advanced and emerging market economies who prefer using digital channels and technologies to manage their lives, have increasingly adopted digital financial services that are more convenient. (Ernst and Young, 2017) In this regard, FinTechs have been gaining traction in the market by focusing on the customer proposition and leveraging technology in novel ways.

As seen Figure 2.3, there are three ingredients with respect to drivers for financial innovation so as to invigorate innovation and competition in the financial market; shifting consumer preferences, evolving technology, and changing financial regulation. (Financial Stability Board, 2017), With the finance going digital, consumers prefer to deal with financial propositions online for their convenience and choose user-friendly financial products and services which may improve their customer experiences from the perspective of the demand side.

Figure 2.3 Drivers of financial innovation



Source : Financial Stability Implications from FinTech, (Financial Stability Board, 2017)

From the perspective of the supply side, financial service providers including traditional financial institutions have aggressively made the most of new advanced technologies and big data so that they can improve their operating capacities in the market and provide a wide range of financial offerings in a more efficient and cost-effective manners. Moreover, with the financial market more innovative and competitive, traditional financial incumbents have faced radical financial environment but have been still subject to stringent financial regulations. However, as the non-financial institutions have materially provided an abundance of financial products and services for financial customers, novel regulatory and supervisory changes and supports have been enlisted to control new players in the financial market. Those three drivers, therefore, can have substantial impacts on the structure of the financial system.

FinTech advantages

Fintechs are likely to hold greater promise for improving financial products and services for the benefit of consumers, businesses, and government. Innovative digital technologies have been instrumental in changing the financial market in a comprehensive way by lowering transaction costs and barrier to entry into finance for new market players, thereby helping to facilitate efficient resource allocation in the market and to reduce information asymmetry.

Although FinTech companies engage in the various financial activities in the financial market for consumers, they generally have a different business model from traditional financial institutions. There are three advantages in finance for FinTechs; regulatory costs, legacy systems and costs of diversification.

A regulation generally creates an uneven playing field in the supply of financial products and services. Under the current regulatory and supervisory framework, FinTechs can take advantage of the regulatory arbitrage since they are not a financial institution which means they do not have to comply with financial regulations, whereas traditional financial incumbents are subject to regulations including capital requirements and liquidity requirements, in the end, leading to increasing the cost of financial products and services. Therefore, as traditional financial incumbents and FinTech are

subject to different regulations, traditional financial incumbents have higher regulatory costs than those of FinTechs for similar financial activities.

FinTechs are more likely to adapt to the new financial ecosystem with novel digital technologies and massive quantity of data, while financial institutions have their own IT legacy systems which expend extremely large amount of budgets per year, making it difficult to integrate new advanced technologies into their own systems. As long as traditional financial incumbents stick to their legacy systems for their core financial activities, the IT legacy system can be a virtue of FinTechs, but disadvantageous to existing financial institutions.

In general, some financial institutions have large diversified business models and engage in a variety of financial activities in the market, creating the positive synergy effect, but leading to costs of diversification and low profitability. Operating costs including branches can be the burden for traditional financial incumbents. On the other hand, as FinTechs do their businesses online by deploying digital technologies, they do not have to take care of operating costs that much vis-à-vis financial institutions and also can take advantage of the digital nature, the network effect in the digital economy.

FinTech threats to financial incumbents

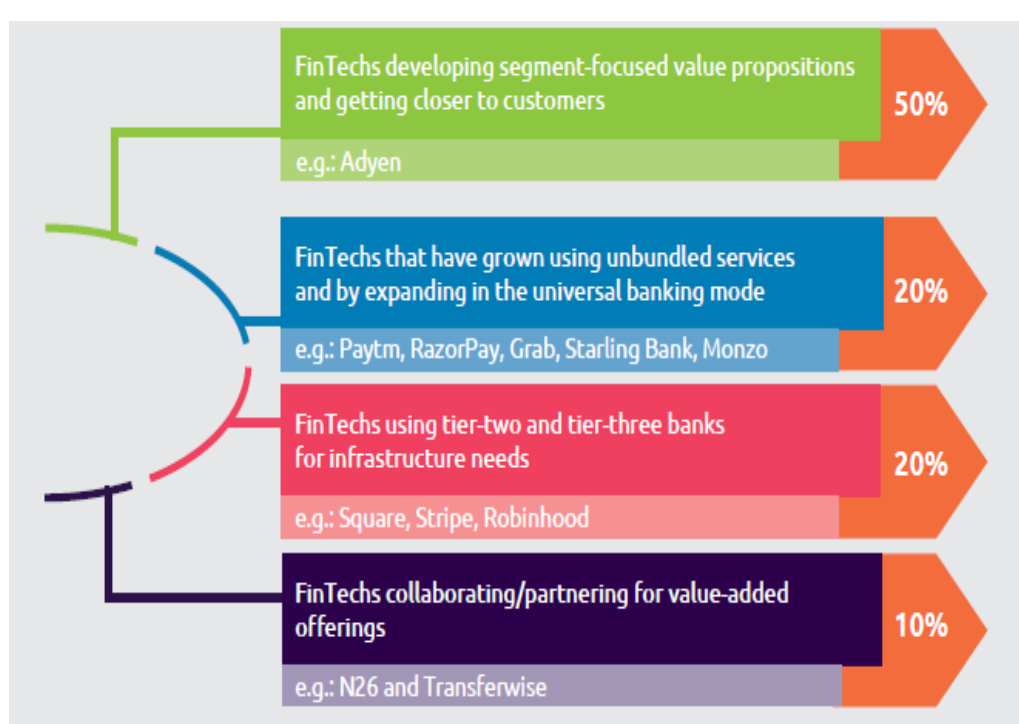
Innovative applications and new technologies applied to financial services bring many opportunities for both financial service providers and consumers, though it may also encompass new risks and challenges. With FinTechs making inroads into financial services, financial incumbents have made efforts to embrace the new digital technologies and enhance their capabilities by modifying their business models. More competition in the market and diversity in the provision of the financial services can make the financial system more efficient and resilient and improve consumer's experiences.

Of competitive business models that FinTechs introduced, segment-focused value propositions are at the top of the most substantial threat to banks, according to the World Payment Report 2019 online survey responses. (Capgemini Research Institute, 2019).

Unlike the traditional financial incumbents, FinTechs tend to offer unbundled services, particularly, FinTech credits, payments, insurance services and the digital currency and the user-friendly financial ecosystem so that consumers can get access to the financial services more easily and conveniently.

FinTechs also appears to be largely complementary and cooperative with traditional financial incumbents in nature.

Figure 2.4 Perception of threat from evolving FinTech business models



Source : Capgemini Financial Services Analysis(2019), World Payment Report 2019 online survey response (Capgemini Research Institute, 2019). recitation; Top trends in Retail Banking(2020)

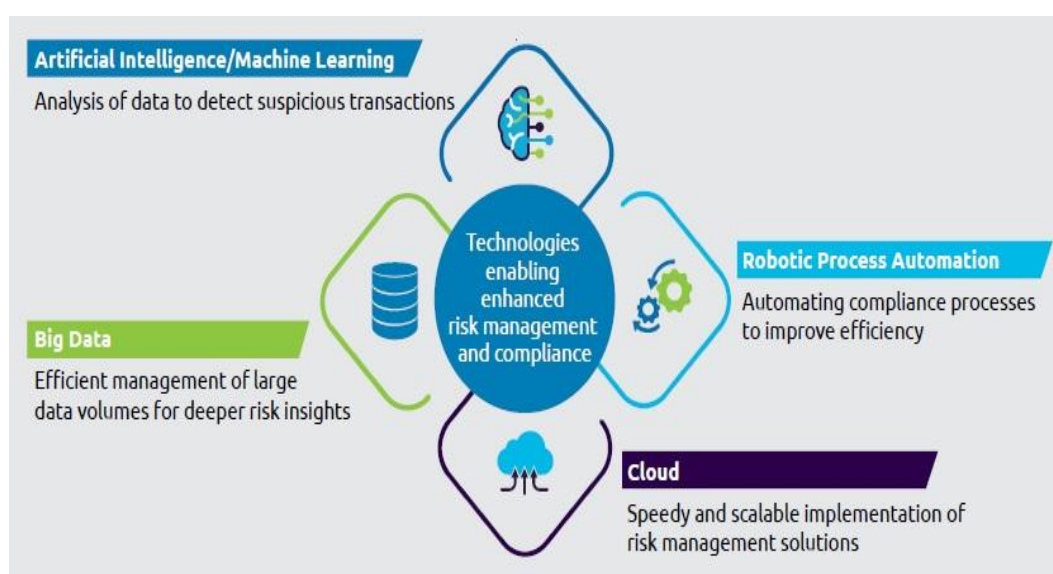
The digital and big data revolutions make possible many new products and practices in the financial industry. Investment to FinTechs and regulatory support will continue to play a role in stabilizing the development of the FinTech industry, which will benefit not only consumers and governments, but the traditional financial incumbents as well by making the financial market more innovative and competitive.

Supervisory and regulatory technology deployed.

Effective financial regulations is one of the most overarching factors in both the FinTech industry and the overall financial system. With the financial market changing rapidly, some challenges are emerged, in particular, about how to create regulation for new players, new interactions, and unique business models. To create a regulatory framework that is strong enough to promote systems safety, novel approaches have been taken with the advanced technologies; the use of technology by supervisors (SupTech) and the use of technology by regulated institutions to meet regulatory requirements (RegTech).

The rapidly evolving technological landscape of financial services provision requires a proactive and resolute approach from supervisors and regulators towards the use of digital technology. Consequently, FinTechs and big data are applied to regulation, risk and compliance, eventually contributing to financial regulation. Fintechs are increasingly adopting and leveraging regulatory technologies which encompass artificial intelligence (AI), machine learning (ML), advanced data analytics, distributed ledger technology (DLT), cloud computing and application programming interfaces (APIs), so that they can improve efficiency and transparency in the financial market.

Figure 2.5 Technologies enabling enhanced risk management and compliance



Source : Capgemini Financial Services Analysis(2019), recitation; Top trends in Retail Banking(2020)

Eventually, this innovation can help to provide standards for the financial service providers that encourage staff to comply with internal compliance. Regulators also can continue to monitor the market developments by maintaining a system. In addition, this new innovation can induce market participants to collaborate by keeping sharing information about financial market conditions and interacting with each other.” (UK Government Chief Scientific Adviser, 2015)

3. BigTech in finance

BigTech firms have been emerging as strong competitors to existing financial institutions as they can provide a wide range of financial products and services for customers by exploiting their digital platforms and data collected from their core businesses including e-commerce to the full compared to those offered by the traditional banks, thereby exerting significant influence in the financial market. Therefore, it will be useful to understand financial activities that tech giants engage in, implications they have for financial market and their competitive edges and potential risks by exploring BigTech incumbents across regions, particularly in the US and Asia.

3.1. What is the BigTech?

BigTech is a term used for the large and dominant firms in the information technology industry with its digital platform and embodies several attributes; particularly, entrenched customer bases, brand loyalty and recognition, proprietary customer data, state-of-the-art technology and economies of scale and scope. BigTech whose core business is technology and data is primarily represented by GAFAM(Google, Amazon, Facebook, Apple and Microsoft) in the US and BAT (Baidu, Alibaba and Tencent) in China.

Tech giants present a distinctive business model by combining network effects through their digital platforms and technology such as artificial intelligence and machine learning using big data; they can gather information about user's digital activities through their online platforms, utilising natural network effect, eventually generating further user activity. That is, more data generates stronger network effects, which elicit more activity, leading to yet more data. They also can deploy a large amount of user data collected by processing and analysing it through technological tools including algorithms and machine learning models, thereby improving efficiency in the market and economic welfare of market participants.

Since BigTechs can provide their services at almost zero marginal cost for customers due to their digital nature, they diversified their business model into cloud services, media, smart devices and so on from its core business model including the search engine, e-commerce and social network service, thereby, reinforcing the brokerage and concentration functions in the process of business diversification. They have gone so far as to penetrate the financial market and have been well positioning to compete in the financial market by capitalising on the state-of-the-art information and communication technology, brand reputation, massive quantities of customer data, and market capitalization secured from the success of their core business models. As a result, a large platform player has been offering various financial products and services including payment, lending, asset management, credit scoring, insurance and current account across the world either directly or in cooperation with financial institution partners.

A BigTech firm can be seen as a sub-concept of a FinTech company focused on the innovation as a FinTech firm is referred to as technology-based financial service innovation that brings about new business models, applications, processes and products that have a significant impact on financial services. From the perspective of technology-based financial service innovation, thus, BigTech can be regarded as a part of Fintech, but has different features; while most FinTechs start from start-ups, BigTechs have already grown in size and retain established customer networks and big data from the core of their business. In this regard, BigTech's entry into financial services may have a significantly higher impact on the financial market than that of other FinTech firms in terms of competition and concentration in the financial sector, thereby changing the financial market structure. (Financial Stability Board, 2019)

Tech giant firms, by processing and analysing abundant customer data collected from their core businesses, do their businesses in the financial market through their digital platforms for financial transaction that can provide tailor-made financial products and services, ultimately lowering financial intermediation costs. Therefore, it can naturally create a network effect by incorporating customer information in the service and concurrently build a circular

structure that generates more data by making users engage in new activities in the process. For instance, Amazon with a large platform that deals with e-commerce, delivery, and customer management functions, makes it possible to sell financial products and services to existing consumers, thereby generating significant synergy effects in terms of convenience and accessibility.

Hence, a large platform player is more likely to become a strong competitor to financial incumbents in a short time since they can optimize customers' user experience by providing customised financial products or services to their loyal customers, based on the large amount of data accumulated on their platforms, but at the same time, increases its market share as well. Combined with strong financial positions and access to low-cost capital, large platform firms could achieve economies of scope and scale very quickly in financial services, particularly in market segments where network effects are present, such as payment, lending, and insurance, by bundling their current offerings with traditional financial products and services. Moreover, since BigTech, as a so-called shadow bank³, is not a financial institution in the current financial ecosystem, it could be an advantage to a tech giant in that a non-financial institution offering financial products and services, are not subject to prudential regulations such as maintaining leverage ratio or capital adequacy that a financial incumbent needs to comply with.

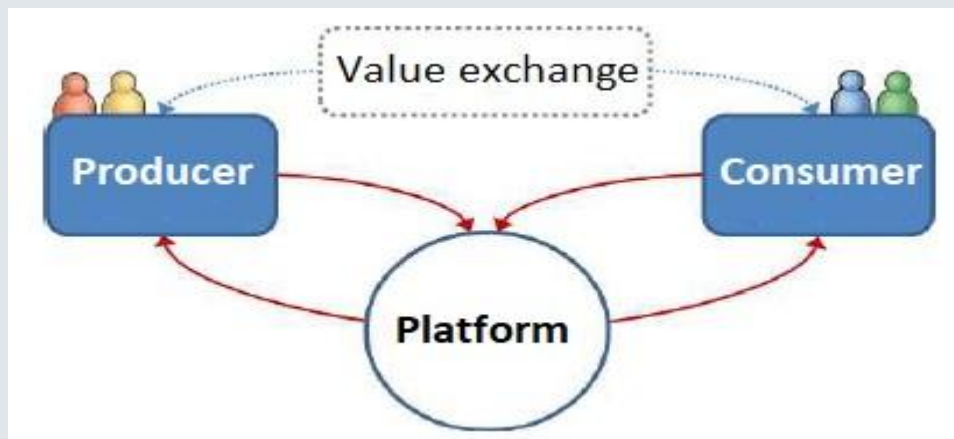
³ Shadow banking (also referred to as non-bank financial intermediation or NBFII) was originally defined by the FSB as a system of credit intermediation that involves entities and activities outside of the regular banking system. Shadow banking has raised concerns of systemic risks (e.g. arising from activities that generate maturity and/or liquidity transformation or that create leverage).

Box 1. Characteristics of BigTech

A strong and exclusive platform business model

BigTech firms build an open infrastructure called a platform and connect market participants including producers and consumers to interact with each other and then exchange values directly and indirectly, yielding revenues. The decisive success factor of the platform business is the network effect and securing a multi-sided market that connects two or more customers.

Tech giants, thus, take advantage of their own core platform business strategies such as a search engine from Google, E-commerce from Amazon and Alibaba, a social network and messenger from Facebook and Tencent and electronic device from Apple



Source : Platform Revolution (Geoffrey G. Parker, Marshall W. Van Alstyne, Sangeet Paul Choudary, 2016)

Lock-in effect through killer contents and services for users

Once a customer starts to purchase and use a certain product or service through the digital platform offered by BigTechs, it is hard to transfer its demand to other similar products or services due to the lock-in effect. Therefore, large platform players can keep attracting and retaining customers through their core businesses such as e-commerce and social media.

Massive quantities of customer information in real time

Tech giants are able to capture user's digital activities and gather the basic personal information, individual preference and lifestyle such as their social relations with acquaintance, their income, credit card information and consumption behaviors, while they do their own businesses through their online platforms.

Sophisticated big data analytics

By processing and analysing an abundance of data accumulated through the digital platform, large platform players can provide information to educate customers and improve customer experience. A huge amount of research and development, hence, has been invested every year on cloud services that store and process data, and Artificial Intelligence and Machine Learning that analyses big data.

Adequate capitalisation

BigTech players have grown rapidly to very large proportions by reaping tremendous profits, and now have market capitalisations well above those of the largest global banks.

3.2. Why BigTech firms venture into financial market?

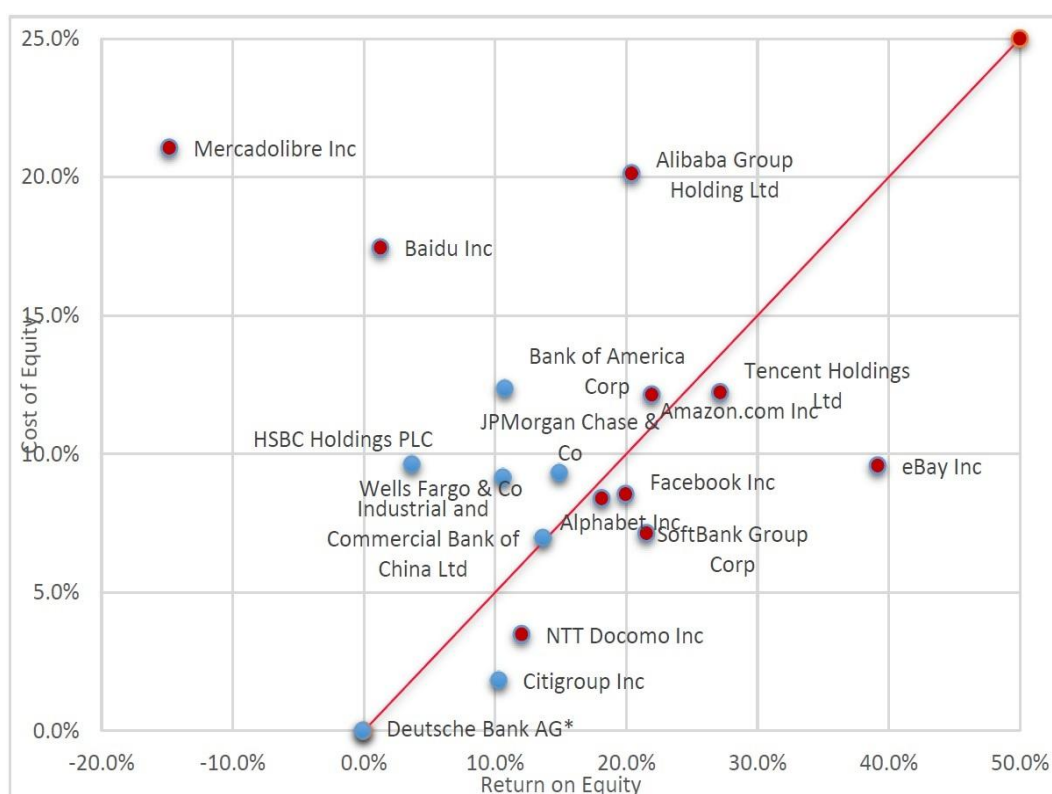
Large platform players have grown very quickly in the financial market with their significant resources and widespread access to customer data, which could be self-reinforcing through the network effect. As such, there is no doubt that BigTech firms have competitive advantages in the financial market in many ways. However, they still appear not to show strong financial performances in finance and even to fall short of those from their core businesses.

Figure 3.1 shows the cost of equity⁴ against the return on equity for BigTechs and Banks for 2019. The cost of equity for tech giants is generally higher than that of banks, which demonstrates tech giants bear a relatively higher level of risk and the stock's volatility

⁴ The cost of equity is the return a firm theoretically pays to its equity investors including shareholders to compensate for the risk they undertake by investing their capital.

compared to Banks in the market. In addition, the return of equity for large platform players is remarkably higher than that of banks, which means BigTechs are utilising their assets to create profits more effectively than banks and have more growth potential in the market. As seen, the return on equity for major banks around the world records 9% on average, while that of Chinese tech titans including Baidu, Alibaba, and Tencent is 16% on average and that of American tech giants including Alphabet, Amazon and Facebook is 20% on average. The financial industry, therefore, tends not to be as risky or profitable as the technology industry in the general market.

Figure 3.1 Cost of equity vs Return on equity



Note: Deutsche Bank is for 2017.

Source: BigTech, financial intermediation and policy considerations (OECD, 2020)

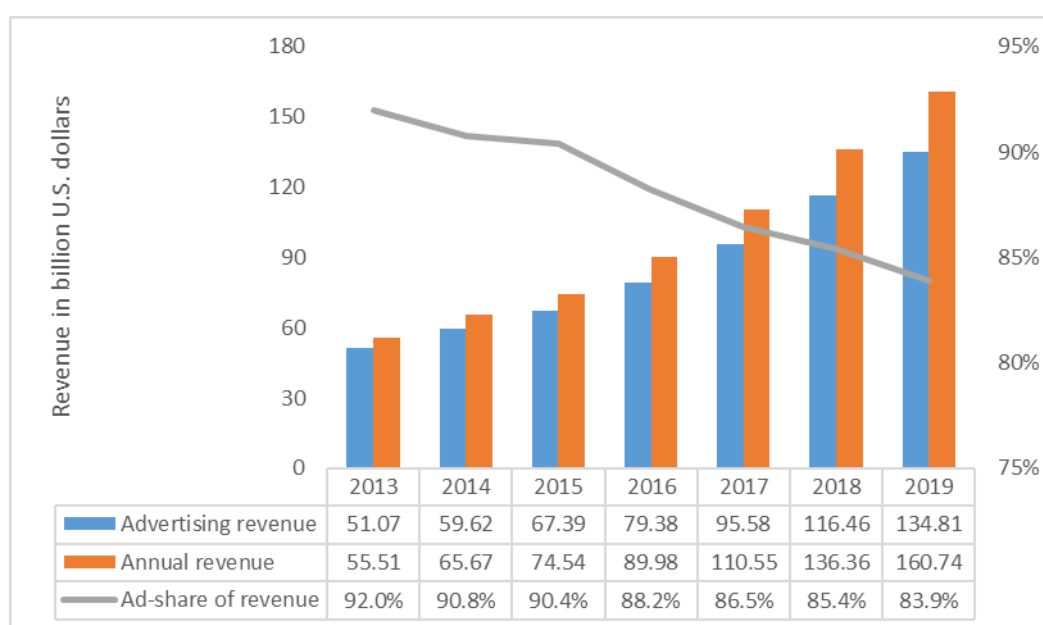
Notwithstanding a relatively higher risk and lower profitability in the market, why are BigTech firms trying to force their way into the financial industry?

First of all, BigTech's entry into the finance make it possible to diversify its revenue streams by deploying its core business. In the current situation where technologies and industries have been changing much faster than ever, if companies settle for a handful of

business models, they are more likely to fall behind the competition. By providing new financial services for customers, therefore, tech giants can diversify their revenue streams and further reduce the risks of their core business models.

Second, accessing new sources of data makes it possible to collect and utilise vast amounts of customer information data accumulated from the non-financial service industries in real time. The user’s activity data from existing digital platforms can be used for financial services to help to understand their customers’ behaviours and lifestyles, and on the contrary, financial data can be linked to platform services. This is why BigTech firms offer most of the financial services free of charge or rather provide incentives to users⁵.

Figure 3.2 Advertising revenue and Ad share of total revenue of Google



Source: Statista, <https://www.statista.com/statistics/266249/advertising-revenue-of-google/>
<https://www.statista.com/statistics/266206/googles-annual-global-revenue/>

Providing tailored products or services through the data analysis reinforces the lock-in effect from customers, and consequently

⁵ See (Klein, Aaron, 2019) https://www.brookings.edu/wp-content/uploads/2019/05/ES_20190617_Klein_ChinaPayments.pdf

establishes a virtuous cycle structure that can lead to the increase in advertising revenue, a major source of revenue for platform companies. A case in point, Google earns advertising revenue through its Google Ads platform, which enables advertisers to display ads, product listings and service offerings across Google's extensive ad network to users. The company generated annual revenue which amounted to a total of 160.7 billion US dollars in 2019 and its advertising revenue accounted for 83.9 percent of Google's total revenue, which amounted to 134.8 billion US dollars⁶.

Last but not least, BigTech's foray into finance can enhance the satisfaction of existing customers and expand the customer base through platform-based financial services, which will complement and reinforce their core business in the end. For example, if a large platform player integrates the payment system into its existing digital platform, a consumer can use payment services more easily and conveniently, and tech giants can secure a new customer base and augment customer loyalty through its network effect at the same time.

3.3. BigTech's positioning in finance

The paradigm shift to digitalization and widespread inefficiencies in financial industry, have attracted large platform players into finance. BigTech firms steadily have extended the share of the financial market since the 2000s and could achieve the scale very quickly in financial services, particularly where the network effect is present, such as in payments and lending by combining their competitive advantages with strong financial positions and access to low-cost capital.

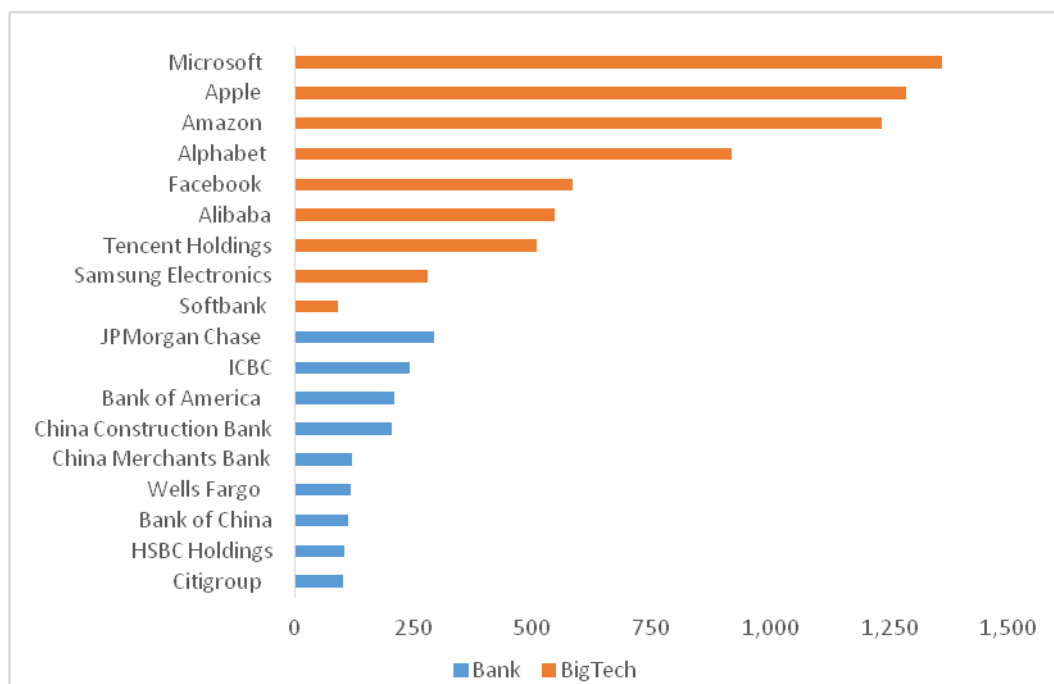
BigTech firms already dominate global financial companies in terms of size. Giant technology companies such as GAFAM⁷, Alibaba and Tencent were placed among the top ten companies in the world by

⁶ See <https://www.statista.com/statistics/266249/advertising-revenue-of-google/>

⁷ Alphabet Inc. is an American multinational conglomerate created in 2015 as the parent company of Google and several other companies previously owned by or tied to Google.

market capitalization in 2020 and it comes as no surprise to exceed the market capitalisation of the world's largest financial institutions including JP Morgan and the Industrial and Commercial Bank of China(ICBC). Thus, they have a comparative advantage over incumbent financial companies in size.

Figure 3.3 Market capitalisation of major financial groups and BigTech firms in 2020



Note: In billions of US dollars, Values are the closing price of all common shares outstanding on April 30, 2020.

Source: Statista, <https://www.statista.com/statistics/263264/top-companies-in-the-world-by-market-capitalization/>

BigTech players and Market developments

Traditionally the financial industry has a high barrier to entry, in particular, as to regulations and substantial fixed costs since financial incumbents are subject to tight scrutiny for financial stability including capital and liquidity regulations. There are two ways for BigTech to do its business with banking license in the financial market; one is that a tech giant directly owns a financial company with the full banking license under the current regulatory framework by initiating the process to become a bank. The other is that a tech giant is affiliated with a well-established financial institution and provides basic financial products or services including digital payment, credit extension, insurance and investor products (Bank for International Settlements, 2019).

This first approach to entering into banking, thus, has been taken into consideration because it is unlikely to materialise since BigTechs have to be under the control of financial regulations and supervisions as a financial institution, once they engage in full license banking. Instead, tech giants may look to collaborating with a financial incumbent that has already obtained the banking license and entrenched customer base at the same time. The extent of their entries appears to depend heavily on regulatory and supervisory requirements and measures. A case in point is that capital requirements played a role in the growth of securitization as leverage created outside of a bank through various structured finance vehicles, had much lower capital requirements for a bank than leverage created inside the bank.

Therefore, non-banks can steal market share from banks in products that can be offered without a banking charter. Even for products that require a charter such as deposits, non-banks can offer attractive substitutes because they do not have to meet bank regulations. (René M. Stulz, 2019) Indeed, prudential regulators may be reluctant to allow tech titans to acquire full banking licenses owing to the possible financial contagion and risk transmission between financial and nonfinancial activities, eventually generating systemic risk. In general, most new entrants in finance tend to hesitate to obtain a banking license due to the compliance costs which will be imposed to them.

Large platform players have forced their ways into finance in various ways in light of the level of the financial ecosystem and the economic structure each country has faced, thereby exerting disparate impacts on the financial market in countries. Some tech giants have expanded their businesses aggressively into financial industry and have provided a wide range of financial products or services prominently in emerging countries including China, while they have mainly focused on payment service in advanced countries such as the United States.

Figure 3.4 depicts most prominent BigTech incumbents and financial activities they widely offer within and across regions. Tech giants and operations shown in red have been introduced outside traditional financial networks and those in blue provide overlays on

top of, or work in collaboration with, existing financial institutions. The digital finance operated by tech giants is now the most outstanding in Asia and the US. Large platform players have successfully penetrated more less-developed financial markets, in particular, those with high mobile penetration with payment and settlement services⁸, investor products and insurance offerings. In terms of credit provision, a tech giant tend to keep more dominant position in countries which have a less competitive financial infrastructure and less strict regulations and be likely to have better predictive power for loan repayment prospects by exploiting customer data analytics through Machine Learning and Artificial Intelligence techniques than that of banks.

Large platform players in Asia tend to have several distinguished features in that they are a lot more advanced in terms of size and scope to the point where they provide a various bundle of financial products and services completely integrated with their core business models to improve efficiency and customer experience. Alibaba, Tencent and Baidu in china, Kakao and Naver in Korea and Rakuten and NTT Docomo in japan are among the largest tech giants which offer a wide range of financial services including payment, the provision of credit, insurance and investment.

⁸ Apple Pay, Google Pay, and PayPal in developed financial markets rely on third-party infrastructures including retail payment systems and credit cards. On the other hand, Alipay and M-Pesa rely on proprietary systems in less developed markets.

Figure 3.4 Big Tech incumbents across regions and their financial positioning

	BigTech	Main business	Share of profit from main business	Revenue (US\$)	Payments	Credit extension	Current accounts	Asset management	Insurance
Companies whose financial service offerings target EMDEs	Alibaba	Buyer /sellers matching fees	88%	23.0 bn	Alipay	MYBank	MYBank	Yu'e Bao	Xiang Hu Bao
	Tencent	Gaming	65%	36.6 bn	Tenpay	WeBank	WeBank	LiCaiTong	Xiang Hu Bao
	Baidu	Search advertising	86%	13 bn	Baidu Wallet	Baixin Bank	Baixin Bank	-	-
	Vodafone	Mobile communi-cations	90%	57.1 bn	M-Pesa	M-Pesa	M-Shwari	Pilots ongoing	
	Mercado Libre	E-commerce platform	60%	1.4 bn	Mercado Pago	Mercado Crédito		Mercado Fondo	-
	Samsung	Selling electronic hardware	n/a	211.8 bn	Samsung Pay	-	-	-	-
	Naver	Search advertising	n/a	58.9 bn	Naver Pay	Naver Financial	Naver Financial	Naver Financial	
	Kakao	Online messenger	n/a	2.7 bn	Kakao Pay	Kakao Bank	Kakao Bank	Kakao pay Security	KakaoPay
Companies headquartered in the United States	Apple	Selling electronic hardware	84%	229.2 bn	Apple Pay	-	-	-	-
	Amazon	Goods retailer	70%	177.7 bn	Amazon Pay	Amazon Lending	-	-	Amazon Protec
	Facebook	Advertising from social media	95%	40.7 bn	Messenger Pay	Pilot	-	-	-
	Google	Search advertising	86%	110.9 bn	Google Pay	Google Tez (India only)			
	Microsoft	Software, services & hardware	100%	89.9 bn	Microsoft Pay		-	-	-

Note: Kakao and Naver are for 2019. KaKao pay took over Baro investemt security and Inbyyoo insurance companies and Naver Financial was established in November 2019, starting to deal with deposit-taking, lending and investor products through the digital platform.

Source: BigTech in Finance, FSB (2019), Kakao Corp, Naver Financial, Amazon

In particular, China-based BigTechs tend to offer a greater range of financial services using infrastructure and networks developed separately from existing financial institutions. Furthermore, they have the ability to process and analyse an abundance of data collected on user's social interactions and financial activities from their core businesses, eventually increasing customer experience and accessibility to finance through their digital platform. What's more, large platform players positively deploy supports from the Chinese government that ardently hopes to develop political, economic and social infrastructures to the full, in contrast to those in the US (Ferenzy, Dennis, 2018).

In the relatively emerging markets and developing economies, besides, tech titans have more inclusive customers and SMEs than those of traditional banks in that they can give vulnerable groups(e.g. low-income customers and small companies) who may have difficulty using traditional banks, a chance to have access to financial services. They also can improve compelling customer experience by providing new financial products and services which are more tailored to customer's needs related to the online payment, the provision of credit, current account, insurance, asset management and credit ratings. In this regard, tech giants have aggressively attracted attention from Chinese people who do not have user-friendly financial business environment and have achieved the explosive growth in the financial industry by not only fully harnessing big data and clouding technology they retain.

BigTech's entry into financial industry, therefore, has the different influence on two countries, depending on regulatory, economic and social conditions and the level of the existing financial infrastructure, despite the fact that the US and China have the rapid expansion of e-commerce and wide spread of smartphones in common. In this regard, large platform players can aggressively provide a wide range of financial offerings for customers who do not have the relatively less established financial business environment and gain dominant positions in the financial market as a new competitor.

Large platform players are more likely to exert the strong influence on the financial market in countries not well equipped with advanced financial systems and resources, just like Chinese tech giants do⁹. However, there is no exception for advanced countries as well in that it is difficult to completely rule out the possibility that BigTech firms in advanced countries where they have the well-established financial environment will gain a competitive advantage in the financial market through large amounts of customer data and the network effect from the platform. In this regard, it is likely to have the competitive edge over financial incumbents because tech giants can attract a bunch of customers in the financial field by appropriately processing and analysing large-scale of customer data acquired from existing core business areas using technologies such as Artificial Intelligence and cloud computing, and utilising them for new product development and marketing. In addition, as the number of customers in the platform increases, BigTech firms are highly likely to be able to extend the market share in the financial market due to the network effect that makes benefits that customers enjoy bigger, thereby gaining market power in a short period.

Box 2. Ant Financial

China has laid the groundwork for the new financial ecosystem centered on FinTech and BigTech firms in that large tech companies in China can break into the financial market and capture the lion's share of the financial market very quickly with the help of the digital economy, the scarcity of consumer-targeted financial offerings and the innovation-friendly regulatory framework. Consequently, digital finance has considerably contributed to groups previously not well served by traditional financial service providers, such as economically vulnerable individuals, small businesses and those living in remote and rural areas.

⁹ Alibaba and Tencent accounted for 94 percent of the market penetration in Chinese mobile payment in 2019.

Four major representative Internet companies in China which comprise Baidu, Alibaba, Tencent and JD.com, has acquired financial business licenses and providing a variety of financial offerings that encompass payment, lending, asset management, insurance and credit ratings, based on the high mobile penetration rate, eventually establishing new tech-centred financial infrastructure.

In particular, Ant Financial, a financial subsidiary of Alibaba has held a dominant market position with its loyal customer base among them. The most prominent online commerce company in China, Alibaba exploited the Chinese undeveloped payment system to the full by establishing Alipay which has been instrumental in Alibaba's success, as a third-party online payment platform in 2003. In addition, Yu'e Bao, the Ant Financial online money market fund is currently the largest money market fund in the world. Moreover, Xiang Hu Bao is a key provider of insurance services, holding a majority stake in Cathay Insurance China and a founding stake in ZhongAn insurance which is a China's first online-only insurance firm.

Ant Financial is now providing payments, asset management, insurance, Credit extension, Credit ratings for financial customers.

Payments	Asset management	Credit extension	Insurance	Credit ratings
Alipay (520 million Active users per year)	Yu'e Bao (330 million cumulative users per active user and 17% of annual growth rate on AUM Per active user)	Ant Later Ant Loans (100 million users per year)	Check Micro (3.92 billion users per year, 17% of annual growth rate on Insurance payment fee per user)	Xiang Hu Bao (258 million active users per year and 95% of annual growth rate)

BigTech's financial activities

As one of the representative regulated industries, financial authorities have regulated the financial industry in terms of the prudential regulation that requires financial firms to maintain sufficient capital and have adequate risk control managements in

place, licensing, corporate governance, inter alia, and consumer protection. Large platform players, hence, tend to provide financial services in cooperation with incumbent financial institutions by focusing mainly on relatively unregulated areas such as remittances, payments, lending to small and medium enterprises, rather than acquiring the full finance license.

BigTech firms have been expanding their business scope accordingly by launching various financial services such as insurance, lending, asset management, card, and credit ratings, starting with payment and settlement service. In other words, BigTech's advancement into finance has occurred in a number of areas, yet three key areas that appear to gain a relatively large-scale in the financial industry rather quickly included: forms of electronic payments, the provision of credit and other financial services including asset management and insurance.

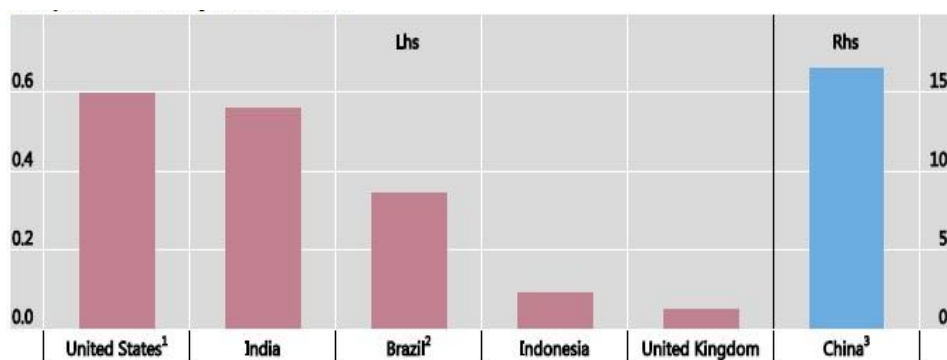
Some BigTech firms have scaled up in the financial market with the help of the development of e-commerce and the spread of mobile devices since they first advanced into the electronic payment service through their digital platforms. They also have furnished the credit provision at relatively low cost by utilising existing customers and the digital infrastructure based on customer data analysis technology superior to those of banks. Furthermore, they have forced their way into other services such as asset management services that can manage customer account balances linked to payment services through the MMF and insurance products which financial companies offer through their online platform or they develop and sell directly.

The electronic payment service, the first financial service introduced by BigTechs is a key Innovative application of digital technology for financial services and embrace online banking, e-commerce and payment service. These payment transactions are extremely convenient and efficient for countries, where tech solutions for the remittance system have significantly taken off despite the fact that traditional payment transaction system has not well developed or the charges of banking service are comparatively high. It can promote the brand recognition and brand value by diversifying relevant businesses, accumulating

data, and enhancing consumer convenience and be expedited by the development of e-commerce and the spread of mobile devices as well.

Figure 3.5 shows this BigTech payment service has been the most active in china, accounting for 16 % of the GDP in China and the portion of the BigTech payment market in china is overwhelmingly high, compared to other countries, given that the second most active US payment service makes up 0.6% of the GDP in the US, (Financial Stability Board, 2019).

Figure 3.5 BigTech mobile payment services around the world



¹ 2016 data are used for US. ² Estimate based on public data for Mercado Libre. ³ Only mobile payments for consumption. The figure shows the annual volume of BigTech payment services in selected jurisdictions divided by GDP. China is displayed on a separate axis due to the large difference in scale to the other jurisdictions.
Sources: Forrester Research; GlobalData; iResearch; Mercado Libre; Nikkei; Worldpay; BIS.

Source : Recitation of FSB (2019), BigTech and the changing structure of financial intermediation

The reason why there is one key distinction between china and the United States is that electronic payment methods such as credit cards were already widespread at the time when the e-commerce was on a tear in developed countries such as the United States. In developed countries, therefore, the infrastructure supporting payment and settlement was optimized for credit cards so that BigTech's advance in finance was somewhat delayed, whereas in China, it was easier for large platform players to penetrate the financial service market by switching to a mobile payment system swiftly since there was not well-established financial system for the electronic payment.

Nonetheless, the payment and settlement market is mainly concentrated on micropayments. Figure 3.6 indicates that, as of 2017, electronic payments facilitated by non-bank financial institutions in China accounted for 76% of the total electronic payments in terms of the transaction volume, while they composed only 8% of the electronic payments in total with respect to the transaction value.

Figure 3.6 Electronic payments facilitated by banks and non-banks in China



Source: People's Bank of China.

Source : Recitation of FSB (2019), BigTech and the changing structure of financial intermediation

Applications of digital technology to lending operations including microloan market is also an area to which big tech companies are paying attention since the credit intermediation provided by large platform players can help to make individuals or SMEs that may have had difficulty getting access to the traditional credit market accessible to credit. New business models for lending and funding are rapidly emerging, remarkably lending-based peer-to-peer platforms and crowdfunding platforms¹⁰ which offer an alternative to bank lending with some forms of market pricing. As a shadow-bank, Tech giants do not have to follow regulatory capital requirements like what banks do and also this kind of flexibility from financial regulation may have an influence on competitive

¹⁰ The success of lending-based crowdfunding platforms hinges on their ability to overcome significant barriers to entry related to scale and scope economies, adverse selection, as well as funding cost advantages of incumbent large banks. (OECD, 2018)

pricing when deciding the interest rate and allow them to provide liquidity provision to the market.

Elements about BigTech's credit intermediation ultimately boil down to the efficiency of credit risk management and financial inclusion. Large platform players can reduce costs by conducting non-face-to-face work based on data collected on their platforms and technical infrastructure, whereas a number of financial incumbents expend costs in operating branches since the traditional loan business is usually conducted face-to-face. However, the BigTech' ability to maintain credit supply in recession, is not clear as BigTech's data-driven rather than relationship-based- approach to lending might see a sharper contraction of credit during the economic downturn than for financial institutions

In addition, tech giants can improve the accuracy of credit appraisal to judge and reduce the risk of insolvency by utilizing various non-financial data of customers such as e-commerce records and social networking activities (Bank for International Settlements, 2019). As a result, vulnerable consumers who may have been excluded from the traditional financial environment or disproportionately may have experienced the lack of access or choice to credit in the traditional financial system for some reason can benefit from new methods for calculating credit scores based on digital information with ample social and commercial data.

BigTech firms entered into the insurance market and was able to sell insurance products offered by financial companies through their online platforms as distribution channels, without the need to engage with brokers. Recently, they seek to invest or purchase equity in insurance and insurance agency technology company in order to improve customer experience by harnessing the internet of things (IoT), big data analytics and Robo-advisors. There are anecdotal evidences that in 2015, Google provided a Google Compare service that could give customers a chance to compare insurance products, which was developed for using it as a platform to connect financial products in the future rather than to make a profit from its business model¹¹. Google also bought

¹¹ Google Compare service is currently suspended

equity stakes in the software provider, Applied Systems in 2018 and has been currently developing health care and insurance systems. Amazon introduced a service that provides guaranteed insurance products to customers through the Amazon project in 2016, and entered the Indian online insurance market by acquiring Acko indemnity insurance, an Indian insurance company, in 2018. On that note, Amazon, Apple and Google have troves of data, idle capital and lacks of underwriting skills but can retain exceptional ability to entice underwriting expertise to complement. (The Economist, 2020)

That, plus there are current account services for cash management and investment fund products provided by tech giants. Some tech giants in China and Korea such as Ant Financial's Yu'e Bao, Kakao and Naver have got banking licenses and have catered to those practices so that customers can benefit from the liquidity and gain profits with relatively low risk with the help of the digital technology including sophisticated analytics

In this way, large platform players are providing various financial instruments through their digital platforms so that financial consumers can compare financial services and decide on the product in which to invest in an efficient and convenient manner and they are also accelerating the transition to the digitalisation of finance.

3.4. Advantages and potential risks of Big Tech

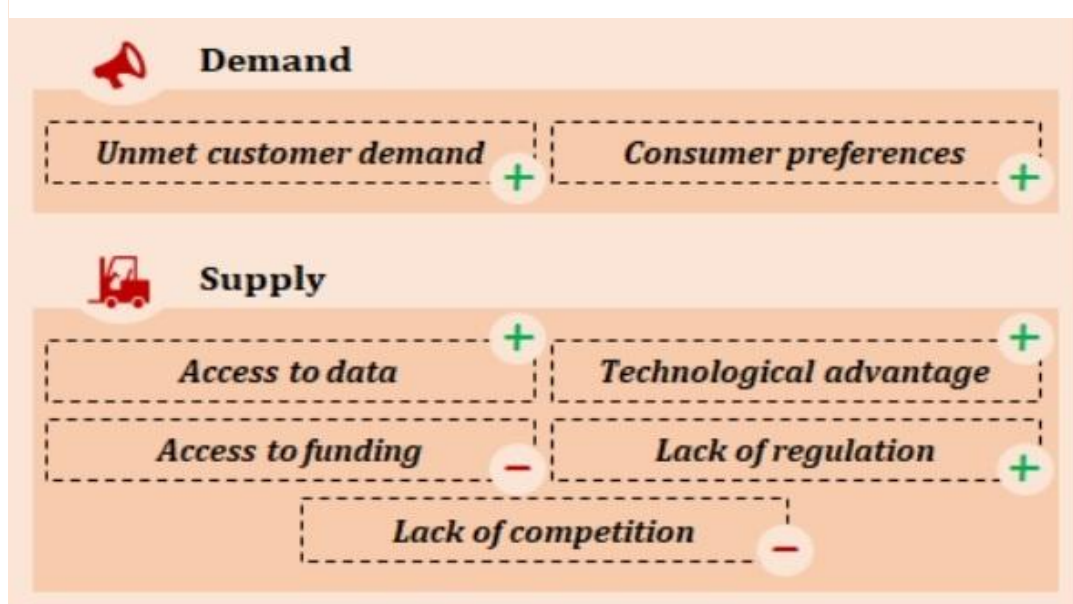
Although BigTech, as a non-banking player, is a latecomer in the financial industry, it competes with traditional financial incumbents in terms of financial services by deploying its customer loyalty and brand recognition that can allow tech giants to have the edge over financial institutions in niche markets and expands into its business scope further.

Large platform players have unique advantages that allow them to replace traditional banks and at the same time, banks cannot easily replicate, and therefore present a much stronger challenge to established banks in consumer finance and lending to SMEs, not in investment banking. (René M. Stulz, 2019)

Tech giants have provided their customers with financial services such as the provision of credit and remittances, which previously have been unique to banks and then have secured competitiveness in terms of cost efficiency, convenience and financial accessibility through its innovative technology and digital platform. In this regard, large platform players have the greater disruptive potential to compete with traditional banks or Fintech firms in the current financial environment and may be likely to affect the financial market structure significantly.

Hence, it could be informative to take stock of the major drivers of growing activities of tech titans in the financial services since it helps to grasp readily what factors are likely to maximize benefits and to threaten the status quo of the financial system, but to weight up virtues and drawback of BigTech's foray into financial services. BIS regarded factors driven from demand and supply sides which could facilitate to scale up for a broader expansion of large platform players in the financial market including payment service and lending service as key drivers with either positive or negative leverage. (Bank for International Settlements, 2019) Figure 3.7 schematises drivers of tech giants in the financial market in a reasonably clear and simple way as below.

Figure 3.7 Drivers for BigTechs in the financial system



Note: "Plus" signs indicate incentives for BigTech, "Minus" stands for possible barriers to entry.
 Source: BIS (Bank for International Settlements, 2019), recitation of BigTech and New Banking Landscape (Ilaria Biondo, Antonio Menegon, 2019)

3.4.1. SWOT analysis about banks and BigTechs

It explores some key factors that tech giants can take into account to compete with banking incumbents in the financial market. With respect to the financial intermediation¹², traditional banks which are well capable of analysing the credit information on the fund demander efficiently under the information asymmetry, entrust and lend depositors' funds to fund demanders. (Douglas W. Diamond, 1984) On the other hand, although technically all BigTech firms are not financial intermediary institutions, it could be regarded that BigTechs provide financial products or services for customers through their online platforms by harnessing their big data in order to assess the credit risk to a fund demander. Furthermore, it could be the case in the future that a wide range of financial offerings by BigTechs serves to debilitate the role of traditional banks as a sales channel, whereas they help to significantly strengthen that of BigTechs as a sales channel.

Financial intermediation from banks has strengths in financing (DeAngelo, Harry and Stulz, Rene M, 2013), while BigTech's platform-based financial brokerage has strong points in the provision of the credit since tech giants have the ability to capitalise on screening and monitoring functions through the extensive network externality. Banks and BigTechs, hence, may be able to create the positive synergy effect, if these merits they hold can be successfully combined. Moreover, BigTech's entry into finance itself can help to stimulate the competition of financial intermediation among financial incumbents from the standpoint of banks and regulatory authorities. However, if a tech giant gradually increases its market power and permanently removes existing financial institutions from the financial market, it should be able to create a limited competition environment and consequently, there might be a risk which hinders the efficiency of financial intermediation and is easily exposed to system-level risks.

¹² Traditional financial intermediation from the bank is called as the delegated banking.

Figure 3.8 SWOT analysis about BigTechs and banks

BigTechs	SWOT	Banks
<ul style="list-style-type: none"> • A Large number of customers and An abundance of data • Building a huge network and capital in the non-financial sector 	Strongness	<ul style="list-style-type: none"> • Substantial market power • Solid customer confidence • Risk management ability in a various way
<ul style="list-style-type: none"> • To build short-term relationships with customers • To place a low priority on data protection Limit to risk management ability 	Weakness	<ul style="list-style-type: none"> • Profit structure with a high proportion of interest income • Hard to collect data from non-financial sectors
<ul style="list-style-type: none"> • Innovation capacity for new services • Growing demand for financial services in emerging countries 	Opportunity	<ul style="list-style-type: none"> • To develop a revenue model utilizing soft information¹³ To creat revenue using fintech
<ul style="list-style-type: none"> • To introduce global regulations on the prevention of market monopoly and information protection • To form a competitive structure with BigTechs having a similar business model 	Threat	<ul style="list-style-type: none"> • To emerge new financial service competitors • To reduce the unique role of the bank

Source: KCMI(2019), *BigTech's entry into finance and its strategy* (KCMI, 2019)

3.4.2. Competitive advantage

There is widespread speculation that BigTechs may shake up the existing structure of the financial industry in the end and will be able to take over from incumbent large players in the financial market as new key players. This is really coming along in parts of Asia, particularly Alibaba and Tencent in China. To force their way into the financial sector, BigTechs need to hold the competitive edge over existing players in financial services, thereby deploying a treasure trove of big data and the network effect to steal the market share from incumbent banks.

¹³ A distinction in how to convey information. Hard information is mainly recorded in numbers and represents financial statements, stock returns, production volume and so on, whereas soft information is mainly delivered in text and means opinions, ideas, economic outlook, and management's future plans. (Liberti, J.M., Petersen, M. A, 2018)

BigTech has some advantages to break into the financial industry and take off; it can induce market players in the financial market to innovate a variety of new products and services, and allow consumers to use innovative financial services at a lower cost by intensifying competition within the financial industry. Furthermore, it can not only provide customized products or services based on the sophisticated data analytics, but also enhance the financial accessibility for vulnerable consumers having difficulty getting access to current financial systems. In addition to that, it is expected that BigTech can achieve economies of scale quickly in financial services through the low cost funding.

Network Effects

Network externality is that the more the number of participants, the greater the improvement of the service using big data, which increases the effect of network participation. It originates from the two-sided market¹⁴ which is an intermediary economic platform having two distinct user groups that provide each other with network benefit. BigTechs leverage on the sheer quantity of information available from digital interactions customers engage in and sophisticated data analytics in the financial market. Big data in the two-sided market can help to improve the function of screening and monitoring in finance by mitigating the information asymmetry about the each participant's credit risk. Therefore, tech giants that are able to utilise big data can have a lot higher competitiveness than banks in that it can alleviate information asymmetry (Hyun Shin, 2019). Accordingly, the assessment of the BigTech business models suggest that the network effect is extremely powerful and influential, and takes into account multidimensional benefits to achieve economies of scale and

¹⁴ It is also called a two-sided network. Two-sided markets represent a refinement of the concept of network effects. A two-sided network typically has two distinct user groups. Members of at least one group exhibit a preference regarding the number of users in the other group; these are called cross-side network effects. BigTech platforms operate in two-sided markets, yielding revenues by facilitating transactions between two groups of agents. The economics of two-sided markets can cause complex interactions between consumers and sellers on the platform. See (M Rysman, 2009).

economies of scope. A case in point, Facebook built a revenue model that allows users to share information with related apps through social graphs that show interactions among users.

Big Data and Analytics

In terms of the uptake of data, banks have already provided a number of financial products and services with verified and reliable data they obtained from existing customers in the process of financial intermediation, yet there are high regulatory thresholds for data use and stringent restrictions on acquiring non-financial data. On the other hand, BigTech firms can collect data in real time at a marginal cost close to zero by doing their own core business and exploit a great abundance of data to the full to offer new services for customers in the financial market. Nevertheless, data Bigtechs retain comprise a mixture of verified data and low-reliability data and appear to be not suitable to provide major financial products and services such as mortgage loans and loans for mid-sized and large businesses.

Exploiting Big Data analytics to the full in the data economy, BigTech firms are more likely to drive efficiencies through competition in financial industry with respect to speed, lower cost, greater transparency. Digitalised life patterns and a hive of activities platform users engage in have dramatically increased the amount of data available and have created extremely large data sets in real time from online interactions. As a result, customised services BigTechs provide for financial customers can reinforce the lock-in effect, thereby leading to boosting profits from advertising. Analysis of Big Data could be used to improve market research and to better understand customer behaviours by weighting up an individual's characteristics inferred from their internet use but possibly be used for internal risk management and outside monitoring market conduct from financial institutions (OECD, 2018).

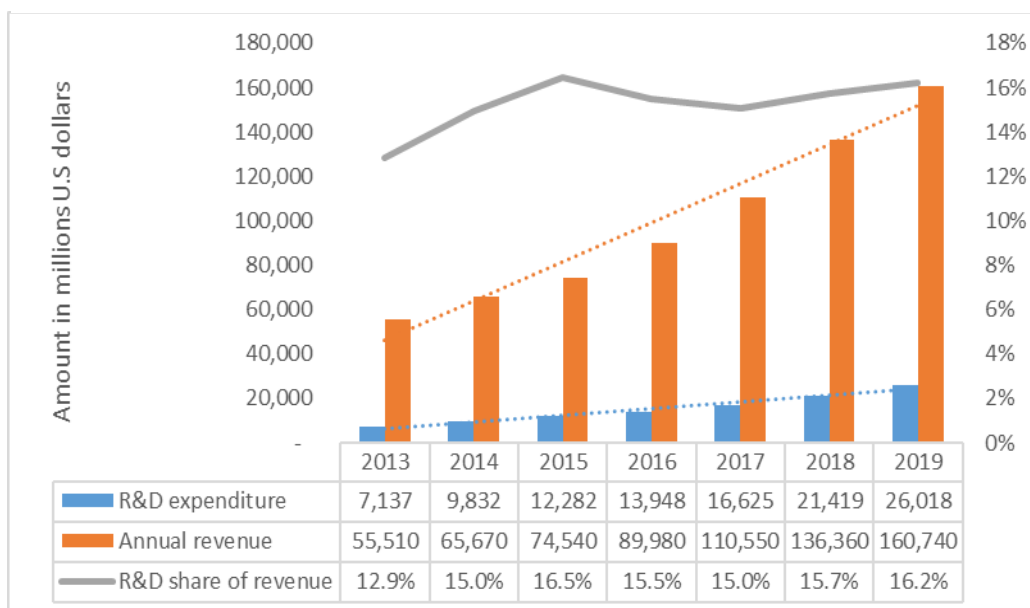
Abundance of resources

With respect to profitability and viability of a company, BigTech firms such as Alphabet(Google), Apple, Facebook, Amazon and Microsoft in the US and Alibaba and Tencent in China are the

most prominent tech giants around the world and rank among the highest in the world by market capitalization, utterly dominating the most influential financial institutions. [Refer to the figure 3.3]

Furthermore, some of them are fairly lucrative and retain extremely large amount of market capitalization so that they can afford to invest a huge amount of funds in the research and development in new technologies or to diversify their business models. For instance, Alphabet, Google's parent company generated a total revenue which amounted to 160.7 billion US dollars in 2019 and increased 19 percent of a total revenue on average compared to the previous year from 2013 to 2019. It consistently spent a certain amount of money accounting for 15 percent of annual revenue on average on R&D and expended 26 billion US dollars on R&D across its many properties in 2019.

Figure 3.9 Alphabet: Annual revenue and R&D expenditure from 2013 to 2019



Note: Values regarding 2013 and onwards have been adjusted retroactively to reflect Google segment revenue of Alphabet Inc. instead of Google's total company revenue as prior to restructuring. Figures regarding 2017 and 2018 have been restated in the 2019 Annual Report to conform with current period presentation.

Source: Statista <https://www.statista.com/statistics/507858/alphabet-google-rd-costs/>,
<https://www.statista.com/statistics/266206/googles-annual-global-revenue/>

3.4.3. Potential risk

Big Tech's rapid growth in finance can bring efficiencies to the financial industry as a whole. Financial intermediation using BigTech's platform can improve the efficiency of financial transactions, but may pose risks to financial stability and financial consumer protection by exerting the excessive market power based on the network externality, leading to restrictions on competition and failure of efficient financial allocation. In addition, financial intermediation provided by tech giants affiliated with financial incumbents can have room to be abuse as a means of regulatory evasion or to cause mis-selling of financial products and incomplete contract. Consequently, BigTech's foray into finance, in turn, can increase market concentration and create new risks mainly relating to operational risks such as risks from regulatory arbitrage and possibly unleashing systemic risks¹⁵ due to the way a tech giant interacts with a wide range of financial systems, which is growing more connected and therefore more challenging.

From the perspective of financial consumer protection, costs may be lower in the short run as a result of stiff competition when new market entrants break into the financial market, but in the long run, the BigTech's foray into finance could result in intense market concentration, in turn, imposing exorbitant costs on consumers. Short-run costs may also be lower because of predatory pricing, whereby entrants aim to achieve a dominant position in the longer term. (European Securities and Markets Authority, 2020)

¹⁵ In case that BigTech provides outsourcing services such as crowds with high dependence on financial institutions, the collapse of one big company could increase the risk of the entire financial system.

This is also the case where digital services including cloud computing might be offered by just a few BigTech players. If any of these players were to get into trouble, a huge number of banks might be affected, eventually triggering a systemic crisis.

Regulatory arbitrage

One source of risk is the case where BigTech players are often outside the current regulatory framework, thereby not needing to meet capital requirements or other regulatory conditions in financial market, and to sustain the compliance system that regulated financial incumbents have to abide by.

Banking incumbents provide products and services such as remittance, payment, issuance account, and loan simultaneously for customers under the current regulatory and supervisory financial system by bundling them¹⁶, often for a lower price than they would charge customers to buy each item separately, thereby facilitating the convenient purchase of several products and services from one bank. Whereas tech giants which either directly own a financial institution or partner with an existing financial incumbent, presently offer their financial products and services, such as payment services, provision of credit, insurance and investor products, by unbundling those of banks and in turn, are in the blind spot of various financial regulations. In particular, Partnerships with existing financial institutions may be abused as a means of evasion or cause incomplete sales. Thus, it can be the case that there is the regulatory arbitrage compared to financial incumbents intensively regulated and supervised by financial authorities since traditional financial providers see tech titans gaining an unfair competitive edge in expanding the scale and scope of their operation and improving operational efficiencies in financial services. That is, it is evident that banks should not be able to compete with tech giants on a level playing ground when a large platform player exploits market power, taking advantage of regulatory loopholes, and bandwagon effects of network externalities. For instance, the creation of cash management accounts that pay some benefits or subsidize other transactional costs can be considered regulatory arbitrage by not setting up collective investment vehicles.

¹⁶ Bundling helps to increase efficiencies, to improve customer confidence and to enhance the customer experience. It allows the consumer to look at one single source that offers several solutions and to relieve the pressure of decision-making.

Competition risk

BigTech's advancements in finance can lead to increased competition for traditional financial institutions and competition in the financial industry is likely to be intensified gradually. This may affect the sustainability of bank's earnings, putting at risk the profitability of individual banks. When new entrants are able to meet customer needs unserved by financial incumbents and deliver less expensive services with various product choices, traditional financial providers may lose a significant part of their market share or profit margin and undermine the role of the financial institution as a sales channel.

When BigTech firms provide an interface between providers of financial services and their customers, rather than competing directly with them, there remains some potential to further disrupt traditional financial business models. Customer loyalty may be weakened where customers interact with the BigTech firms that initiate financial services supplied by other institutions. (Financial Stability Board, 2019) With the adoption of open banking initiatives in the financial regulatory regime, large platform players could reduce the stickiness of bank deposits by exploiting sharing information system from financial incumbents, leading to incumbent banks' cost of funding and stability.

That plus, it can create the environment that restricts competition, hinders the efficiency of financial intermediation, and in the end, be easily exposed to a certain degree of systemic risk if a tech giant progressively increases its market dominance and drives existing financial companies out of the financial market.

Funding products provided by tech giants, such as Alipay's MMFs in China, offer higher interest rates than those of bank deposits, so large amounts of money are flowing into tech giants. If funding products become popular, banks give high deposit rates for financing, and the cost of financing for banks increases, which could deteriorate profitability. The problem is that it may weaken the bank's financial intermediation function when banks cannot finance loans from deposits. In addition, funding products offered by tech giants are often not subject to supervisory regulations,

such as bank reserves requirements¹⁷. Of course, funds may flow into the financial system such as deposits and bonds depending on the risk management and management policies of each company, but are most likely to flow into the shadow banking system. Large amount of inflows and outflows may occur in funding products in the event of an economic shock or management failure of BigTech, and liquidity risks resulting from inflows and outflows may spread to the entire financial system as tech giants achieve more market dominance in the financial industry.

A similar problem arises with loans. A financial incumbent can compete with a large platform player for the interest rate on loan to defend the market, thus calculating the interest rates on loans at a lower price than the risk as a tech titan breaks into the lending sector, resulting in over-borrowing by borrowers, which can eventually lead to a huge amount of bad debts. Furthermore, it could be the case that the method of the data-based screening and credit ratings utilised by BigTech, compared to that of banks, is not so complete that a large platform player may have the potential to be driven into the large-scale insolvency. Meanwhile, financial stability may be impeded by reducing loans during the economic downturn as various regulations are applied to banks to tighten the lending standards and reduce the incentives to loans in recession, whereas there are no regulations to control procyclicality¹⁸ for large platform players.

¹⁷ Bank reserves are the cash minimums that must be kept on hand by financial institutions in order to meet central bank requirements. The bank cannot lend the money but must keep it in the vault, on-site or at the central bank, in order to meet any large and unexpected demand for withdrawals. Bank reserves are essentially an antidote to panic, so banks have to hold a certain amount of cash in reserve so that they possess enough liquidity for withdrawals and obligations and for withstanding the impact of unforeseen market conditions.

¹⁸ In simple terms, procyclicality refers to the interactions between the financial system and the real economy which are mutually reinforcing. Such interactions tend to amplify the amplitude of the business cycle, thereby heightening the risk to financial stability.

Interlinkage risk

Due to the regulatory arbitrage, a tech giant tend to affiliate with financial incumbents to penetrate financial market, which may create new operational and financial links and its dependencies. As large platform players have gained their dominant positions in the financial industry, the scale of links between tech giants and traditional financial institutions can increase the complexity of the financial system and new probable risks, eventually amplifying financial stability risks from an operational failure or a financial shock. In addition, the interconnectedness between financial incumbents and BigTechs are increasing and affecting banks' operations to some degree, eventually leading to substantial dependency since financial incumbent utilise cloud service provided by tech giants.

At present, the level of financial activities which large platform players do under the current financial ecosystem appears not to provoke particular concerns from the perspective of financial stability, but is likely to give rise to a structural issue related to the interconnection between financial markets and other different services that BigTechs offer such as cloud services and data analytics. As a result, such interconnection may amplify financial risks associated with the entry of tech titans into financial markets. In addition, the scaling up of tech giants in financial services may affect the market structure and the concentration of financial services provided by new market entrants with a large cross-sectoral presence may prompt cybersecurity incidents arising in other economic sectors and cross-sectoral competition issues to affect the financial market directly. (Kathryn Petralia, Thomas Philippon, Tara Rice, Nicolas Véron , 2019)

In contrast to smaller FinTech firms, BigTech firms typically have established governance structures and risk management functions, with a strong focus on resilience. That said, BigTech firms may lack experience and expertise in operating within the financial sector, and have difficulty adapting their risk management culture to the stringent requirements in the financial services industry. (Financial Stability Board, 2019)

Anticompetitive behaviour

Anticompetitive behaviour appears to stem from the BigTech's core information technology and data strategies, rather than finance. It is probable that some tech giants may engage in anti-competitive behaviour by taking advantage of their monopoly status as barriers to entry or to contestability of markets. Large platform players which have massive quantities of customer data and sophisticated data analysis capabilities, can secure a dominant position in the financial sector by deploying big data to the fullest. Such processes may bring costs associated with market power and data privacy, increasing switching costs for customers, eventually leading to raising barrier to entry.

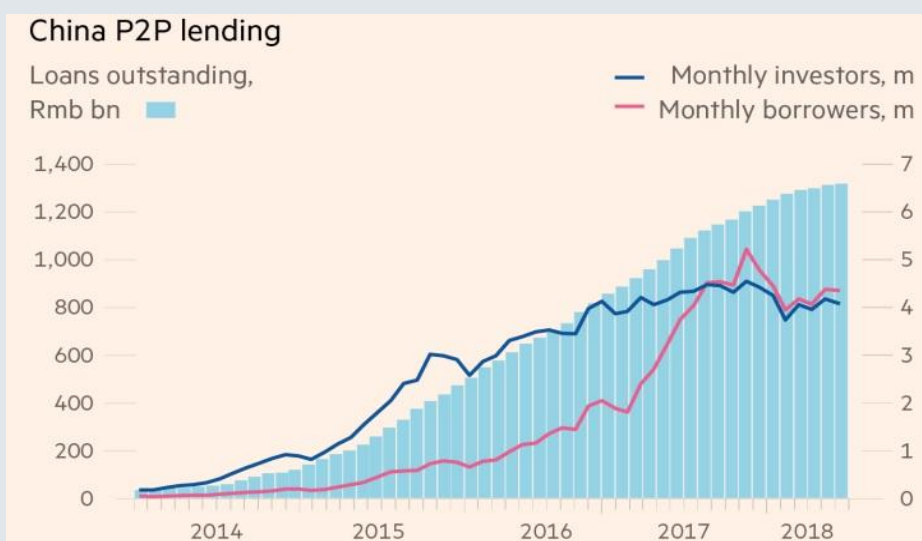
There is no explicit evidence that tech giants hinder competition so far, but BigTech is likely to be involved in anti-fair behaviour after it holds substantial market power with the help of a variety of data and data analytics and such anticompetitive behaviour, where it exists, could undermine consumer welfare. Large tech platform players, for instance, can increase conversion costs to prevent customers from switching to other digital platforms by utilising its dominant position to build a barrier to entry. It can also reduce competition, such as forced tying and bundling and other potentially unfair commercial practices and acquisition of potential entrants.

With the rise of a progressive antitrust movement, the power of BigTechs is now topical. Data-opolies, in contrast to the earlier monopolies, can raise other significant concerns, including less privacy, degraded quality, a transfer of wealth from consumers to data-opolies, less innovation and dynamic disruption in markets in which they dominate, and political and social concerns. Moreover, data-opolies can not only be more durable than some earlier monopolies, but also more easily avoid antitrust scrutiny when they engage in anticompetitive tactics to attain or maintain their dominance. (Maurice E. Stucke, 2018)

Box 3. Problems arising from the structure of the financial industry mainly occupied by BigTechs

An extremely large part of the banking industry in China was engulfed by BigTech firms and Fintech companies and massive loans authorized by P2P lending companies soared dramatically.

Peer to Peer(P2P) lending is widely regarded as a method of debt financing that directly connects borrowers, whether they are individuals or companies, with lenders. It cuts out the middle man (e.g. banks) and presents itself as an efficient form of alternative finance. It is worth mentioning that the size of China's P2P industry is larger than that of the rest of the world combined, with outstanding loans of 1.49 trillion yuan (\$217.96 billion USD) as of December 2018.

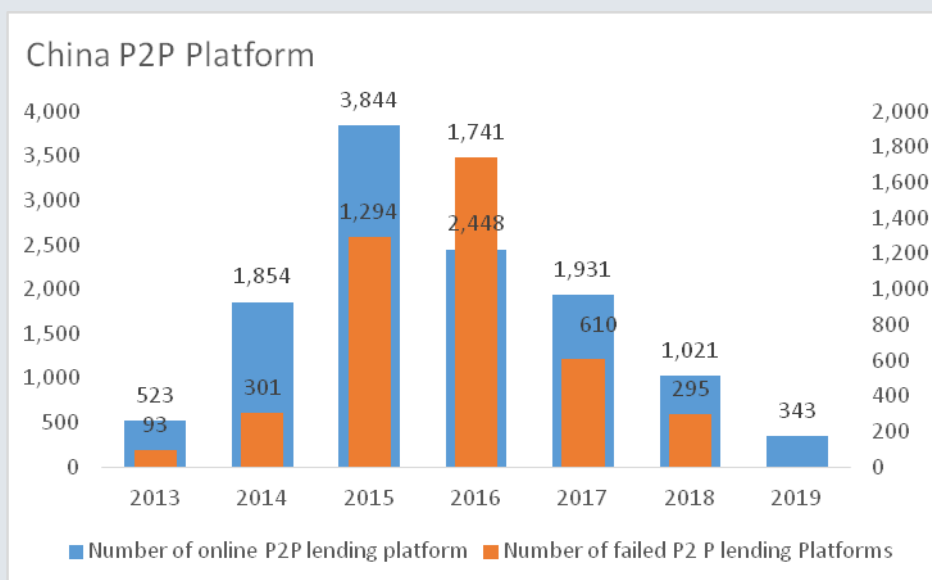


Source: Online Lending Club, Recitation of Financial Times

The industry was nearly unregulated and at its peak in 2015, when there were about 3,800 P2P businesses in the country. Trouble started brewing in China back in 2016, when statistics released by the Chinese Banking Regulatory Commission showed that about 40% of P2P lending platforms were in fact Ponzi schemes¹⁹. Consequently, this forced authorities to issue the comprehensive regulatory framework

¹⁹ See the link <http://tfageeks.com/2018/08/20/p2p-lending-crisis-china-will-end-p2p-lending/>

for the industry, banning risky practices such as guaranteeing loan principals and using fund inflows to meet payouts due to previous investors, gradually implemented in order to eliminate fraudulent or poor business practices that plagued the industry. This triggered the shutdown of P2P lending platforms and for 2018, only 1,021 providers remained in place²⁰.



d

Note : P2P lending platforms for 2019 has not been available at this moment in time.

Source: Bloomberg News, Finextra, Statista(<https://www.statista.com/statistics/652720/china-online-p2p-lending-platform-count/>)

As such, as most P2P Lending providers go bankrupt and the overall financial soundness of the lending industry deteriorates seriously due to a deluge of fund withdrawals from investors,

there are growing concerns that this risk triggered by financial vulnerability of the lending market will amplify the systemic risk which is imposed by interlinkages and interdependencies in a system or market, where the failure of a single entity or cluster of entities can cause a cascading failure, which could potentially bankrupt or bring down the entire system or market. In addition, it could be the case that risks in the financial sector of BigTechs will be able to be transmitted to the real sector, which consequently will have the potential to create far-reaching impacts on the entire economy.

²⁰ See the link <https://www.bloomberg.com/news/articles/2019-01-02/china-s-online-lending-crackdown-may-see-70-of-businesses-close>

4. Regulations in finance

BigTech, as a new entrant in financial services can improve the efficiency of financial intermediation by promoting competition and easing asymmetric information, but reduce it at the same time due to market concentration and to the way they interact with the broader financial system, eventually leading to failure of efficient financial allocation in the financial market. It is, therefore, important to understand how large platform players fit within the current regulatory framework and how regulation should be organised.

Regulation is crucial but hard to identify the right approach, as banking business models and their underlying technologies evolve dynamically. As tech giants have achieved its rapid growth and market dominance in the financial sector, regulators have been taking into account new regulations related to competition and data privacy, along with traditional financial regulation.

At present, tech giants are not subject to regulatory and supervisory requirements, such as payment and credit provision, although risks inherent to data economy has emerged constantly; large platform players may raise their barriers to entry in the financial market, as they gain or consolidate their dominant positions in finance. In addition, when non-financial business activity that tech titan does as its core business, is combined with finance due to operational interconnectedness between BigTechs and financial incumbents, the financial system may become more complex and complicated, in turn, leading to being vulnerable to risks.

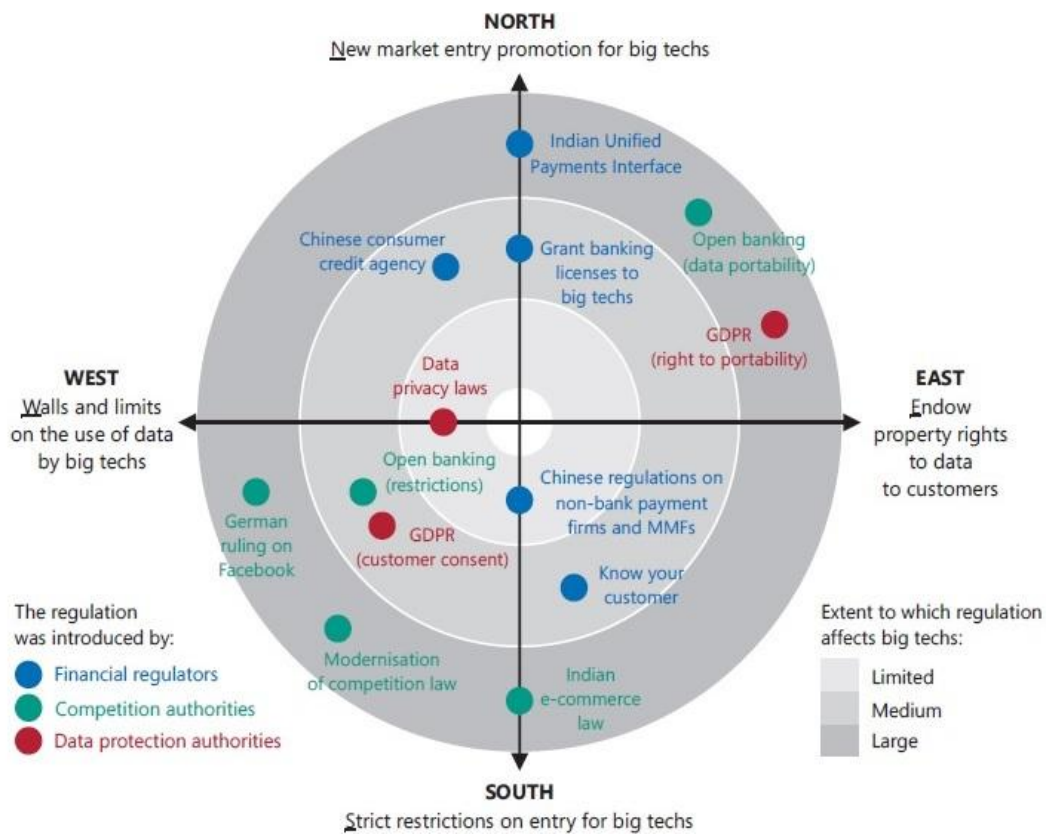
That plus, overseas supervisory agencies, which have pursued innovations by promoting Fintech and BigTech's entry into finance, have recently paid attention to the competition conditions between financial incumbents and tech giants, and financial stability issues arising from the BigTech's entry to the financial market. The Expert Group on Regulatory Obstacles to Financial Innovation by the European Commission, suggests

recommendations²¹ on how to create an accommodative framework for technology-enabled provision of financial services, particularly emphasizing that a level playing field should be created between existing financial institutions and new entrants in terms of access to the financial infrastructure and regulations in business areas. (ROFIEG, 2019) The FSB indicates that large platform players may increase systemic risks, as they not only combine financial business and non-financial business, but also are not subject to regulations related to financial stability, unlike financial incumbents that must comply with stringent regulations such as capital and liquidity requirements. In order to invoke the regulations on the financial activities of large platform players, it should be indispensable to make a tactical switch from the current entity-based regulatory framework to the activity-based regulatory framework and to take into account the scope and intensity of the regulations applied to large platform players. (Financial Stability Board, 2019)

Business activities of tech giants in the financial industry may justify a rather comprehensive approach embracing not only financial regulations, but also competition and data privacy objectives. However, policy tools aiming at traditional financial regulation may impede competition and data privacy objectives, and vice versa since, in case of large platform players, it is a lot more complex to show the link between policy tools and final welfare outcomes, thereby introducing potentially complex interactions and trade-offs that do not figure in traditional regulation. (Bank for International Settlements, 2019) Policy makers, thus, have to put in place additional regulations and oversight by keeping a level playing field that strikes the right balance between fostering competition and preserving financial stability, along with consumer protection issues.

²¹ Thirty recommendations on Regulation, Innovation and Finance pertaining to the innovative use of technology in finance, maintaining a level playing field, access to data, and the financial inclusion and ethical use of data. It also focuses on the need to harmonise regulation to further ensure fair competition between businesses.

Figure 4.1 Regulatory compass for BigTech in finance



Source: BIS(2019), Big tech in Finance: opportunities and risks

4.1. Financial Regulations

Financial regulation, traditionally aims not only to ensure the solvency of financial institutions and the soundness of the financial system, but to protect consumers as well. So far, thus, financial authorities has taken advantage of policy instruments including capital and liquidity requirements, funding requirements and anti-money laundering regulations to achieve these goals. Regulators have to not only provide a secure and level playing field for all market participants, but foster innovative and competitive financial markets as well. Firms providing similar services or taking similar risks should not operate under different regulatory regimes; BigTech firms remained largely outside the regulatory sphere and were able to enter certain parts of the

financial services sector without needing to meet the capital and regulatory requirements under the current regulatory framework.

The rapid scaling up of financial activities by BigTech firms indicates that financial authorities need to consider whether tech giants should be brought into the financial regulation perimeter. At present, tech giants may not be subject to prudential regulations and customer or investor protection rules that maintain market integrity, nor subject to measures that limit or control the level of interconnectedness between financial intermediaries, thereby preventing the build-up of systemic risk.

Regulations have fueled the growth of non-bank financial institutions, often called shadow banks, that can deliver banking services without being subject to the costs of bank regulations. To ensure the financial stability and protect financial consumers, financial institutions are subject to regulation that governs their financial activities, and there is the strict chartered licensing to restrict market entry. Financial authorities may not grant a full banking license to tech giants owing to the systemic risk that the combination of financial and non-financial businesses would give rise to, and BigTechs also would hesitate to obtain the banking licence due to the high regulatory compliance costs, thereby wriggling out of deposit-taking requirement in traditional banking. This is particularly the case where tech giants engage in regulatory arbitrage and exploit it to the full. As such, when tech titans engage in actual financial activities, they should be subject to the same regulations that apply to regulated financial institutions, thereby narrowing down the regulatory arbitrage between financial incumbents and large platform players in order to eradicate shadow banking activities. Hence, the overriding principle of "the same activity, same regulation" should apply to both financial incumbents and new market entrants so as to establish the sound competitive environment among market participants.

Given that the financial activities of tech giants are likely to have tremendous impacts on financial stability, regulations which financial incumbents have to comply with under the current regulatory and supervisory framework, should apply to tech giants

engaging in financial activities that may cause risks financial institutions can give rise to. Therefore, regulators have to impose regulations by not entities but activities subject to market failure and potential risk factors, in turn, scrutinising thoroughly all activities that may trigger systemic risk and step-in risk²², to maintain a level playing ground. The European Securities and Market Authority also indicated that the diverse business lines of BigTech firms, coupled with potentially complex interlinkages with traditional financial institutions, may make it difficult to determine a clear regulatory boundary. It also stressed that there may be a greater need to complement an entity-based approach to regulation with an activity-based approach to ensure appropriate and internationally consistent coverage of activities that have implications for financial stability. (European Securities and Markets Authority, 2020)

Regulation for rent seeking²³ also should be considered to make the financial market sufficiently competitive and innovative since they may do rent-seeking in a certain platform with tremendous market power. Large platform players may act as a gatekeeper for its customers and financial incumbents when they can monopolise the interface to control the operating system and the distribution business between customers and financial institutions as a superior intermediary, leading to significant market concentration in the financial industry. Moreover, they can have an enormous impact on the allocation of profits generated in the platform as large platform providers can control the allocation of its rent by

²² It derives from interconnectedness arising from activities seemingly outside of the traditional banking model but connected to banks through ownership, partnership, or sponsorship, which may imply guarantees. Step-in-risk may apply to the new partnerships between incumbents and entrants.

²³ Rent seeking is to pursue wealth by capturing economic rent in the form of either consumer surplus or producer surplus or economic profit and to lower the consumer's surplus plus one's own surplus, eventually creates a dead weight loss. It also harm economic growth by reducing competition and innovation, leading to the wasteful use of valuable resources and talents in unproductive activities and invariably redistributes resources from large unorganised populations to small organised groups.

designing the platform such as complementary placement or advertising, which results in reduced economic efficiency through misallocation of resources, reduced wealth-creation, lost government revenue, heightened income inequality, and potential national decline.

In addition, Know-Your-Customer(KYC) rule which is one of the strict regulations that traditional financial incumbents conform with, should be applied equally to Big Tech's payment and settlement business in order to prevent money laundering. A report to ROFIEG emphasized that it needs to remove regulatory fragmentation and to create a level playing field between financial incumbent and market entrants including both Fintech and BigTech players across the whole EU countries. This is somewhat in contrast to China's more accommodative approach in applying specific rules to new market entrants. It, furthermore, highlighted that it is inevitable to establish the principle of financial regulation that the same regulations should be applied to the same business activities that cause the same risk, and then to take measures to conform to it. It also articulated concerns that it is more likely to hinder the fair competition in the market if new market entrants do not comply with standards or regulations in finance, despite the fact that financial and non-financial companies provide the same service.[Refer to Figure 4.2.]

At present, it seems that regulators and supervisors seek to stick to existing financial regulations rather than changing regulations by considering more carefully new market entrants that are both FinTechs and BigTechs, but take a stance in closely monitoring the financial activities by new entrants under the current regulatory and supervisory system. European Central Bank suggested that it makes efforts to strike a balance by neither restricting innovation, nor letting it run wild and to monitor innovation, assess new risks and then tackle squarely them, thus, adhering to a core principle: "same risk, same rules, same supervision". In this respect, as large platform player actively engage in financial activities, they should come under the scope of banking supervision, tackling the relevant risks. (Andrea Enria, 2019) The Federal Reserve declared that it is looking to ways to step up scrutiny of technology firms

Figure 4.2 Recommendations relating to “Maintaining a Level Playing Field”

Regulatory approach	Recommendation 13	Activity and risk-based regulation	The Commission and the ESAs should take the necessary steps to ensure that regulation of the financial sector follows the principle of ‘same activity creating the same risks should be regulated by the same rules’.
	Recommendation 14	EU-level facilitation, including ‘the sandbox’	The Commission and the ESAs should further assess the need to establish an EU-level ‘regulatory sandbox’, or similar scheme, taking account of the experience acquired in the context of European Forum for Innovation Facilitators.
End fragmentation, especially regarding KYC	Recommendation 15	Uniform regulation	The Commission, in co-operation with the ESAs, should review the aspects of financial regulation that are currently subject to fragmented regulation and assess how to address them to ensure the highest possible uniformity across the EU in order to foster efficiency and competitiveness.
	Recommendation 16	Fully harmonised KYC processes and requirements	The Commission, in co-operation with the EBA, should introduce legislation to fully harmonise the Know Your Customer (KYC) processes and requirements across the EU for obliged entities in the financial sector according to the AMLD with regard to identification and verification processes, as well as the mandatory collected set of data.
	Recommendation 17	Convergence in the use of innovative technologies for CDD purposes	The Commission and the EBA should take steps to achieve convergence in the acceptance, regulation and supervision of the use of innovative technologies for CDD purposes, including remote customer onboarding, and consider them on their respective merits, including through: <ul style="list-style-type: none"> - enhanced industry engagement and monitoring of market developments - periodic updates of the Risk Factor Guidelines to support the use of these innovative technologies; - further guidance relating to reliance on third parties, including on issues relating to liability - changes to Level 1 legislation (e.g. the AMLD), based on the advice of the EBA.
	Recommendation 18	Clarifying the capacity to re-use CDD data	The Commission, in cooperation with the EDPB and the EBA, should clarify the rights of data subjects to permit the use of data provided for CDD purposes and the outcome of identity verification for further identified purposes, where the data subject consents.

	Recommendation 19	Digital identity verification	The Commission, in consultation with the EBA and relevant authorities, should investigate potential models (including decentralised models) for efficient, robust and trusted digital identity verification. The findings should inform a future legislative strategy on common digital identity solutions in the EU.
	Recommendation 20	End default paper requirement	The Commission, in cooperation with the ESAs, should take steps to remove provisions of financial services law that require documentation to be provided, by default, to consumers in hard copy. This is without prejudice to the right of consumers to request information in this format.
Access to infrastructures	Recommendation 21	Participation in clearing and settlement systems	The Commission, in cooperation with the ESAs and the ESCB, should evaluate the need to revise the Settlement Finality Directive to allow for the participation in clearing and settlement and payment systems of any type of regulated financial institution, on the basis of appropriate risk-based criteria.
	Recommendation 22	Access to platforms	The Commission should introduce rules to ensure that large, vertically integrated platforms do not unfairly discriminate against downstream services that compete against their own similar services.
Limitation of scope of business	Recommendation 23	Framework for P2P insurance	The Commission, in cooperation with EIOPA, should evaluate the need for a framework for the regulation of P2P insurance.
	Recommendation 24	Proportionate restrictions on non-core business	The Commission, in cooperation with the ESAs and the ESCB, should consider the impact of existing activities restrictions for financial institutions' non-core business, to determine whether these restrictions remain proportionate and, if so, whether the restrictions are consistently applied having regard to the need to maintain a level playing field.

Note: Expert Group on Regulatory Obstacles to Financial Innovation was established in 2018 to review whether or not the current law and regulatory framework in Europe is fit to govern and regulate FinTech players.

Source: Expert Group on Regulatory Obstacles to Financial Innovation (ROFIEG) (2019), 30 recommendations on regulation, innovation and finance.

https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/191113-report-expert-group-regulatory-obstacles-financial-innovation_en.pdf

that serve the banking industry, amid ongoing concerns about the threat of cyber security breaches²⁴.

Likewise, it will be of paramount importance that financial authorities should grapple with closing the regulatory gap between financial incumbents and BigTechs and strike a balance between prudential regulations and competition policies.

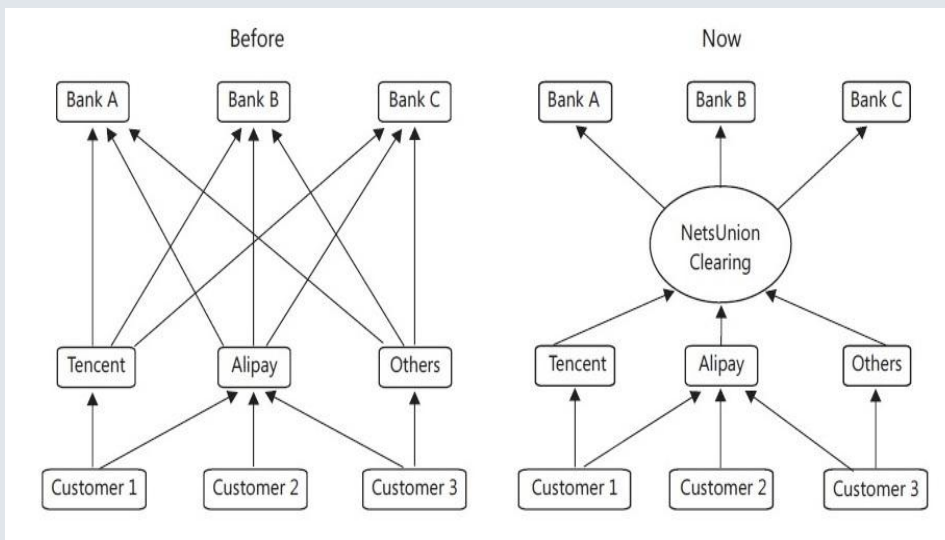
The competition and banking disruption from FinTechs and BigTechs could be a cross-jurisdictional problem for regulators and supervisors. Financial authorities in EU are looking to ways of imposing a digital tax based on the number of users of large platform players owing to limitations in the current taxation structure not able to levy any tax on tech giants without permanent establishments.²⁵ Tech giants, which are generally lacking comparable policy and the appropriate regulatory framework, have been slow to see the importance of public sector calls for high standards of governance, consumer protection and ethics. However, the scale of the Big Tech firms and the speed of adoption across borders in the digital era suggest that developments in the provision of financial services could be accelerated at a faster pace than seen before and rapidly change the competitive landscape, so much so that supervisors and regulators need to monitor and overhaul the financial market thoroughly, concluding that for banks to succeed in the new era, they should embrace technology, partner with tech firms, meet customers' expectations and maintain their trust. (Kathryn Petralia, Thomas Philippon, Tara Rice and Nicolas Véron, 2019)

²⁴ The central bank consider whether to examine the compliance programs and governance structures at tech firms that provide data storage and services to the industry. In addition, financial regulators are allowed under the Bank Service Company Act to examine third-party vendors that provide core banking services.

²⁵ The corporate tax in EU which is levied based on a permanent establishment is imposed 23.2 % on average to a general company but 9.5% on average to a BigTech, which pays a lower tax compared to profits.

Box 3. Case Study

(China) The Chinese government, at first, did not impose any regulations on Fintech and BigTech firms in finance and allowed them to do banking business when they break into the financial industry. However, it put ex post regulations in place to control the financial market as problems started brewing in China. As Ant Financial, a financial subsidiary company founded by Alibaba which is a global IT company, has grown exponentially to the 10th place in the market capitalisation around the world, the Chinese government formulated regulations for BigTech firms to minimize financial systemic risks.



Note: The major stakeholders of NetsUnion Clearing are the PBOC and associated governmental institutes(40%), Tencent (9.6%), Alipay (9.6%) and other third-party payment platforms (40.8%).

Source: BIS(2019), Big tech in Finance: opportunities and risks

The regulation akin to the reserve requirement²⁶ in banking has been applied to MMF products offered by BigTechs to prevent the risk of insolvency, as the MMF market which tech giants provide as a short-term investor product by exploiting customer balances in its payment accounts, has grown substantially, thus, in turn, leading to the risk of instant

²⁶ The reserve requirement is a central bank regulation that sets the minimum amount of reserves that must be held by a commercial bank. The minimum reserve is generally determined by the central bank to be no less than a specified percentage of the amount of deposit liabilities the commercial bank owes to its customers.

redemptions. In this regard, Alipay is required to deposit 100% of customer's deposits²⁷ in PBOC in order to prepare for liquidity risks of MMF products by utilising deposits received in advance from payment services. NetsUnion Clearing (NUC)²⁸ that is the operator of China's nationwide centralised platform for the processing of online transactions undertaken by the country's third party payments providers including bank accounts, was established to strengthen the transparency of financial transactions in the Chinese payment system by unifying liquidation transactions between BigTechs and banks. That, plus it allows the People's Bank of China to monitor customer funds on the third-payment platforms²⁹ and is subject to the supervision and regulation of the PBOC.

(Singapore) The Monetary Authority of Singapore has promoted the financial stability by enforcing the Integrated Payment Service Act and strengthening regulations for BigTech's platform businesses. It seeks to introduce legislation to apply regulations corresponding to risks that are in accordance with the type and level of individual service activities after granting a single license for payment services, and utilises supervisory technology(suptech) through big data technology to improve the financial risk measurement.

²⁷ This change is part of a process started in January 2017, when the PBOC required third-party payment groups to keep 20% of customer deposits in a single, dedicated custodial account at a commercial bank and specified that this account would pay no interest. In April 2018, the ratio was increased to 50%. The increase of reserves to 100% is effective as from January 2019. Payment firms will earn zero interest on customer funds.

²⁸ NetsUnion established by the Payment and Clearing Association of China, has registered capital of 2 billion yuan and is 37% owned by 7 subordinate entities of PBOC including China National Clearing Centre, Shanghai Clearing House and Shanghai Gold Exchange. Since 30 June 2018, it has been responsible for the centralized processing of all transactions by China's third party payments providers involving bank accounts, in a move that has severed direct ties between payments companies and banks.

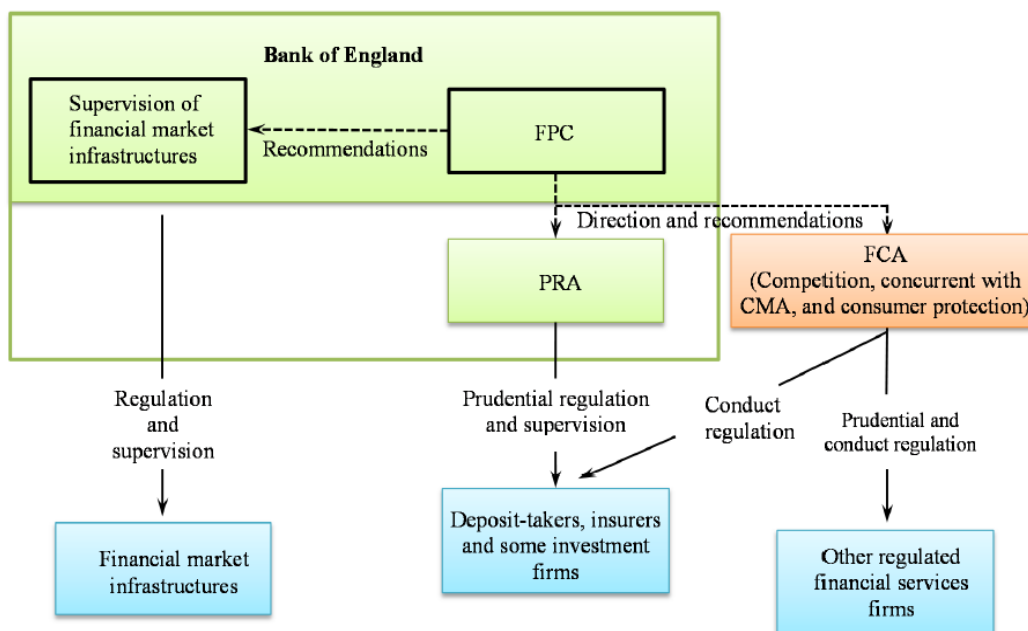
²⁹ Payment information is stored in a clearing house, NetsUnion Clearing, while customer funds are deposited with the central bank or a commercial bank meeting the requirement.

4.2. Competition Policies

Competition that is a vital engine of economic growth, aims to promote market development and efficiency in the market, as well as regulation will influence the type of competition between incumbents and entrants. A main issue is whether regulation should aim at a level playing field or whether it should favour entrants in order to promote competition.

In the wake of the financial crisis, the novel approach to competition in the financial industry was employed with caution to ensure that financial markets function well and to enhance trust in the market by stimulating competition and innovation in an effective manner. A case in point is the 2015 UK reform in which the Financial Conduct Authority (FCA) gained concurrent powers for enforcement of competition policy³⁰, subsequently taking the sandbox approach to foster start-up banks with innovative financial services, without being subject to regulatory requirements, so as to support effective competition.

Figure 4.3 Regulatory framework in the UK



Source: Financial Stability Board (2013), Peer Review of the United Kingdom.

³⁰ See <https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf>

the FCA also adopted regulations in relation to competition to promote effective competition in the interests of financial consumers so far as is compatible with meeting our objectives to protect consumers and enhance market integrity, by improving the way the UK financial system works and how firms conduct their business. (Financial Conduct Authority, 2018)

With finely tuned regulation, competition policy in the financial system should be given the simple mandate to maximise competitive pressure. However, since regulation is not perfect, prudential regulation must be coordinated with competition policy.

Traditional financial institutions have grasped that digital competitors, both FinTechs and BigTechs encroached upon parts of their core businesses that encompass payment to investment services, eventually threatening financial incumbents' profitability. This is because new entrants, in the short run, can increase the contestability of financial services³¹, leading to innovation and efficiency more and more in the market, but may integrate financial incumbents into their platforms and provide a wide range of financial offerings for customers, in turn, taking advantage of anticompetitive practices³² as a dominant player in the long run. As a result, whenever financial regulators and supervisors detect tying or bundling of financial products and services, they have enforced anti-tying or anti-bundling regulations to prohibit anticompetitive practices which require bank customers to accept or provide some other service or product or refrain from dealing with other parties in order to obtain the bank product or service they desire.

³¹ Some pointed out, however, that the link between the new entry and competition is not clearly identified. In fact, there might be no convincing evidence which shows the de facto increased contestability.

³² Tying and bundling practices are part of these behaviours and have traditionally been seen as anti-competitive and adopted to foreclose competition. Tying often refers to a situation where one product (the tying goods) is sold conditional on the purchase of the other product (the tied goods) and bundling means that two products are sold together.

In the market with strong network externalities through the digital platform, once the captive market is established, potential competitors tend to have little room to build and extend their own business scopes and what's more, have to face high entry barriers that the existing firms made in order to consolidate their positions by exploiting their market power and network externalities. In this respect, the scaling up of BigTechs in the financial market has drawn attention from policy-makers to the potential for such firms to leverage competitive advantages to compete in traditional financial incumbents. Under the current regulatory framework that favours a so-called level playing field to guarantee fair competition, it is likely to be a trade-off between activity-based regulations that aim to nurture a level playing field and entity-based regulations focusing on financial stability arising from the systemic risk of failed entities.

In addition, new forms of monitoring and regulations emanate from the competitive and innovative financial market with the advent of digital competitors and primarily focus on data privacy, sandboxes, algorithms and financial network, whereas the traditional regulations in the financial industry tend to mainly put emphasis on the prudential regulation, financial stability and consumer protection. This is because from the perspective of competition, obtaining the chartered banking licence could be a barrier to entry for new entrants to financial market, but the main barriers to entry for traditional banks to market will be the high level of proficiency in artificial intelligence, algorithms and machine learning which can be deployed in the financial market.

Competition between financial incumbents and tech companies is mostly driven by their relative ability to manage information sharing. The competitive impact of a third party's right to access bank account data by virtue of open access regulation offers an opportunity to reflect on the competitive value of an economy based on the free-flow of data and on how to ensure a level playing field among competitors. (OECD, 2020) Data localisation requirements are barriers to the free flow of data. That said, regulators in some jurisdictions have worked on reducing its impacts and put the data sharing initiative in place by forcing banks to share customer's data with third-party providers through

the Open Banking Initiative. For instance, the UK Open Banking³³ initiative and the EU Payment Services Directive 2(PSD2)³⁴ are European initiatives which dramatically changed the status quo to drive innovation and increase competition in the payments and banking industry by sharing banking data with new entrants.

Such initiatives, not only enhance competition by granting open access to certain elements of customer data for authorized competitors free of charge, thereby lowering switching costs, creating a new data sharing infrastructure, but empower consumers, without putting financial stability or consumer protection at risk as well. Nonetheless, neither of them focus on the data requirements needed when BigTechs engage in financial

³³The open banking is applied to financial incumbents to give service providers access to customer's financial information, which is an innovation that allows third parties Application Programming Interfaces(API) to build apps and services around financial institutions like banks.

The API refers to a set of functions and procedures that a player opens to the external world to allow the creation of applications that access the features or data of an operating system, application, or other service.

³⁴The revised EU Payment Services Directive (PSD2) is to regulate payment services and payment service providers throughout the European Union and European Economic Area. It aims to increase competition and participation in the payments industry from non-banks, and to provide for a level playing field by harmonizing consumer protection and the rights and obligations for payment providers and users. The key objectives of the PSD2 directive are creating a more integrated European payments market by granting open access to certain elements of customer's banking data for non-bank licensed providers of payment initiation services (PIS) and account information services (AIS), making payments safer and more secure and protecting consumers.

Payment service providers in the EU has been required to implement strong customer authentication (SCA) since September 2019 as stated in the European Banking Authority's Payment Services Directive 2. This new rule has affected all payment service providers from anywhere in the world who complete a customer transaction made within EU member countries. It is likely to lead to an upsurge in the number of payment authentications taking place and may pose numerous hurdles to organizations that process payments for EU residents. In 2019, payment service providers in the EU will be required to implement strong customer authentication(SCA) as part of PSD2. This e-book covers critical factors that financial organizations need to understand before these 2FA rules go into effect.

activities and access to infrastructure requirements. Competition policy, therefore, should be carefully targeted to balance the trade-off between financial stability and innovation since sometimes a regulation has the potential to discourage innovation. On that note, Prudential regulation must be coordinated with competition policy due to a trade-off between competition and financial stability

In this context, recent EU enforcement actions including PSD2 and open banking initiative and ongoing debates in the US³⁵ illustrate how BigTech will increasingly force fundamental changes in the framework for competition policy, not to mention cross-border security concerns. Competition policy has often been only selectively applied to the banking sector, but the interaction with tech firms is likely to prompt a rethink. (Kathryn Petralia, Thomas Philippon, Tara Rice, Nicolas Véron, 2019)

Regulators have to treat dominant players differently than small entrants in terms of regulatory compliance requirements, in order to ensure a level playing field that fosters innovation and maintains stability. At present, the EU has faced complaints that the current regulatory regime has resulted in weak and belated action, thereby having done little to foster competition. In an effort to curb immense market power of digital platforms and to force tech giants to share data with rivals and obligation to be more transparent on how they gather information, regulators in the EU have been seeking to impose more stringent regulations to tech giants than to small other competitors.³⁶ It has also been preparing draft proposals for the new digital service act so that tech giants can boost the responsibility about their business conducts, thereby restoring fair competition in the digital economy.

³⁵ Increased public and political scrutiny have thrown American data privacy into the spotlight. At the moment, there is no federal data privacy legislation. However, there have been increasing discussions on the topic. The conversation took a high profile turn with the congressional hearings of Facebook founder Mark Zuckerberg. Many states have instituted laws of their own, the most notable to date being the California Consumer Privacy Act.

³⁶ see <https://www.ft.com/content/c8c5d5dc-cb99-4b1f-a8dd-5957b57a7783>.

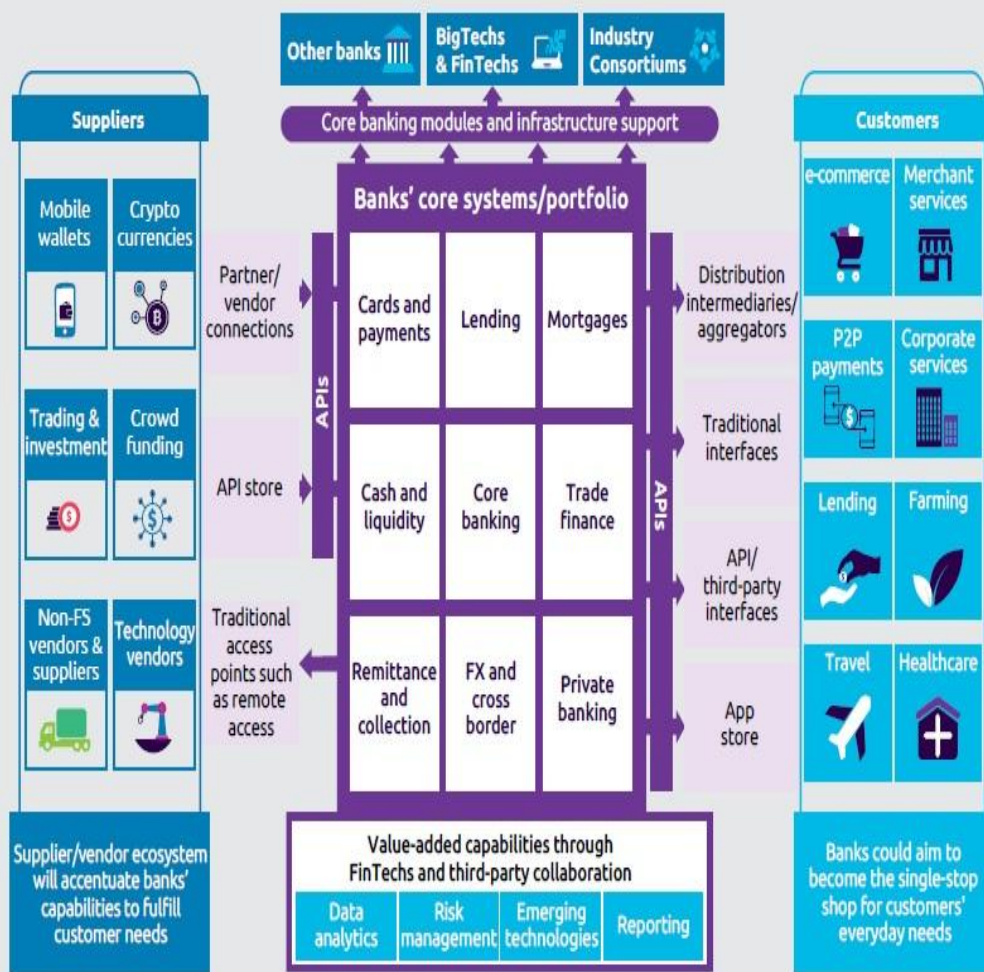
The Competition and Markets Authority in the UK called on the government to introduce a new pro-competition regulatory regime to tackle BigTech's market power and has been looking to regulations to scrutinise digital mergers that would fail to meet the criteria for inspection.³⁷ The Subcommittee's antitrust report indicated a clear intent to increase enforcement and oversight of large technology platforms since tech titans often have exercised monopoly power and abused their dominant positions, suggesting that tech giants should restructure their businesses entirely and at the same time, anti-trust laws should be reformed. (House Committee on the Judiciary Chairman Jerrold Nadler , 2020)

Some jurisdictions have put an effort to push through laws in relation to anti-monopoly and digital taxation to regulate the market monopoly of tech giants and protect their own markets since a regulation for the financial services industry should include fair taxation for all companies operating in the same market. For instance, G7 countries reached an agreement to impose the taxation regulation on digital economic activities in July 2019, thus, achieving an international consensus about both strengthening the taxation right in the country where customers reside and minimising the global taxation, eventually seeking to prepare draft proposals for details by 2020. Regulators in the EU without hesitation have introduced regulations to prevent BigTech firms from abusing their market power which may eliminate competitive threats and privilege their own aligned businesses, since they investigated unfair competition in Big Tech 10 years ago. As a result, Google's Android operating system and search engine service were subjected to an antitrust investigation and fined three times as it turned out that Google used its monopoly over general online search and advertising to benefit its own content while maintaining its monopoly through contractual restrictions and exclusivity provisions tied to Google's Android operating system.

³⁷ see <https://advanced-television.com/2020/07/01/cma-new-regime-to-take-on-tech-giants/>.

Box 4. Open Banking

Open banking aiming to ensure an equal opportunity market with no discrimination among market participants, is an opportunity for people and businesses to use their transaction data to access better financial products and services and for regulators to remove barriers to competition. It can not only create new revenue streams and build sustainable service models for underserved markets, but also improve customer experience.



Source: Capgemini (2019) , Capgemini Financial Service Analysis

Open APIs requires banks to open up their systems and data for a level playing ground and competition. With a successful adoption of Open Banking initiatives, banks can turn into financial service platforms and emerge as one-stop-shop for all customer

requirements.

Open banking which is a fundamental pillar of the new payment ecosystem, enables third-party developers to build regulated apps and innovative financial service offerings around the financial institution. It is also linked to shifts in attitudes towards the issue of data ownership illustrated by regulations such as GDPR and concepts such as the open data movement, creating to empower users, but only with your consent. Chances are, therefore, that large platform players exploit this opportunity related to the information sharing initiative to the full.

4.3. Data Privacy

The key comparative edge on BigTech is to collect massive quantities of data about customers' activities such as personal data on users, social and commercial preferences and habits and financial transactions through their digital platforms, and deploy them with the help of technological tools including Artificial Intelligence and Machine Learning, eventually improving the welfare of market participants³⁸. However, as large platform players consolidate their dominant position through vast amounts of user data in the financial market, high-profile risks have emanated from data and use of data such as misuse of data and data breach and strongly increased public consciousness of data issues and the level of concern about data protection for individuals. Regulators, thus, have paid close attention to issue of data rights and access to resolve asymmetric data sharing with respect to data protection and data sharing regulations in the financial services sector; data privacy, data ownership and data value.

³⁸ Data from social media and search engine can be instrumental in distributing and pricing financial services, while data from for e-commerce platforms can facilitate credit assessment, thereby improving customer experiences, targeted marketing of financial services, and credit risk management. A study demonstrated that data from social media was hard to replace the information contained in credit scores. (Freedman S, Jin GZ, 2017)

The core element for this development is the EU's General Data Protection Regulation (GDPR) and similar rules in other jurisdictions related to data privacy, including the California Consumer Privacy Act (CCPA), as well as regulatory encouragement such as PSD2 in the EU and the Open Banking initiative in the UK, in light of the asymmetry in customer information sharing requirements. In particular, to keep the financial market sufficiently competitive, it is crucial to have both data ownership and portability for individuals and data interoperability between platforms so that switching costs for customers can be minimised. (Xavier Vives, 2019)

Across the world, the GDPR has been seen to set a new splendid standard for data protection. But although GDPR applied indiscriminately to Banks or BigTech, and PSD2 applied solely to financial firms, both went live in 2018, in hindsight it is clear that while the two policies share similar objectives in terms of data security and portability, the details were developed in silos and are difficult to reconcile in practice. In fairness, the GDPR does include a right to data portability which could be leveraged to ensure reciprocity but in practice does not specify either the obligation to respond in real-time to data portability requests.

In the EU, there is a distinct discrepancy in the data sharing regulation between traditional financial institutions and BigTech firms. PSD2 aims to ease barrier to entry and increase contestability by lowering switching costs, and to improve market transparency. This enables BigTech firms to access payments-related data previously only available to banks free of charge with customer consent, imposing data sharing obligations on banks only. However, generalising the obligation to share data in the PSD2 to platforms will harm privacy.

On the other hand, GDPR, the European Union's personal data protection law, aims to protect the privacy of EU citizens and to utilise the personal data on citizens in the EU by imposing strict regulations on all organizations that do their business to EU residents, and process their personal data. It also sets a new standard for consumer rights regarding their data and applies not only to European entities, but also to non-EU organizations

processing personal data, so long as they target or collect data related to people in the EU. Hence, customer data protection and customer trust can be improved by complying with GDPR requirements. This kind of the regulation such as allowing data portability but requiring customer consent for personal information is instrumental in deploying advanced data technology in the financial industry, but regulating the use of anti-competitive data by Big Techs. However, regulators should keep in mind that stringent adoption of data protection rules might hamper the progress of Open Banking and stifle overall innovation.

As data sharing frameworks have often been developed in order to promote competition by reducing barriers to entry, empowering consumers and facilitating innovation, some of these frameworks have created asymmetries between different types of market participants. With the asymmetric regulation or lack of reciprocity in customer data sharing framework, regulations intended to facilitate the entrance of new players and promote competition and end-user choice in the payments market has created a competitive drawback for banks and other financial services firms compared to players from other industries. This risks contributing to the existing trend in digital markets towards the concentration of power in the hands of a few big technological players. In this regard, Institute of International Finance would address this asymmetry, through various forms of reciprocal data sharing among market participants to ensure fair and open competition that benefits customers. (Institute of International Finance, 2018)

Data portability obligations such as those imposed on banks in the EU (PSD2) or in the UK (Open Banking) do contribute to level the playing field. Likewise, capital requirements, enhanced supervision and resolution plans can help offset the too-big-to-fail advantages hitherto enjoyed by large incumbents. They also contribute to a level-playing field. Yet, we believe that these asymmetric regulations are insufficient and are likely to prove detrimental unless they are complemented with other measures targeted at addressing the data power of Big Tech firms. On their

own, existing asymmetric rules cannot constitute appropriate public policy. (Miguel de la Mano, Jorge Padilla, 2018)

Data regulations will have a transformative impact on the shape and structure of financial services, particularly in the context of data sharing and portability. Policymakers, therefore, must determine how best to balance important and somewhat conflicting objectives, to take advantage of the benefits new data sources and analytical approaches offer for society while ensuring appropriate protection of individual data privacy and other rights.

Figure 4.4 Key features of mandatory data sharing frameworks

	Open Banking (UK)	PSD2 (EU)	GDPR (EU)	Open Banking (Australia)	Open API Framework (HK)	FinTech law (Mexico)
Entities obliged to make data shareable	Nine largest retail banks. Others can also choose to participate	Account servicing payment service providers (including banks)	Any firm controlling personal data	Banks ¹	Banks	Banks, money transmitters, credit bureaus, crowd-funding and e-payments institutions
Customers entitled to share data	Individual and business customers	Individual and business customers	Natural persons	Individual and business customers	Retail customers	Individual and business customers
Data that can be shared ²	Transactional data from current accounts; to be extended to all payment accounts	Transactional data held in payment accounts	Personal data observed by the firm or directly provided by the individual	Customer provided data and transactional data	Account information and transactions across core banking	Transactional data
When data is shared	Real time	Real time	Within 30 days	Real time	Real time	Real time
Standardization of the transmission	Using mandatory standardized APIs	Only basic standardization is mandatory ³	No standardization is mandatory	APIs will be developed, but screen scraping will not be forbidden	Various internationally recognized standards	Standardized APIs (pending definition)
Entities with whom data can be shared	Authorized payment service providers, including banks and service-specific entities	Authorized payment service providers, including banks and service-specific entities	Any other firm	Banks ¹ and third parties (based on a graduated, risk-based accreditation standard)	3rd party service providers that enter into bilateral contractual relationships	Entities obliged to make data shareable and authorized IT specialized third-parties

Note: 1. Authorized Deposit-taking Institutions (ADIs), which includes banks (other than foreign bank branches), building societies and credit unions. Obligations will be phased in, beginning with the largest ADIs.

2. Some of these regulations or frameworks include other open banking functionalities such as making product or reference data publicly accessible or allowing third-parties to initiate payments on behalf of customers. However, information on the table is limited to the sharing of customers' data.

3. According to the European Commission (EC) FinTech Action Plan, it will help to develop more coordinated approaches on standards for FinTech by Q4 2018 and will support joint efforts by market players to develop, by mid-2019, standardized application programming interfaces that are compliant with the PSD2 and GDPR.

Source: Institute of International Finance (2018), Reciprocity in Customer Data Sharing Frameworks

https://www.iif.com/portals/0/Files/private/32370132_reciprocity_in_customer_data_sharing_frameworks_20170730.pdf

4.4. Financial Consumer Protection

Technology is changing how consumers engage with and use financial products and services. The shift to digital services has meant that data are increasingly harnessed to develop valuable insights and provide tailored solutions. In this regard, the data-driven and tech-driven business model of BigTechs represents a significant development in the financial market by providing a wide range of financial offerings for customers; this could increase competition and consumer's benefits in the short run, but lead to high market concentration in the longer term, eventually imposing more costs on consumers, reducing consumer welfare.

Moreover, even higher prices could be sustained if large platform players monopolise their interfaces as a gatekeeper to provide financial offerings along with their core businesses and the gatekeeping function may have potential risk for financial exclusion among segments of the population. In addition, financial decisions made in an automated digital environment are faster and easier but may worsen the quality of customer decision-making.

That plus, tech giants can be an attractive target for cyberattacks, although they retain advanced technology and specialist expertise to cybersecurity to ensure security when transacting in platforms. Hence, new risks to consumers arise in several respects, including risks to data misuse, cybercrime and mis-selling, as well as ethical issues over data use such as privacy and data rights, cyber security, higher costs if a tech giant reach a dominant market share in the market, and the consequent pricing power they achieve, and financial exclusion.

If large platform players continue to extend their businesses in the financial market, leading to uncertain risks, without any measures to regulate data monopoly and potential systemic risk, this will harm the customer's welfare, not the financial incumbent's welfare. In addition, financial consumers expect to relish an equivalent level of financial consumer protection as with traditional financial services firms, when they use financial products and services provided by tech giants. However, large platform players may not

take the responsibility for failures and issues related to consumer protection, since there are the regulatory arbitrage and the complex interconnectedness between existing financial institutions and BigTechs. This is why financial consumer protection is urgent and paramount, reflecting the characteristics of digital platforms dealing with financial product brokerage, particularly easy access to high risk investments or credit products, and advertising, and regulators and supervisors need to consider how the policy settings for financial consumer protection operate in an increasingly digital environment.

Financial authorities, therefore, need to maximise benefits from BigTech's entry into the financial market and at the same time, mitigate its risks related to the market concentration, market integrity and financial stability by proactively monitoring their developments and increasing guidance to large platform players around consumer protection, to better protect consumers and maintain trust in the financial system. In particular, regulators and supervisors should pay attention to cyber security, data privacy and consumer protection; tech giants may be vulnerable to keeping the financial system stable and protecting financial consumers due to the lack of experience in security systems and financial accidents in various procedures. Moreover, financial services offered by large platform players may cause unexpected problems in terms of protecting financial consumers. Regulations related to accessing and using data and data privacy should be considered to increase consumer welfare³⁹. In addition, they should carefully take into account the fact that digital technology allows a greater degree of price discrimination, which calls for enhanced consumer protection, but also take special care to foster the use of digital technology in a transparent way that minimizes the possible behavioural biases of consumers as well.

³⁹ Regulators in the data economy have taken data privacy issues seriously and put in place requirement to follow stricter rules for users' data protection. For instance, the Federal Trade Commission imposed the fine of US\$5 billion on Facebook due to the violation of data privacy for commercial gain related to the Cambridge Analytica.

The FCA in the UK use this principal to anticipate potential financial consumer protection problems and to intervene to stop harming the markets as the obligations and responsibilities financial market participants have to take, have become complex due to BigTech's entry into the financial industry. It suggests that new technologies and ways of interacting can make firms vulnerable to cybercrime, fraud and technology outages. Moreover, rapid innovation and change has raised questions about the adequacy of new entrants' controls to both safeguard client funds and prevent misuse of their systems for financial crime, including fraud. (Financial Conduct Authority, 2020) Governor Lael Brainard from Federal Reserve demonstrated that a variety of regulatory approaches need to be taken for financial service offerings provided by tech giants to ensure financial consumer protection, since consumers may not appreciate that nonbank providers might not provide the same protections. (Lael Brainard, 2020)

5. FCP Principle based approach to mitigate risks

5.1 Current situation from the perspective of FCP

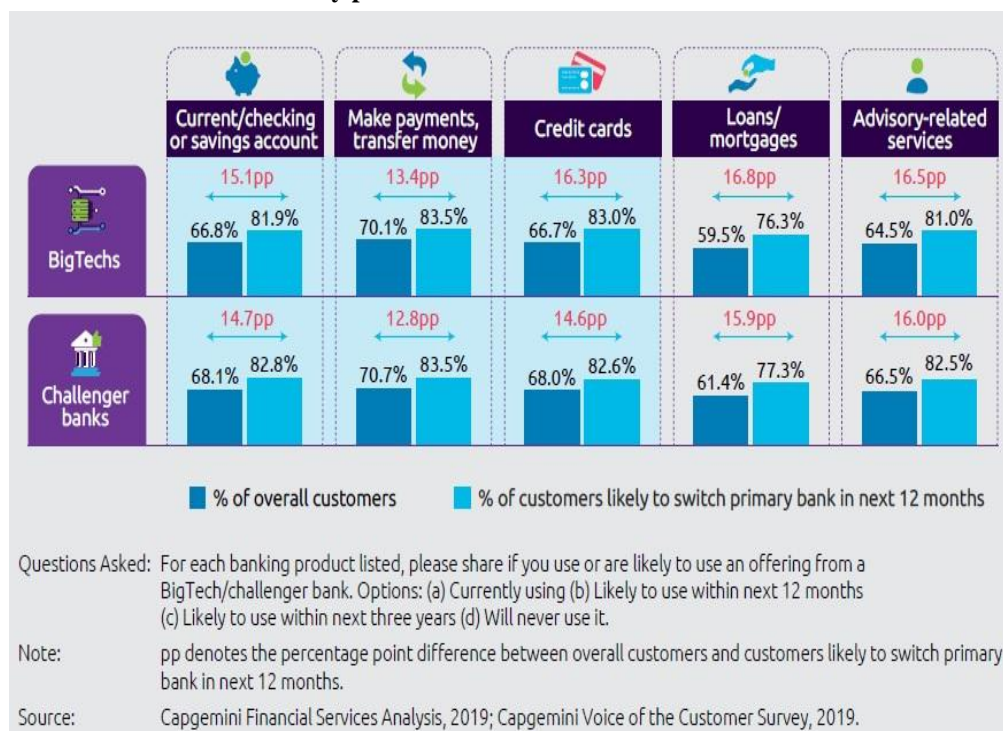
The new entrants' entry into finance has been making significant changes in the financial market. With digital disruption evolving in the financial market, financial consumers have been greatly benefiting from a dynamically changing financial environment; increased consumer's welfare and efficiency in the financial services as a whole including the diversification of financial services and the sales channels with innovation, and fierce competition amongst market players.

Financial consumers, on that account, can make the best choices, while innovation can increase competition and consumer outcomes, foster financial inclusion and reduce consumer vulnerability. On the other hand, there may be adverse implications on issues related to financial stability, BigTech's anti-competitive behaviour, data and operational linkages between tech giants and financial incumbents. Consumer welfare, thus, needs to be protected and enhanced, which will result in a wider spectrum of providers to choose from, better accessibility and quality, and respect for data privacy, while mitigating risks arising from FinTechs and BigTechs' entry into financial market.

Financial consumers in the digital economy, as seen Figure 5.1, have been using a variety of financial products and services in a single app, relishing improved financial convenience and options. When using financial products and services provided by new entrants, consumers tend to not care about financial service providers that much and expect the equivalent level of the consumer protection guaranteed by traditional financial institutions such as deposit protection, strong data security, personal data privacy and fraud prevention, eventually leading to possible damages to customer due to the regulatory arbitrage. Moreover, innovations in payments services, such as digital wallets, together with the complexity of the regulatory regime mean that consumers could suffer harm because they do not

understand whether schemes and laws related to financial consumer protection apply to such products and services offered

Figure 5.1 Customers currently using or likely to adopt banking products in three years from non-traditional firms by product in 2019



by new financial service providers.

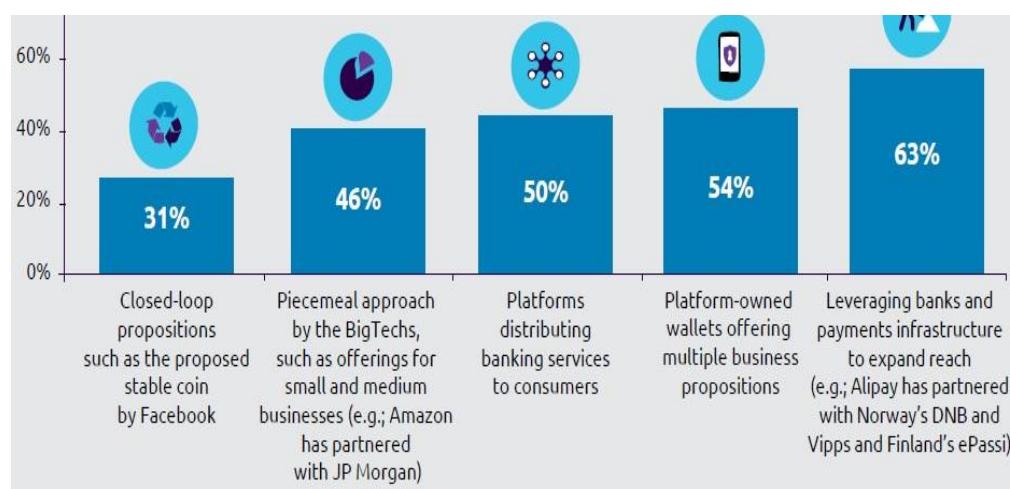
In addition, tech giants that engage in financial activities as a non-financial institution, may reduce financial consumer welfare, considering the possibility of algorithmic collusion, price discrimination based on consumer bias, the quality of free services, and data privacy issues. Large platform players. They may also exacerbate market trust by providing incomplete services for them, focusing on marketing rather than service quality and increasing in incomplete sales owing to excessive competition in the market.

Financial authorities, thus, need to put more effort to maximise benefits of new entrants' entry into the financial market and mitigate their risks, so that they can minimise decrease in consumers' welfare and behavioural discrimination based on consumer behaviour arising from consumers' bounded rationality and information asymmetry between customers and companies or between data-driven firms and financial incumbents. They

should not only take into account whether some of the business models not previously covered by regulation should be put under the regulatory perimeter, and be subject to targeted obligations, but put market development into scrutiny and additional financial regulation and oversight in place, along with giving increased guidance to tech giants around consumer protection. Furthermore, they should clearly assign responsibilities between large platform players and financial institutions by adequately reflecting the allocation of liabilities to regulate the financial system and prevent probable and possible risks.

Since most financial services provided by new entrants, particularly, tech giants are evaluated so far to be less likely to fundamentally change the existing financial market system, potential risks arising from BigTech's entry into finance will be examined under the current regulatory and supervisory framework, focusing on probable risks associated with overheating competition in the market, data-driven and tech-driven issues.

Figure 5.2 Seriousness of threat form BigTech business models



Source: Capgemini (2019) , Capgemini Financial Service Analysis, World Payments Report 2019 online survey responses

5.2 Exploring consumer protection risk drivers

The rise of Fintech and Big Tech has reshaped user experiences but also has meant a growing participation in the financial market from new entrants which make liability and accountability more complicated. Irresponsible financial service provider practices, scandals, and abuses rooted in misconduct may occur in the financial intermediation provided by large platform players, so financial authorities need to assess conduct risk, recognising that risks to consumers can stem from a firm's strategy, business model, culture, governance and other internal structures, its systems and processes. That is why it is critical that they continue to persistently monitor market developments and risks that financial consumers may face, not only from the products and services they buy but also from the behaviour of the financial service providers and that of the wider market.

In order to maintain consumer trust and confidence in the financial market and deliver the right consumer outcomes in a consistent and sustainable way, regulators and supervisors must monitor and identify current and emerging consumer protection risks to reduce harms in the market, ultimately influencing a more positive consumer-focused culture in the financial service providers.

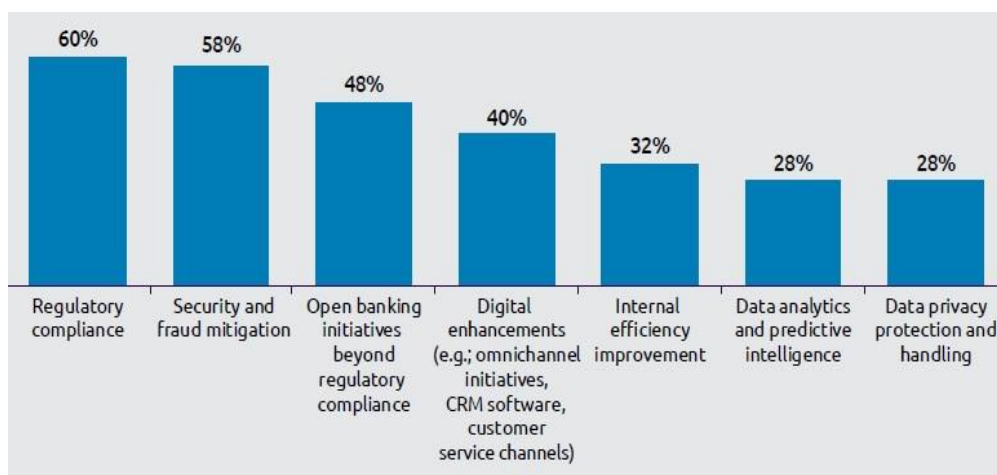
To that end, it is needed to explore a framework for the management of risks to financial consumer protection to identify and mitigate risks arising from new entrants' entry and steps into financial market under the current regulatory and supervisory framework, adopted on the "financial consumer protection risk drivers" published by the OECD in 2018. (OECD, 2018) It is incorporated to take advantage of the framework for identification and mitigation in line with the High-Level Principles on Financial Consumer Protection. The identification of the source of risk is essential in order to subsequently be able to implement policy and regulatory interventions to not only to help consumers who have been harmed, but to prevent harm in the first place.

Therefore, the business and innovation context regulators among the risk categorisation discussed in the “financial consumer protection risk driver” will be examined to prevent and mitigate risks caused by BigTech’s foray into finance, since they are more likely to have the means to exercise control over the risks, or to prevent and mitigate them from arising in the first place.

In the context of innovation

Rapid innovation and changes have raised questions about the adequacy of new entrants’ controls to both safeguard client funds and prevent misuse of their systems for financial crime, including fraud. Traditional banks, as seen Figure 5.3., also have put enormous efforts to adopt to innovation and advanced technologies along with the digital transformation in the financial market. In this regard, the Cyber security has emerged as a key risk in the data economy due to the spread of the digital financial environment.

Figure 5.3 Bank's investments in digital transformation initiatives



Source : Capgemini Financial Services Analysis(2019), World Payment Report 2019 online survey response (Capgemini Research Institute, 2019).

New entrants as well as traditional financial institutions are at high risk of cyberattacks as cyber risks are mounting. While financial incumbents might have a legacy system that requires constant updating to remain safe from cyber attacks, FinTechs and tech giants may not have invested sufficiently on security. Customers also must have absolute confidence about the security of the

operating system and data. In situations where personal information protection and cyber financial security reinforcement are required, it is necessary to respond pre-emptively to keep the financial market stable and protect financial consumers.

To ensure security and keep a level playing field in financial industry, further steps are needed to take with the innovation context regulator in the categorisation of risks to financial consumer protection from a consumer behaviour perspective, as seen Figure 5.4. In particular, the combination of the increased use of algorithms and big data introduce new risks to financial services, while the increased risk of cyberattacks goes hand in hand with the increased reliance on technology.

Figure 5.4 Innovation context in the categorisation of risks to consumer protection

Risk driver	Risk factor	Outcome	Detriment	Contributing factors	Mitigating actions	Relevant HLP
Technological Innovation	Accessibility of financial services and products	Overconsumption	Unsuitable products; high costs	Information asymmetry; impulsiveness		4,5
		High indebtedness	Financial arrears; revolving debt	Cognitive limits, low financial literacy, impulsiveness		4,5
		Uninformed financial decisions	Unsuitable products	Reliance on friends and family	Effective disclosures, targeted educational initiatives	4,5
		Easy and rapid access to high cost/short term credit and speculative products	Unsuitable products; high costs	Information asymmetry; reliance on algorithms	Effective disclosure; data protection rules	4,5
		Lack of attention or disengagement, e.g. easily give out personal data	Misuse of personal data	Lack of information and knowledge of rights and responsibilities of use of digital platforms; social	Effective disclosure; data protection rules	4,5,8

				norms; cognitive limits		
		Cross-border transactions	Protection gaps			2
	New business models	Inappropriate regulation of entities	Protection gaps	Information asymmetry	Sandboxes, innovation hubs Regulatory cooperation and consistency	2,10
		Cross-sectoral entities	Protection gaps			2
		Opaque business operations	Hidden risks	Information asymmetry		4,7
		New profit sources	Cost-savings do not flow through to consumers	Information asymmetry	Effective disclosure	4
		New products and services (e.g. robo-advice, crowdfunding, peer-to-peer lending)	Protection gaps		Sandboxes, innovation hubs, reg-tech/sup-tech	2
		Cross-border transactions	Protection gaps			2
		Business failure	Loss of financial assets		Compensation schemes	7
	Speed of innovation	Inappropriate regulation of entities	Protection gaps	Information asymmetry	Sandboxes, innovation hubs Targeted educational initiatives	2,8,10
		Lack of technological literacy	Financial exclusion	Low financial literacy	Education and training initiatives	3,5
		Lack of regulatory/supervisory expertise	Inadequate supervision ; protection gaps			2
	Reliance on algorithms	Coding error	Product/service malfunction leading to loss of money		Stress testing, governance and controls processes, qualificati	6,9

				on standards		
		Coding manipulation	Misled decision making	governance and controls processes	6,9	
		Over-simplification/complexity	Unsuitable products or advice (e.g. robo-advice); inadequate supervision		6	
	Use of big data	Risk profiling	Financial exclusion, e.g. uninsurability		3,6,10	
		Targeting individuals with personal offers	Higher costs for vulnerable populations		3,6,10	
		Learned bias	Unsuitable products	Representative bias		3,5,10
		Distorted credit rating	Discrimination			3,6
		Behavioural bias	Over-rating Biased decision-making	Information asymmetry, untrustworthiness of data		3,6
		Unclear ownership of personal data and informed consent	Overconfidence Dark nudge	reliance on algorithms, Impulsiveness		3.4.5.6
			Reduced consumer privacy			8
	Cyber-threats	System disruption	Financial loss; inaccessibility of service		7	
		Data theft, manipulation, destruction	Financial loss		7,8	
		Security attack/threat	Financial loss, trust loss in	Malware/phishing	Impose legal liability	7,8,9

			market		
		Mistrust of financial/digital services	Don't gain from lower costs and better efficiencies	Availability bias	7

Source: OECD, DAF/CMF/FCP/RD(2017)3, Financial Consumer Protection Risk Drivers: A framework for identification and mitigation in line with the High-Level Principles on Financial Consumer Protection.

In the context of business

As for the business context, social media and ease of access to finance may have led customers towards risky investment vehicles without their knowledge and the adequacy of the financial consumer protection is also questioned available to customers switching to new market entrant. As the excessive marketing rather than focusing on financial products and services may lead to incomplete sales, financial authorities need to take precautions against a risk management plan.

To that end, business context in the categorisation of risks to financial consumer protection can be a great boon to preventing digital disruption from large platform players by examining both FinTechs and BigTechs' business culture and the competitive environment as seen Figure 5.5.

Figure 5.5 Business context in the categorisation of risks to consumer protection

Risk driver	Risk factor	Outcome	Detriment	Contributing factors	Mitigating actions	Relevant HLP
Culture (serving consumer best interests)	Product design	Overly complex or risky products	Unsuitable products, misselling	Low financial literacy, information asymmetry	Limits on certain complex products; requiring that products are suitable for target market	4,5,6,9
	Pricing structures	Lack of transparency of fees	Paying for unwanted features	Information asymmetry; focus on headline cost	Effective disclosure requirements; standardised product comparisons	4
	Sales/ending practices	Misleading or aggressive marketing and	Unsuitable products	Information asymmetry; cognitive limitations when faced with high pressure sales	Limit certain products from retail markets; no-call lists; cooling-off period	3,6

		promotions; direct calls				
		Cross-selling	Unsuitable products; higher costs	Information asymmetry; reference bias; consumer trust	Effective disclosure requirements; cooling-off period	4,6
		Failure to take adequate steps to determine and monitor suitability	Unsuitable products	Lack of awareness of duty of advisor/sales person; low financial literacy, present bias, consumer trust, cognitive limitations	Duty of care, qualification requirements	3,5,6
		Inaccurate, misleading, or unclear pre-contractual information	Unsuitable products	Information asymmetry	Effective disclosure requirements	3,4
		High indebtedness	Financial arrears; revolving debt; use of payday loans	Lack of awareness of duty of advisor/sales person; low financial literacy, present bias, consumer trust, cognitive limitations; focus on monthly payment	Limits on loan terms; limits on loan-to-value ratios; duty of care; effective disclosure	4,5,6
		Poor debt collection practices	Increased vulnerability	Low financial literacy	Work with providers to restructure loans for vulnerable groups and provide access to forbearance	3,5
	Remuneration and conflicts of interest	Conflicted sales and advice	Unsuitable products; higher costs; misselling	Information asymmetry; lack of awareness of duty of advisor; consumer trust; low financial literacy	Duty of care standards, effective disclosure, remuneration limits	4,5,6,9
	Reputation	Lack of consumer	Undermined	Availability bias	Industry and professional	2,6,9

		trust and confidence	financial system		standards; accountability and enforcement	
Competitive environment	Product design	Lack of market efficiency, innovation	Unsuitable products	Low financial literacy, information asymmetry, choice overload	Product comparisons; standardised disclosures	4,5,6,10
		Complex or risky products	Unsuitable products, misselling	Low financial literacy, information asymmetry	Simplified and standardised disclosures	4,5,6,10
	Pricing structures	High costs	Expensive products and services	Information asymmetry; choice overload; inertia	Product comparisons; standardised disclosures	4,5,10
		Inappropriately differentiated price		Price discrimination, Information asymmetry	Impose legal liability and increase transparency in the market	4,5,10
	Sales/ending practices	Products and services with differentiated price/mis-selling	tacit collusion of algorithms	Behavioural Discrimination	Impose legal liability and increase transparency in the market	4,5,10

Source: OECD, DAF/CMF/FCP/RD(2017)3, Financial Consumer Protection Risk Drivers: A framework for identification and mitigation in line with the High-Level Principles on Financial Consumer Protection.

Regulators and supervisors should carefully take into account the fact that digital technology allows overheating marketing and a greater degree of price discrimination, which calls for enhanced consumer protection, but also take special care to foster the use of digital technology in a transparent way that minimizes the possible behavioural biases of consumers as well. In addition, they not only can encourage financial service providers to be responsible for embedding a customer-centric culture and attaining specific customer outcomes, but also need to improve the disclosure regulation along with the digital developments and a high uptake of data, based on better understanding of the consumer's decision-making process.

In the context of consumer behaviour

From the perspective of consumer behaviour, large platform players may have substantial impacts on consumer's decision-

making through their high-end technology and induce them to make inappropriate choices. Since tech giants may exploit consumer's behavioural bias deliberately through and use the dark nudge⁴⁰ to make profits, eventually leading to customers making bad and irrational choices, financial authorities should introduce measures not only to give customers choices, but also to prohibit large platform players adjusting the exposure order and frequency of financial products sold by BigTechs.

It is also needed to enhance understanding of consumer behaviour by recognising the role of behavioural biases and figuring out actual consumer decision-making patterns. In this respect, financial authorities need to take into account that consumers tend to show different behaviours and decision-making pattern in using financial products and service provided by large platform player vis-a-vis those of traditional financial incumbents and take active but deliberate approach to regulations and supervisions.

Hence, the risk categorisation reviewed above can be a guide for the identification of risk with potential indicators for risk monitoring, eventually contributing to prevent or mitigating these risks. In addition, clear rules of conduct for financial service providers, combined with improved financial literacy for consumers, will inevitably increase consumer trust in financial markets and will support the development of these markets.

As explored above, new potential risks arising from the entry of both FinTechs and BigTechs are more likely to fall under the current financial consumer protection principals and be within the control of the current financial regulatory and supervisory framework.

However, as the boundary of the financial industry and other industries has been blurred due to the technology and digital developments, financial authorities need to pay more thorough attention to the market changes and conditions and continue to

⁴⁰ Dark Nudge, so-called nudges for bad, that is employed for nefarious purposes, usually to trick and deceive others. They end up creating zero sum situations and do not contribute to the welfare of the recipient

closely monitor the market developments and financial market conducts from the financial service providers in an effective and meticulous manners.

Figure 5.6 Linking High-Level Principles to relevant risks

High-Level Principle	Most relevant aspects	Risk Target
1. Legal, Regulatory and Supervisory Framework	Risk Management Framework	Prevent/Mitigate/Reverse
	Protection gaps	Prevent
2. Role of Oversight Bodies	Reputational risks	Prevent
	Fraud	Prevent
3. Equitable and Fair Treatment of Consumers	Sales/Lending Practices	Prevent/Mitigate
	Vulnerability	Prevent
	Big Data	Prevent
4. Disclosure and Transparency	Unsuitable, complex or risky products	Mitigate
	Pricing structures	Mitigate
	Conflicts of interest	Mitigate
	Consumer disengagement	Mitigate
	Financial decision making	Mitigate
	Technological literacy	Mitigate
5. Financial Education and Awareness	Financial exclusion	Mitigate/Reverse
	Consumer disengagement	Mitigate
	Over-indebtedness	Mitigate/Reverse
	Reliance on financial advice	Prevent
	Sales/Lending Practices	Prevent
6. Responsible Business Conduct of Financial Services Providers and Authorised Agents	Conflicts of interest	Prevent
	Reputational risks	Prevent
	Product design	Prevent
	Reliance on algorithms	Prevent
	Use of big data	Mitigate
	Fraud	Prevent/Reverse
7. Protection of Consumer Assets against Fraud and Misuse	New business models	Prevent/Reverse
	Cyber-threats	Prevent/Reverse
	Consumer disengagement	Prevent/Mitigate
	Inappropriate regulation	Prevent
8. Protection of Consumer Data and Privacy	Big Data	Prevent
	Cyber-threats	Prevent
	Misselling	Reverse
9. Complaints Handling and Redress	Coding errors	Reverse
	Reputational risks	Mitigate
	Competitive environment	Prevent/Mitigate
10. Competition	Inappropriate regulation	Prevent
	Use of big data	Prevent

Source: OECD, DAF/CMF/FCP/RD(2017)3, Financial Consumer Protection Risk Drivers: A framework for identification and mitigation in line with the High-Level Principles on Financial Consumer Protection.

6. Conclusion

With new entrants' foray into finance, there are significant changes happening in the financial industry; Rapid developments of FinTechs and BigTechs have been influencing the financial markets and business models of traditional financial incumbents. They are not only bringing considerable benefits to customers through better choice, competitive price and efficiency in the provision of financial services and opportunity for financial inclusion, but also contributing to improving consumer welfare through competition with the banking sector. They, however, may be disruptive to the financial market and pose probable risks related to financial stability, competition and data privacy such as the viability of financial incumbents' business models, operational risks and potential anti-competitive behaviour.

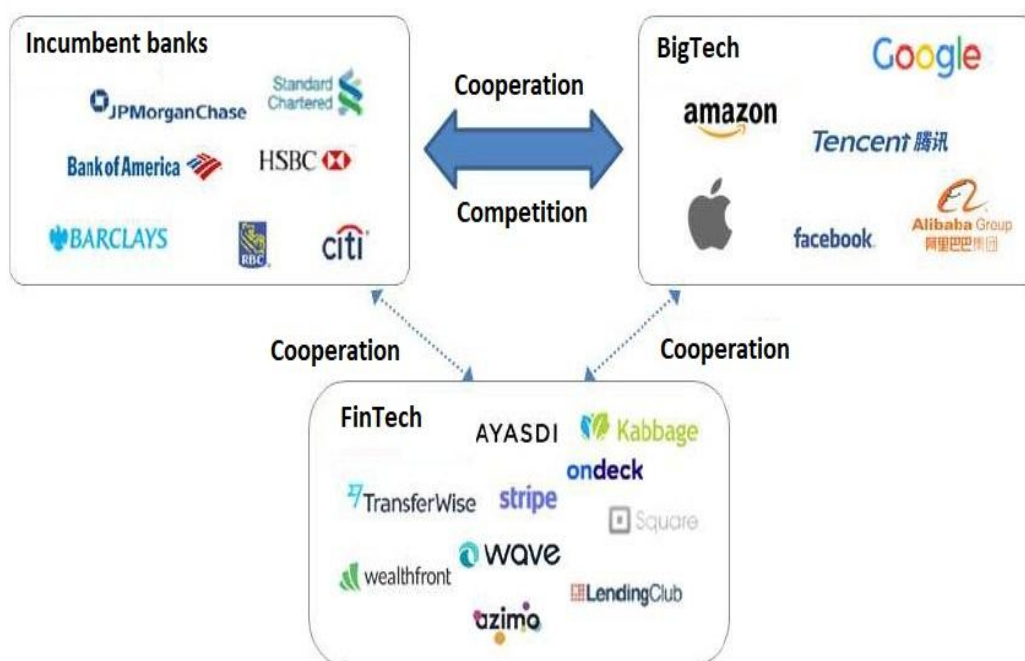
As technology continues to shape the future of financial services, new entrants, particularly, large platform players will play a critical role in the financial market now more than ever by engaging in areas of finance where their competitive advantages and regulatory arbitrage allow them to reap profits and further take advantage of their network. On the contrary, they may be involved in anti-competitive behaviours and exert market power through their own platforms if they gain exclusively dominant position in the financial market. BigTech's platforms already have a captive ecosystem, with high switching costs for customers, and can exploit economies of scale and scope, vast amount of data and efficient technologies to provide financial services.

Therefore, with the finance going digital and complex, regulations and supervisions that go beyond financial regulations, need to be put in place in order to keep the financial market stable and sufficiently competitive. In this regard, financial authorities in Korea should work together with competition authorities and relevant regulators and closely monitor market developments in a comprehensive and deliberate manner, as large platform players are potentially much more disruptive to the traditional financial business burdened by legacy systems.

In a mature market where there is a high appetite for innovation, new entrants, both FinTech start-ups and tech giants can promote the financial market to be more innovative and competitive, eventually leading to improving economic welfare in the financial industry. With new entrants giving impetus to the financial industry, financial incumbents have been putting enormous efforts to make a more dynamic and cost effective financial system and give their customers all the benefits that tech giants offer, without having to compromise their best revenue streams.

Traditional financial institutions in Korea also have to bend over backwards to have in place the technology-enabling systems to enhance convenience and accessibility to finance by adapting quickly to new tech-driven and data-driven environment, so that they can increase their profitability in a challenging financial ecosystem. Therefore, it could be desirable and productive for financial incumbents and new entrants to have a constructive relationship which invigorates the financial market and augments consumer welfare through competition and collaboration between them in order to have a level playing field for fair competition between them in terms of access to financial infrastructure and institutional structures.

Figure 6.1 Cooperation and competition in the financial market



To that end, regulators and supervisors can be instrumental to ensuring a level playing field without stifling competition and improving consumer welfare by thoroughly monitoring and identifying risks arising from the new entrants' entry into finance and market developments, in turn striking a balance between financial stability and competition in the market. As a result, changes to regulation and supervision will be made unavoidable to better protect consumers and maintain trust in their systems.

Moreover, they have not only to rapidly adopt the tech-driven and data-driven instrument for monitoring the financial industry more effectively and predicting potential problems, but also to enhance their abilities to detect or deter domestic and cross-border risks that may arise from innovation and fierce competition among financial market players. Financial authorities, thus, at the national and global level, have to pay close attention to the impacts these developments would have on financial stability, competition, data privacy and customer protection and put additional financial regulations and oversights in place, along with giving increased guidance to both FinTechs and large platform players around consumer protection.

International cooperation can be a boon to all the countries in the world in setting rules and standards to grapple with issues arising from the BigTech's entry into finance as the global economy has been intertwined more than ever and prominent tech giants have done their businesses across regions owing to the expansion of the digital economy and technology advancement.

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