



Digital Innovation Challenges for Korea's Financial Investment Services Industry

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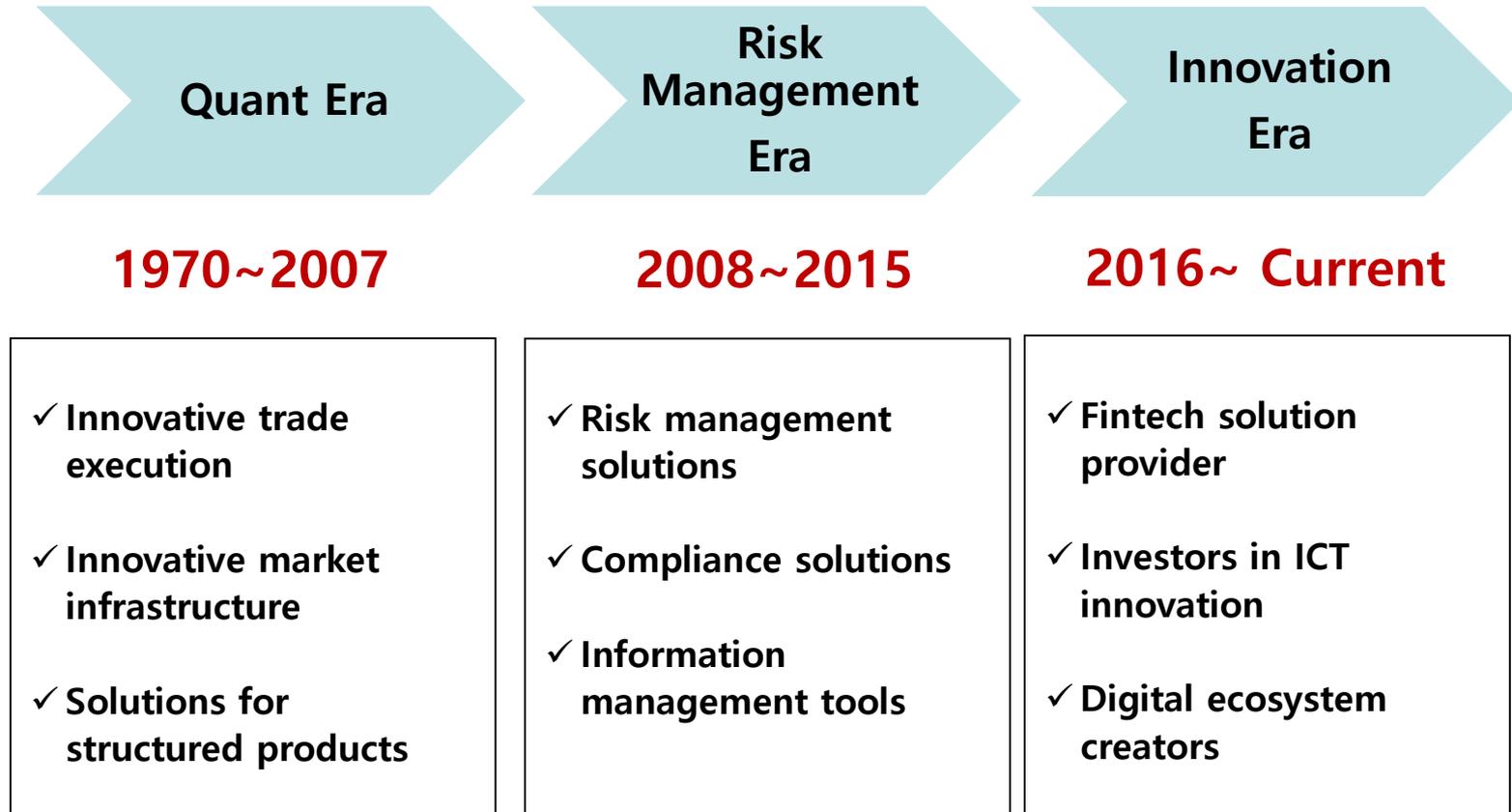
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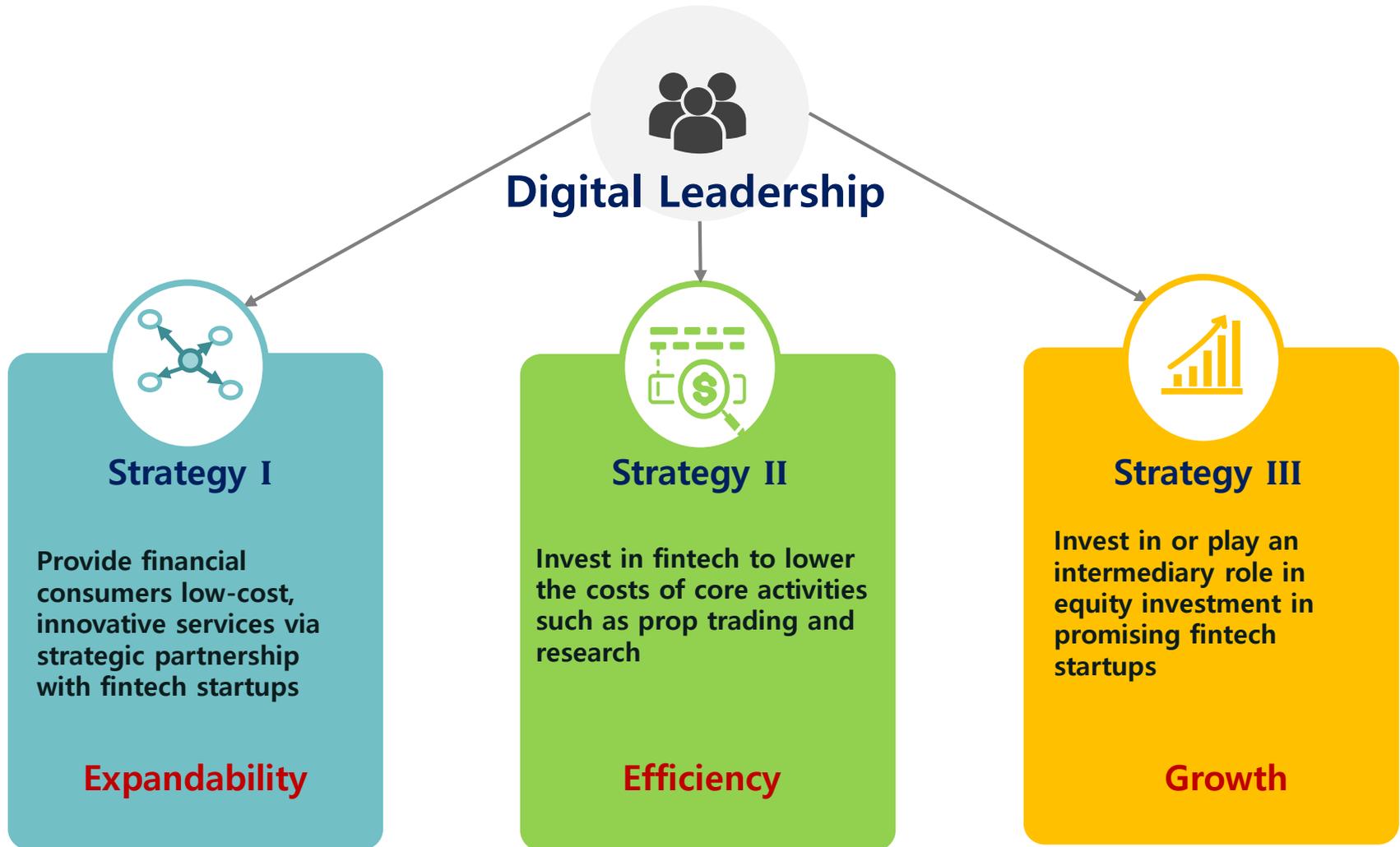
2 Diagnosis and Suggestions for Korea

3 Future Directions for Korea

History of Global IBs' Investment in Digital Innovation



Global IBs' Digital Innovation Strategies



Global IBs' Digital Leadership

Digital Vision



Shift away from financial firm toward digital platform

Agile Culture



Flexibility and agility to cater to client needs

Trust & Support



Company-wide support and trust toward digital business unit

Company-wide Fintegration



Digital integration of all business units via ICT convergence

Willing to Learn

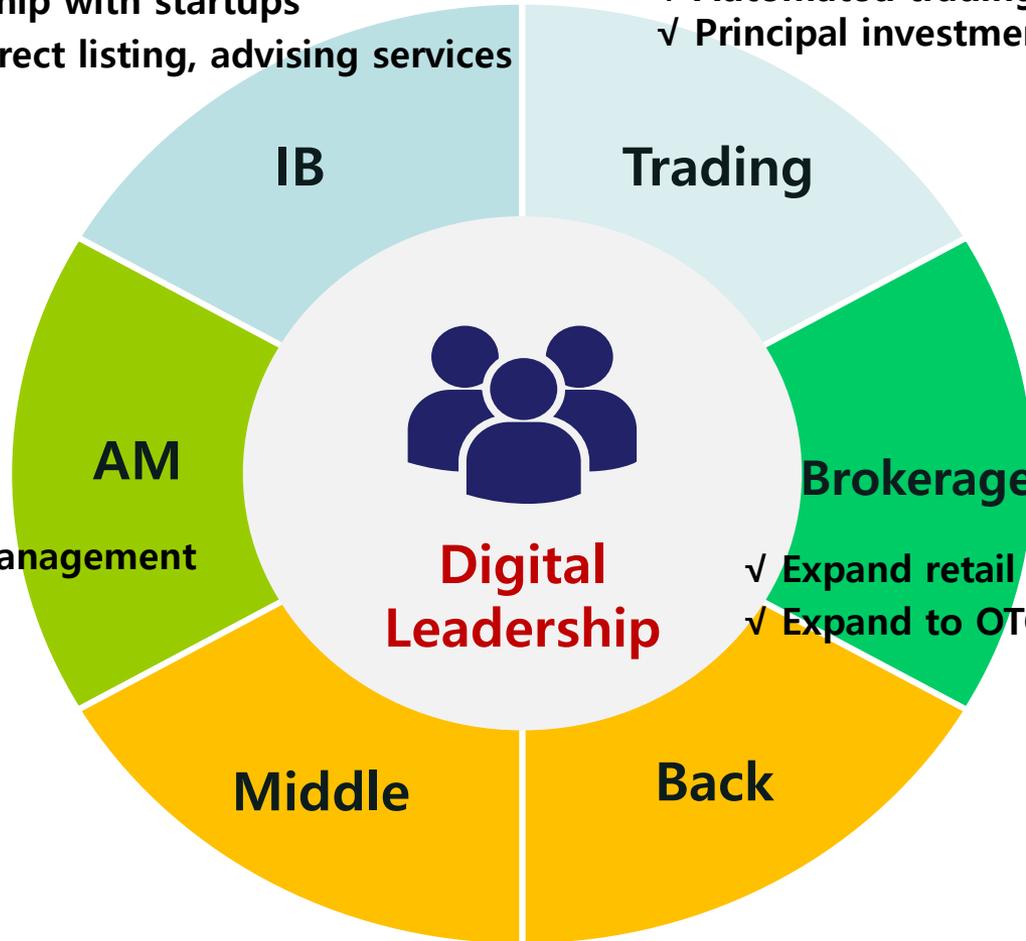


Continuous effort to learn and apply ICT technologies and overseas cases

Differentiated Digital Strategies by Business Unit

- ✓ Strategic partnership with startups
- ✓ Platform-based direct listing, advising services

- ✓ Automated trading, risk management, etc.
- ✓ Principal investment in fintech firms



- ✓ Robo advisers
- ✓ ETF-based asset management

- ✓ Expand retail non-face-to-face services
- ✓ Expand to OTC market

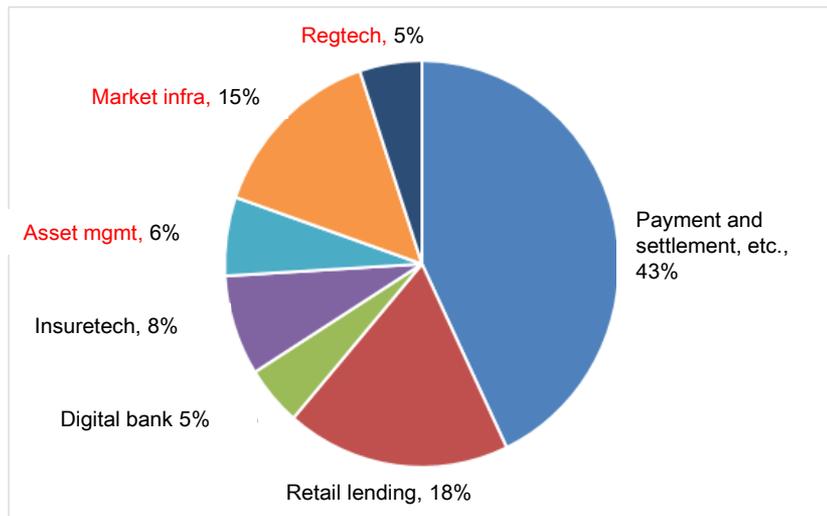
- ✓ Research based on AI and big data
- ✓ Company-wide open platform
- ✓ Outsource to fintech firms

Fintech Investment in Capital Market

- ❖ **Capital markets accounted for about 20%~25% of fintech investment, the second-highest after payment and settlement**
 - In capital markets, market infrastructure, asset management, and regtech took up 15%, 6%, and 5%, respectively
 - Alongside with global PEFs and VCs, **global IBs represented a significant portion** in this area

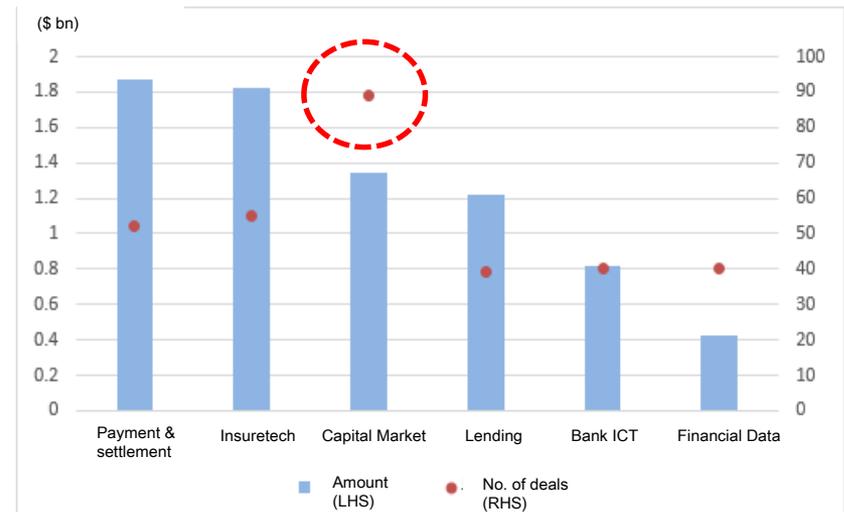
- ❖ **Investment in this segment recorded the highest, in terms of no. of deals in the US**
 - The increase backed by rising **demand for non-face-to-face (NFTF) wealth management**, and **platforms for trading and risk management**
 - Capital markets had 90 deals, surpassing insure tech (55), and payment and settlement (50) as of 2018

Global Fintech Investment (2018)



Source: CB Insights

Fintech Investment in the US (2018)



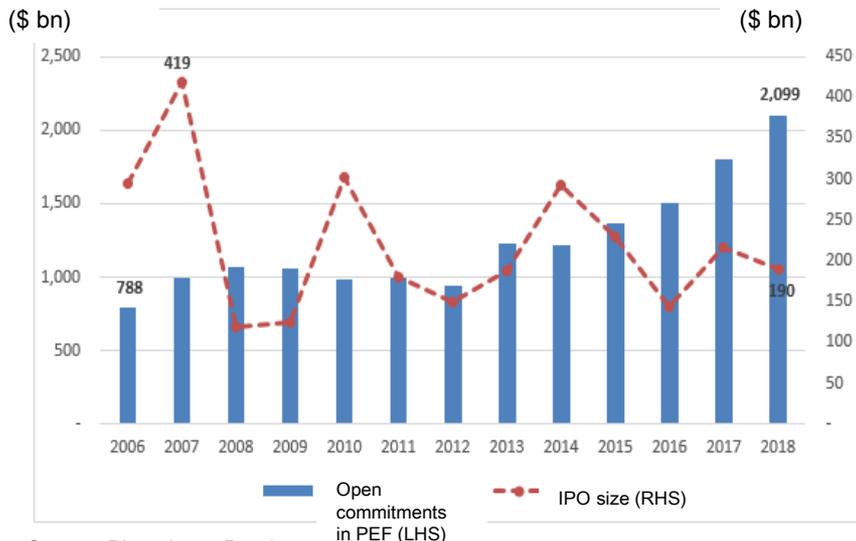
Source: S&P Global Market Intelligence

Global IBs' Digital Strategies under New IPO Trends

- ❖ **IPO market slowed down, whereas private equity market rose fast**
 - Financing via PE rose amid tech firms' growing unwillingness for IPO
 - In 2018, open commitments in PEF rose to \$2.1tn, whereas IPO fell to \$190bn
 - Direct listing excluding IB (e.g., Spotify, Slack) fueled competition for IPO among exchanges

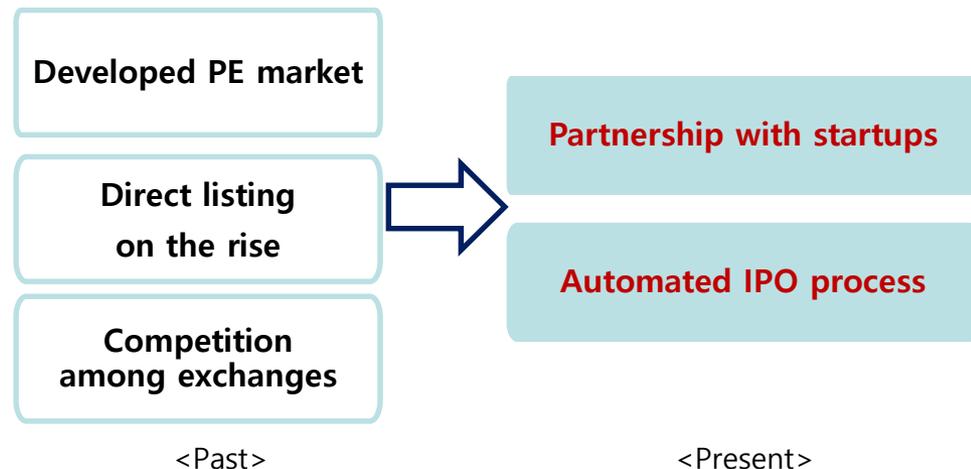
- ❖ **Alliance with startups, innovation in IPO process, etc. to cope with the changes**
 - More strategic partnership with prospective issuers, automated IPO process for lower costs
 - Goldman Sachs launched an automated solution for deal sourcing, compliance, monitoring, etc.
 - Morgan Stanley took over ESOP management solution Solium Capital for tech-firm IPO

Open Commitments in PEF and IPO Size



Source: Bloomberg, Preqin

Coping Strategies

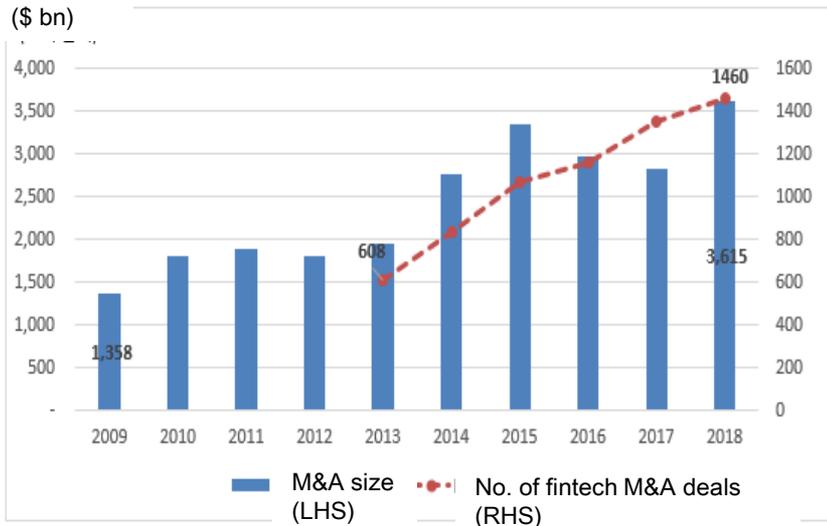


Global IBs' Digital Strategies under New M&A Trends

- ❖ **Increased tech firm M&A, cross-border M&A backed the growth of global M&A market**
 - In 2018, fintech-firm M&A reached 1,460 deals, a 2.5 times increase from 2013
 - ICT-based M&A platforms (e.g., Axial) fueled competition and brought down M&A fees
 - Carta provided VCs pre-IPO valuation services

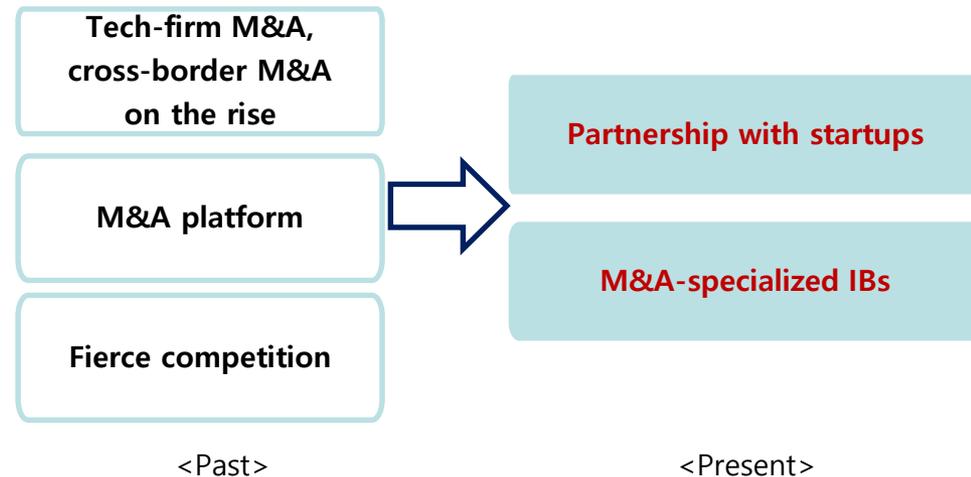
- ❖ **Large-scale IBs increased strategic alliance with startups, with more players specialized in M&A**
 - Via strategic alliance with early-stage start-ups, global IBs provide advising on financing and M&A
 - ICT-based boutique IBs specialized in M&A emerged (e.g., Qatalyst, Centerview)

Global M&A vs. Fintech M&A



Source: Bloomberg, CB Insights

Coping Strategies



Global Players' Support for Fintech Firms via Innovation Lab

Citigroup

Citi Innovation Lab ('11)

- ✓ Mentoring service via partnership with start-ups, university research institutes, and financial support from subsidiary Citi Ventures

JPMorgan

Financial Solution Lab ('15)

- ✓ Select promising startups via open competition and provide financial support, M&A, etc.

Morgan Stanley

Multicultural Innovation Lab ('17)

- ✓ Offer offices, funds, mentoring to startups with multicultural CEO or female CEO

Goldman Sachs

Internal Brain Trust ('17)

- ✓ Establish an internal innovative lab to collect opinions differentiated from existing M&A strategies, and share them with PI business units, etc.

BBVA

Innovation Labs ('07)

- ✓ Provide the winner of its startup competition with an office, funding, and mentoring services

UBS

W.M Innovation Lab ('14)

- ✓ Select fintech firms specialized in client asset management, and provide funding support

Barclays

Barclays Accelerator ('14)

- ✓ Select startups via Demo Day and provide them with networking opportunities with ICT companies

Deutsche Bank

Deutsche Bank Labs ('16)

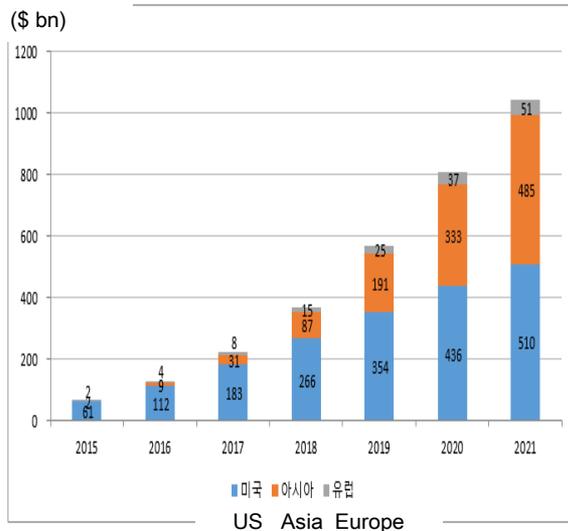
- ✓ Provide clients with innovative solutions of fintech firms, and reflect them into its digital strategy

Global IBs' Digital Strategies in New Asset Management Environment

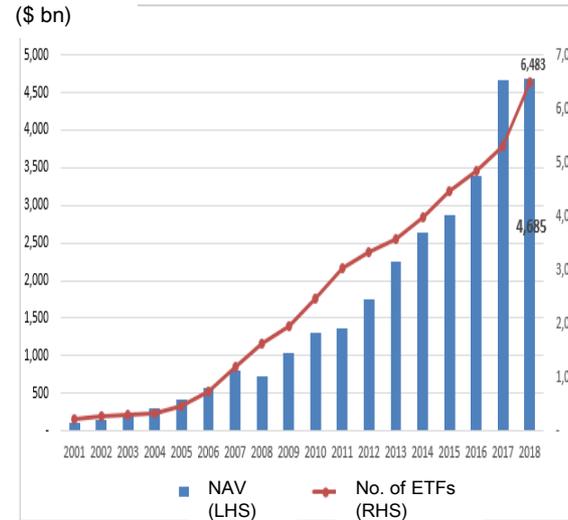
- ❖ **Ageing, low interest rates pushed up demand for asset mgmt, especially NFTF services and ETF**
 - Digital innovation boosted demand for asset mgmt. via NFTF channels such as robo advisors
 - More affordable, convenient services as ETF-based asset management demand is on the rise

- ❖ **Global players focus their capabilities on asset mgmt, especially NFTF channels**
 - Customized wealth mgmt solutions to HNWIs at lower costs (e.g., ETF Managed Portfolio)
 - Use digital asset mgmt solutions such as robo advisors to provide customers more convenient services at lower fees via NFTF channels
 - E.g., Marcus (Goldman Sachs), Merrill Edge (BOA), Intelligent Portfolio (Charles Schwab), etc.

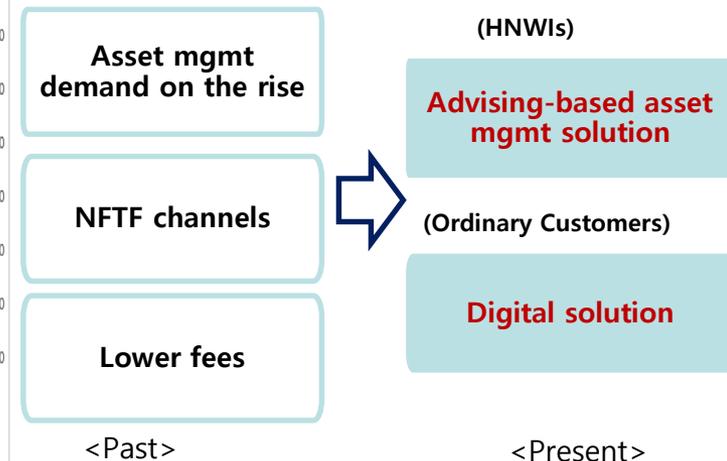
Size of Global Robo Advisor



Global ETF NAV



Coping Strategies



Source: statista

Source: ETFGI

Global IBs' Digital Strategies in New PI Environment

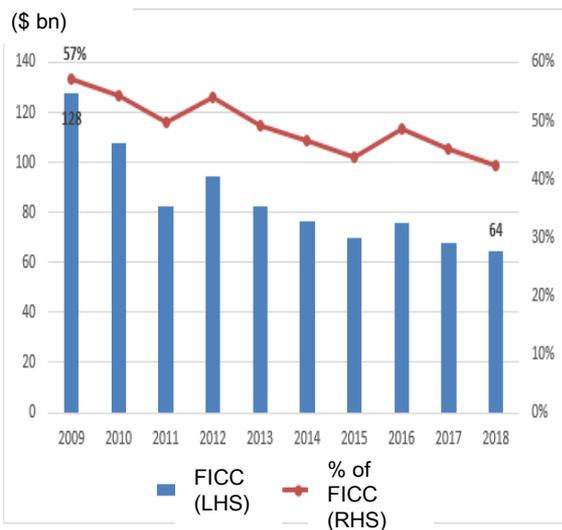
❖ Stronger PI regulation, less volatility brought down revenues, especially in FICC

- Under the Volcker Rule and stricter capital regulation on IBs, FICC revenues fell
- **Less capital market volatility, lower information asymmetry** thanks to ICT development diminished PI revenues

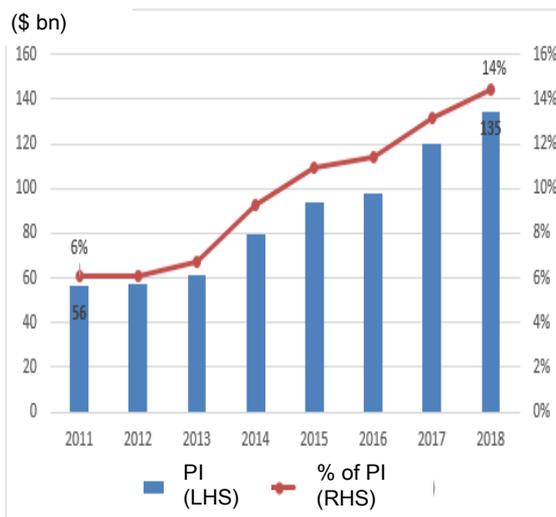
❖ More PI in start-ups and non-listed companies, trading platform innovation for cutting costs

- Global IBs are expanding PI in startups with growth potential
 - Goldman Sachs' PI shot up from 6% (2011) to 14% (2018) of the total assets
- Provide institutional clients with open data platforms for more investment opportunities (unlisted firms, etc.)
 - E.g., Marquee (Goldman Sachs), Execute (JP Morgan), Matrix (Morgan Stanley), etc.

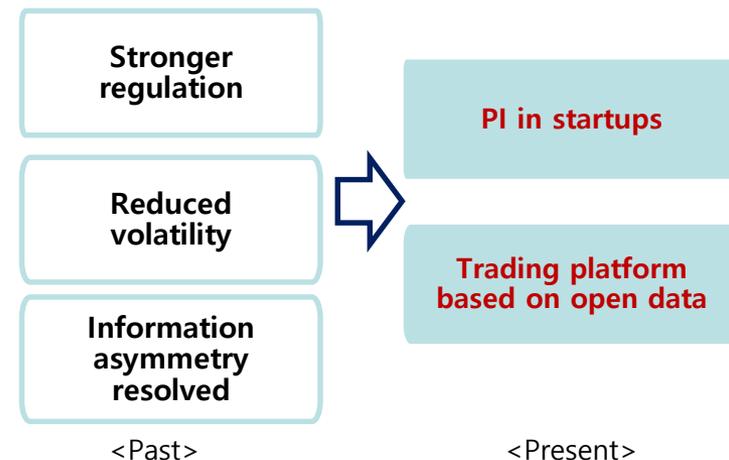
FICC Revenue of Global IBs



Goldman Sachs' PI



Coping Strategies



Global IBs' PI Strategies for Fintech: Taking on VC, PEF Roles

❖ Set up independent PI units for large-scale PI in promising fintech firms

- Global players set up a specialized team to carry out large-scale PI in fintech firms
 - Goldman Sachs's Principal Strategic Investment, Morgan Stanley's Investment Management, Santander's Innoventures, Credit Suisse's Entrepreneur Capital, etc.

❖ Realized massive returns by sales of equity holdings in fintech firms

- Selling the holdings for returns, in case of a fast value increase or portfolio overlap
- Goldman Sachs sold its holdings in Kensho (\$0.55bn, S&P, 2018), DataFox (Oracle, 2018), etc.

Fintech PI Strategies of Global IBs

IB	Business unit	Features
Goldman Sachs	PSI Group	Long-term investment in fintech firms such as AI, big data, ICT security firms ,etc., achieving 25% ROE for 7 years
JP Morgan	Strategic investment unit	Reorganized its PEF unit for fintech investment
Morgan Stanley	Investment management unit	Bolstered strategic alliance for IPO via long-term investment in fintech firm equity and debt
Santander	Subsidiary (Innoventures)	Equity investment in early-stage startups, playing a VC-like role
Credit Suisse	Subsidiary (CS Entrepreneur Capital) LTD	VC fund for equity investment in small to mid tech firms and fintech firms

Source: Website of each firm

Case for Global IBs: PI and Strategic Alliance

❖ Global IBs invest in asset management, trade execution, risk management, data analysis, retail lending, regtech, etc.

- Goldman Sachs, JP Morgan, Morgan Stanley, Santander, UBS are active investors in this segment

Global IBs' investment in the capital market segment of fintech

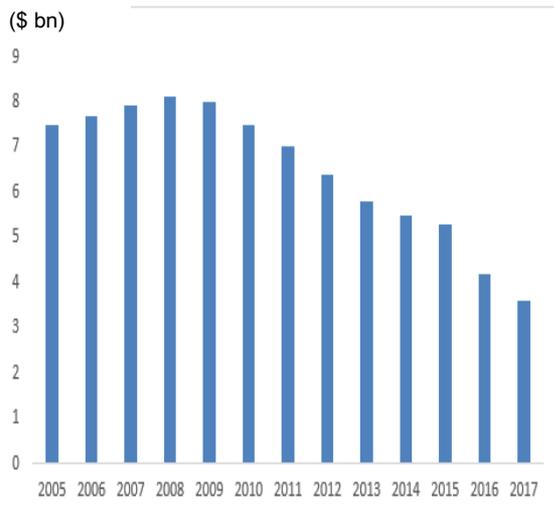
	Asset Management	Trade execution, Risk Management	Data Analysis	Regtech	Retail Lending	Entrepreneurial Solutions
Goldman Sachs	<ul style="list-style-type: none"> • MOTIF • FOLIO • HONEST_\$ • VESTWELL 	<ul style="list-style-type: none"> • SYMPHONY • TRADESHIFT • PLAID • CURVEGLOBAL 	<ul style="list-style-type: none"> • DATAMINR • PLAID • VISIBLEALPHA • DATAFOX 	<ul style="list-style-type: none"> • ACADIA • DROIT • DIGITAL REASONING 	<ul style="list-style-type: none"> • MARQUETA • NAV • NEYBER • PERSADO 	<ul style="list-style-type: none"> • CARTA • DIVVY • NYSHEX
JP Morgan	<ul style="list-style-type: none"> • MOTIF 	<ul style="list-style-type: none"> • SYMPHONY • OPENFIN • CURVEGLOBAL • INVESTCLOUD 	<ul style="list-style-type: none"> • PLAID • MOSSAIC 	<ul style="list-style-type: none"> • ACADIA • CLOUD9 	<ul style="list-style-type: none"> • PROSPER 	
Morgan Stanley		<ul style="list-style-type: none"> • SYMPHONY • ERIS • ELINI • ICAPITAL 	<ul style="list-style-type: none"> • DATAMINR • VISIBLEALPHA 	<ul style="list-style-type: none"> • ACADIA 	<ul style="list-style-type: none"> • LU.COM 	
Santander	<ul style="list-style-type: none"> • ROOSTIFY • SIGFIG 	<ul style="list-style-type: none"> • TRADESHIFT • PERSONETICS • DIGITALASSETHOLDINGS 	<ul style="list-style-type: none"> • VISIBLEALPHA 	<ul style="list-style-type: none"> • SOCURE 	<ul style="list-style-type: none"> • KABBAGE • AUTOFI • EPOSOS • CREDITAS 	<ul style="list-style-type: none"> • MARKETINVOICE
UBS	<ul style="list-style-type: none"> • SIGFIG 	<ul style="list-style-type: none"> • SYMPHONY • ICAPITAL 	<ul style="list-style-type: none"> • VISIBLEALPHA 	<ul style="list-style-type: none"> • ACADIA 	<ul style="list-style-type: none"> • CHINA RAPID FINANCE 	

Global IBs' Digital Strategies in New Middle/Back Office Environment

- ❖ **Concerns about deteriorating profitability led to a cutback in investment in middle and back office workforce**
 - **Deteriorating profits** in front office such as IB and FICC led to **cost-cutting efforts** in middle and back office
 - Research investment by global IBs more than halved to \$3.6bn from 2008
 - Basel3, MiFID II, PRIIPS, and other new regulatory environments **require improved business processes** for compliance

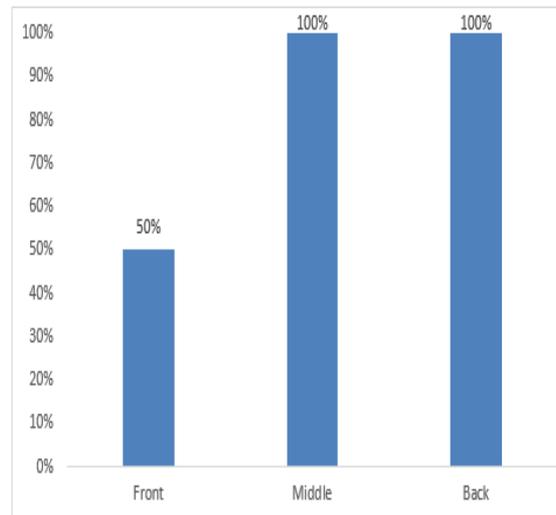
- ❖ **For cost reduction and better business processes, more fintech investment is going to middle and back office**
 - Middle office units: compliance, risk management, and research on unlisted firms
 - Back office units: clearing and settlement, collateral management for Basel3, MiFID II, etc.

Global IBs' Investment in Research



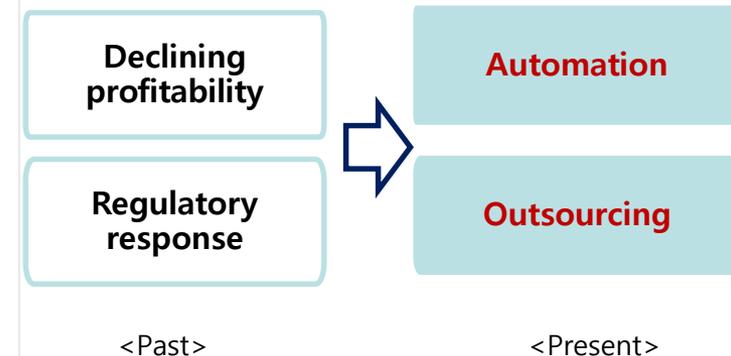
Source: Financial Times, Frost Consulting

Global IBs' Fintech Investment Plans



Source: Accenture, Survey on 10 global IBs

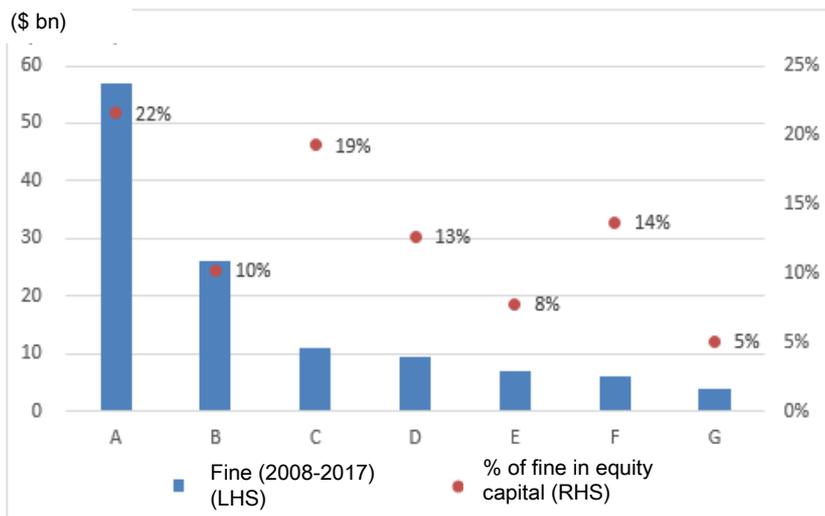
Coping Strategies



Digital Strategies for New Regulation: Regtech

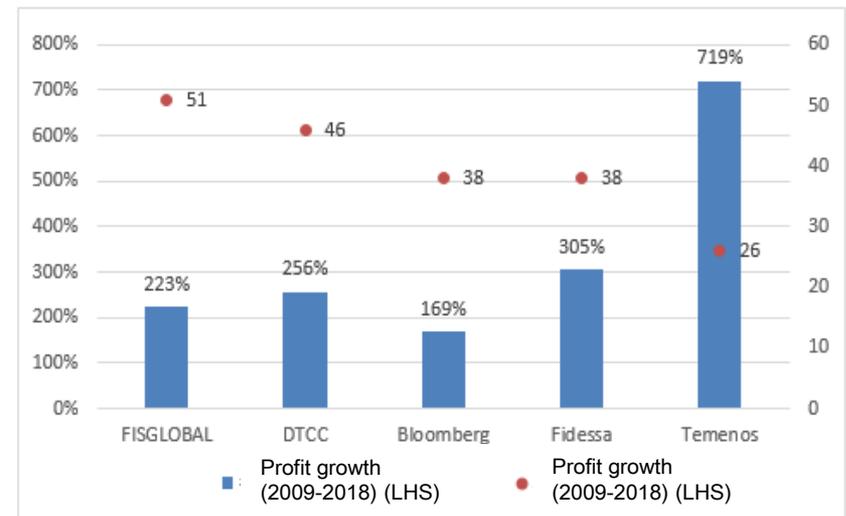
- ❖ **In the post-crisis era, global IBs paid massive fines due to unfair trades and misselling**
 - On a cumulative basis, global IBs have been fined \$17bn (13% of equity capital) since the crisis
 - This made global IBs actively respond to regulation via compliance, reporting of transaction information, collateral and margin management, clearing and settlement, etc.
- ❖ **In response to regulation, global IBs and market infrastructure firms expanded investment in ICT financial solutions**
 - Increased demand for legacy solutions pushed up profits of major capital market platform providers
 - FISGLOBAL: 223%, DTCC, 256%, Bloomberg 169%, Fidessa 305%, Temenos: 719%
 - Exchanges, central depositories aggressively investing in ICT-based capital market solutions via M&A
 - CME took over NEX (ICAP) ('18), LSE bought Refinitive ('19), HKEx took over Ronghui Tongjin ('19), etc.

Cumulative Fines of Global IBs



Source: Financial Times

Profit Growth of Leading Capital Market Platforms



Source: Website of each firm

Global IBs' Digital Innovation Strategies



1 Digital Innovation Strategies of Global IBs

2 Diagnosis and Suggestions for Korea

3 Future Directions for Korea

Profitability and Efficiency in Korea's Securities Industry

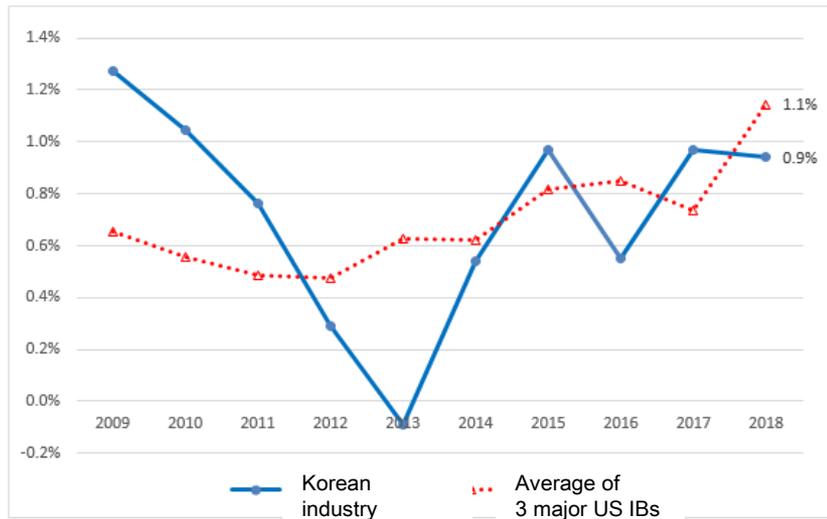
❖ Korea's securities industry sees profitability improving, with still high revenue volatility

- As of 2018, the industry's annual average ROA stood at 0.9%, a steady rise since 2013, but revenue volatility is relatively high as compared to US IBs
- US IBs' average ROA was 1.1% during the same period, a continuous increase since the crisis

❖ The industry's efficiency (cost-income ratio) improved, but still volatile compared to the US

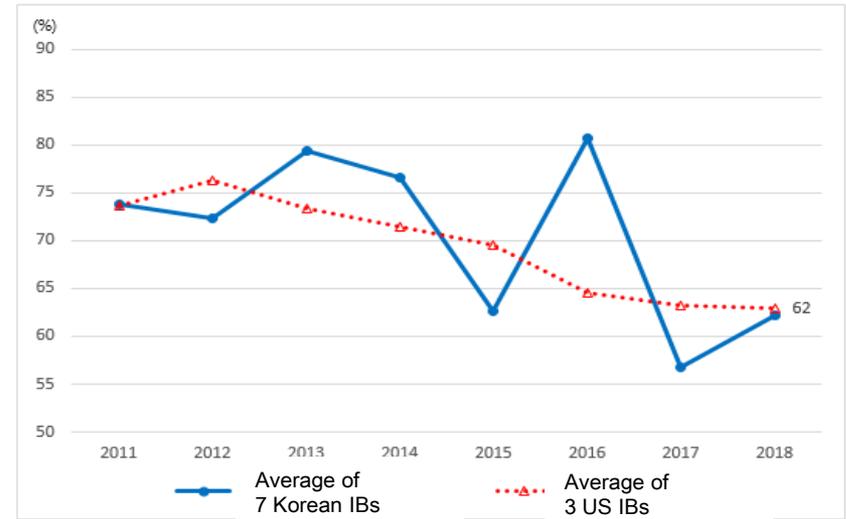
- As of 2018, Korean IBs' cost-income ratio (SG&A/(operating income-operating expenses excluding SG&A)) was 62%, down from 73% in 2011
- During the same period, the average cost-income ratio of three US IBs dropped to 63% from 74%

ROA Trend in Korean and US IBs



Source: KOFIA, Bloomberg

Cost-Income Ratio in Korean and US IBs

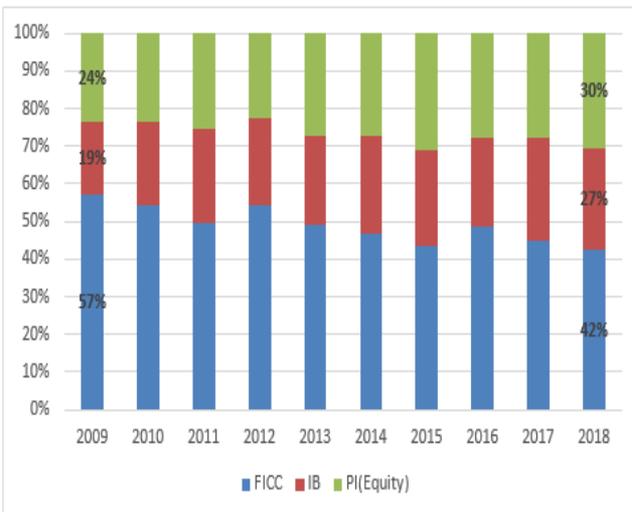


Source: KOFIA, Bloomberg

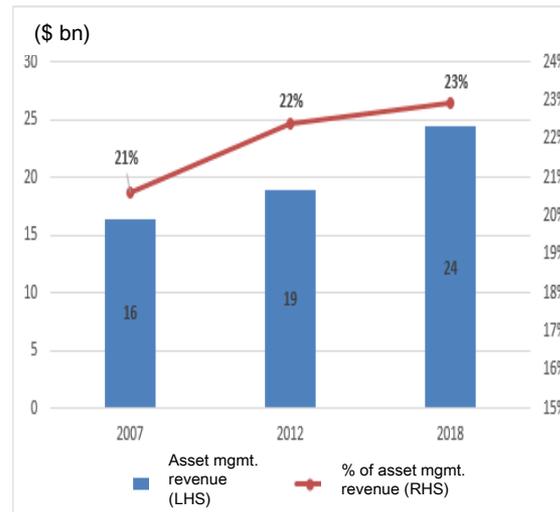
Revenue Structure in Korea's Securities Industry

- ❖ **Investment banking continues to increase its share domestically and globally**
 - For the past decade, investment banking rose from 19% to 27% in global IBs, and 7% to 20% in Korean firms
- ❖ **Unlike global IBs, Korea's securities industry saw prop trading grow, asset mgmt slow down**
 - FICC in global IBs continued to fall, the share of Korea's **prop trading rose** (with increased volatility) thanks to the growing market in securities derivatives and repos
 - **Asset mgmt** revenues climbed in the US IBs, but **slowed down in Korea's securities industry**
 - Global IBs are earning more from PI, while Korea still **relies heavily on brokerage**

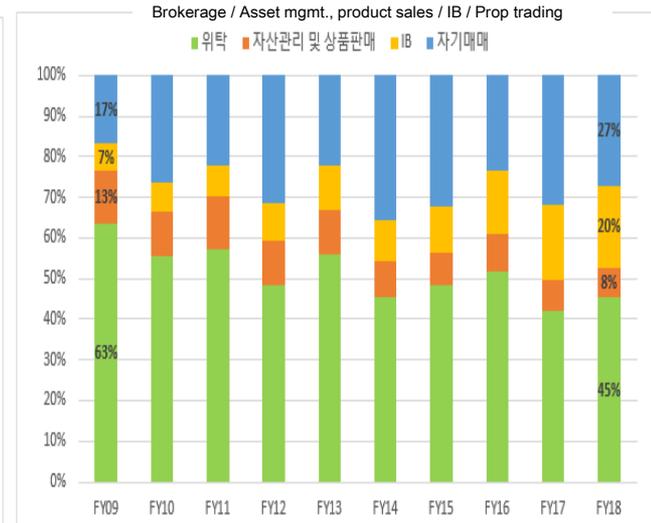
Global IBs' Revenue Structure



Asset Mgmt Revenue in 3 US IBs



Korean Securities Firms' Revenue Structure



Source: Coalition, S&P Global

Source: Website of each firm

Source: KOFIA

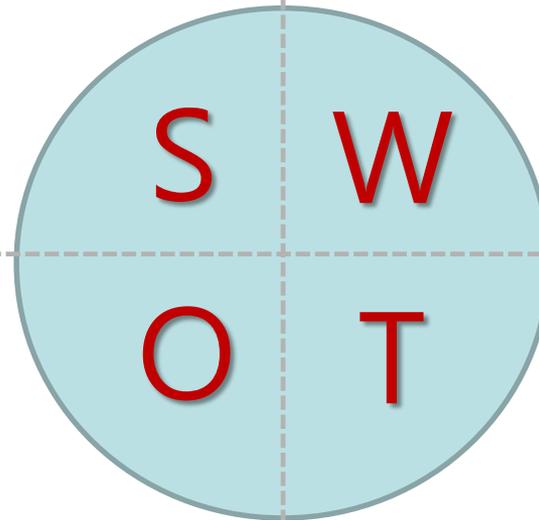
Diagnosis and Need for Digital Innovation

❖ Strengths

- Business diversification and improved profitability
- Superb human capital
- Flexible organization structure

❖ Weakness

- Undiversified sales channels
- Lack of investment in ICT
- Lack of differentiation



❖ Opportunities

- Rising demand for risk capital, asset management
- Growth in New Southern markets
- Abundant digital service experience

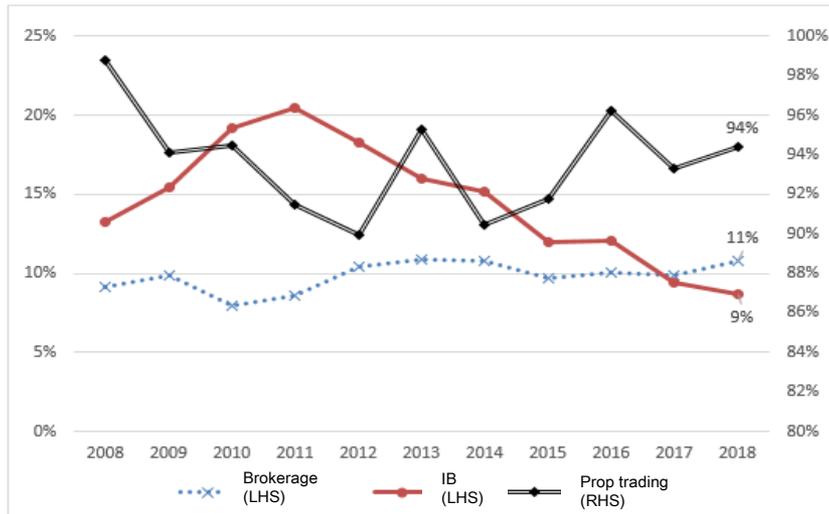
❖ Threats

- ICT firms' entry to the industry
- Lowered industry barrier
- Tougher regulation on sales activity

Business Efficiency

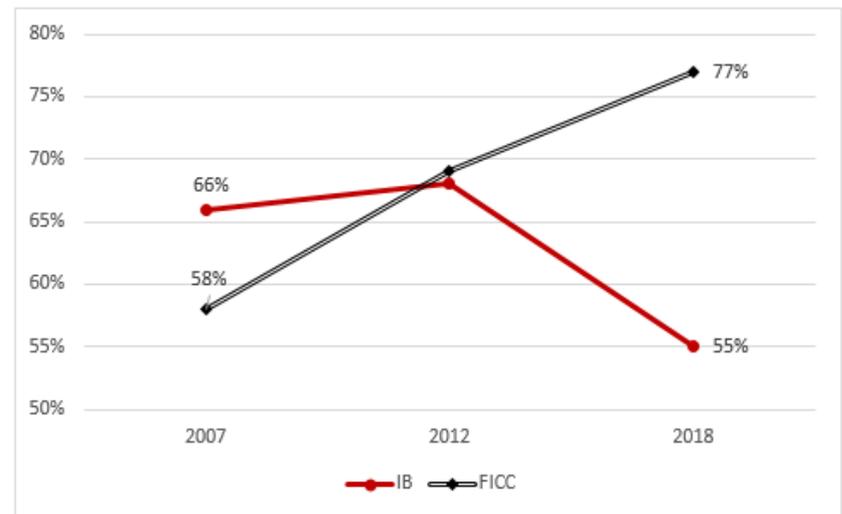
- ❖ **Efficiency in IBs improved both in Korea and the US, with lowered prop trading efficiency**
 - **Cost-income ratios continued to fall in Korean IBs**, as well as in global IBs
 - **Efficiency in prop trading slightly fell** in Korea and in the US
 - Efficiency in Korea's brokerage business also declined slightly
- ❖ **Growing needs to improve efficiency, especially in prop trading and brokerage**
 - Efficiency improvements are needed in the areas of brokerage and trade execution, e.g., **advanced trading platforms, automated middle and back office operations, digital-based overseas expansion, NFTF asset mgmt services**, etc.
 - An **agile corporate culture based on digital leadership** is essential to company-wide efficiency improvement

Korean IBs' Cost-Income Ratio by Business Area



Source: KOFIA, Average of Korea's seven largest securities firms

US IBs' Cost-Income Ratio by Business Area



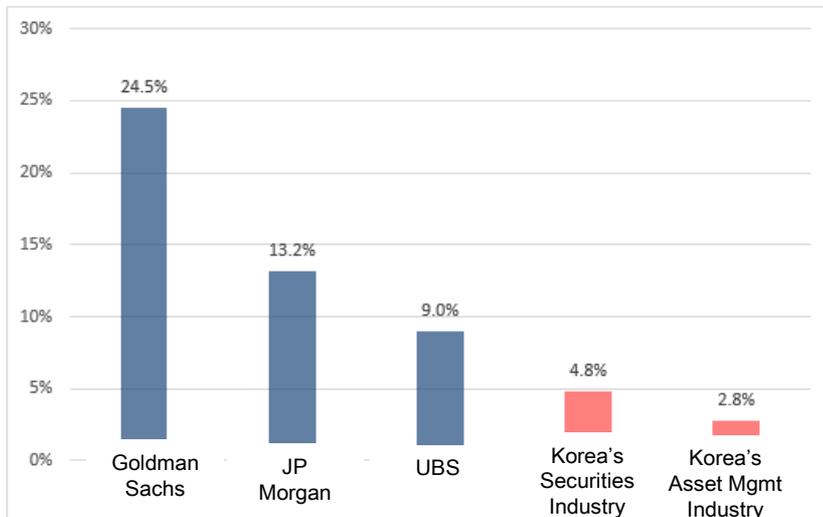
Source: Website of each firm

ICT Investment

- ❖ **ICT workforce takes up a remarkably low proportion in Korea's securities industry, compared to global IBs**
 - ICT workforce represents 10% to 25% of employment in Goldman Sachs, JP Morgan, UBS, and other global players
 - The portion of ICT workforce drops to 3% to 5% in Korea's securities firms and asset management companies, with most of the workforce working at non-core areas such as security, computer facilities, etc.

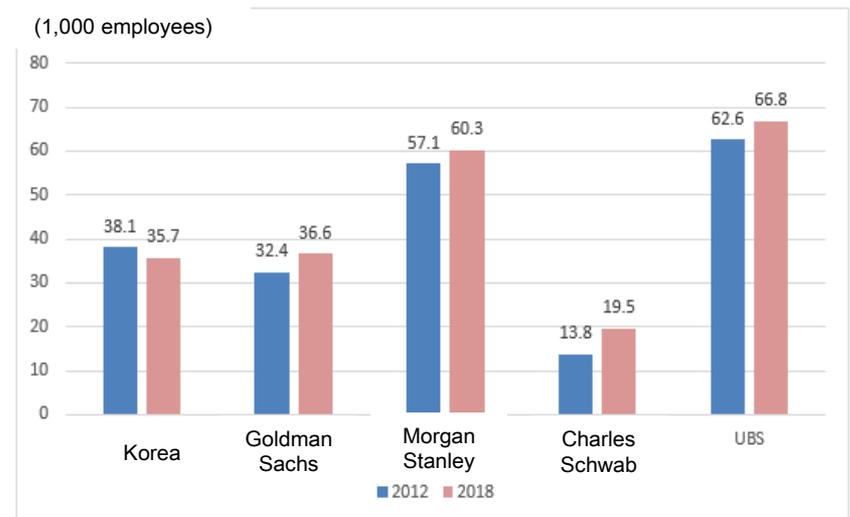
- ❖ **Unlike in global IBs, the number of staff slightly fell in Korea's financial investment industry**
 - Global IBs have steadily increased their employment, in particular, ICT and asset management workforce
 - No. of staff increased 41% (Charles Schwab), 13% (Goldman Sachs), 7% (UBS), 6% (Morgan Stanley) from 2012
 - Korea's downsizing could have resulted from their reduction in the number of physical branches

% of ICT Workforce



Source: Bank of Korea, Medici research, as of 2017

No. of Employees



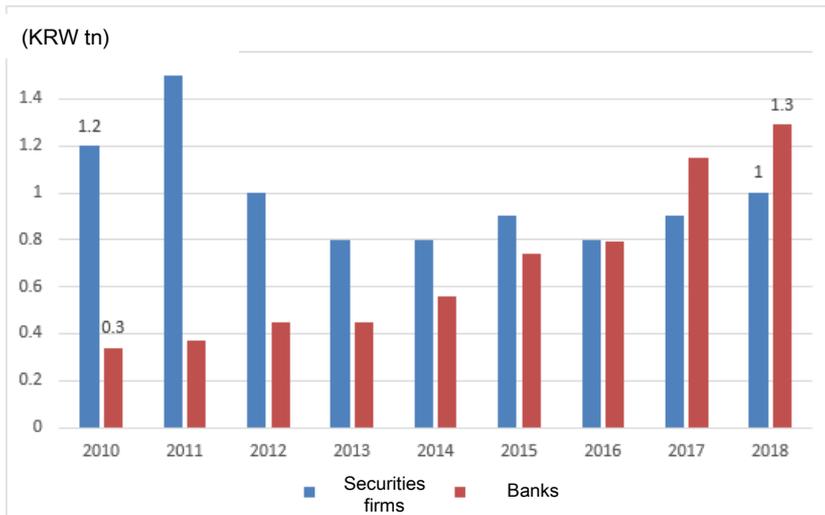
Source: FSS, website of each firm

Sales Channels

- ❖ **Revenues from financial product sales stagnated in financial investment firms, unlike banks**
 - Revenues from asset mgmt and sales of financial products stagnated due to the reduction in physical branches and declining fund distribution fees
 - Securities firms' asset mgmt revenues: KRW 1.2tn ('10) → KRW 1.0tn ('18)
 - Banks' trust revenues: KRW 0.3tn ('10) → KRW 1.3tn ('18)

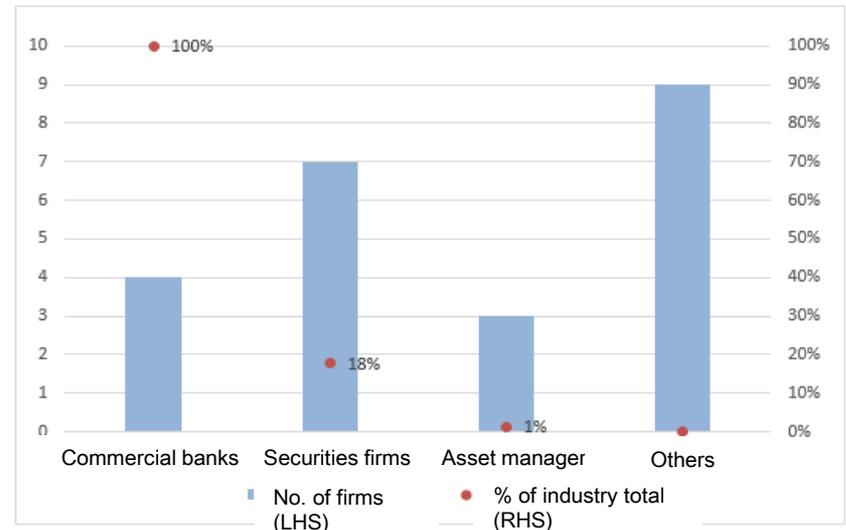
- ❖ **Need to increase NFTF, direct sales solutions such as robo advisors, etc.**
 - Banks, asset managers, and fintech firms invest more and more in NFTF asset mgmt. channels such as robo advisors
 - Securities firms show relatively low interest in NFTF channels
 - Only 18% and 1% of securities firms and asset managers, respectively, opt for robo advisors

Asset Mgmt Revenues in Securities Firms and Banks



Source: KOFIA, FSS

Participation in Robo Advisor Testbed in Korea

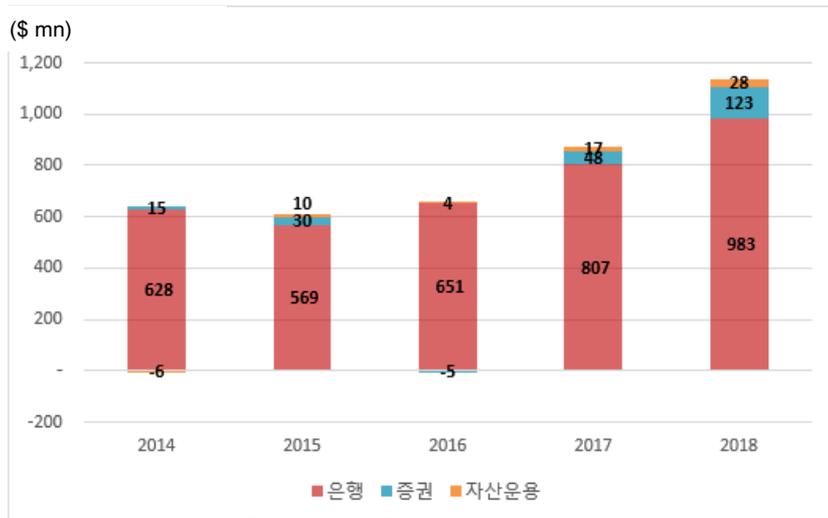


Source: KOSCOM

Overseas Expansion

- ❖ **Aiming for revenue diversification, financial investment companies are aggressively expanding to Asian emerging markets, but their digital strategies falling short of those of banks'**
 - As of 2018, profits from overseas branches in securities firms and asset managers increased to \$0.12bn and \$0.03bn, or 3.9% and 5.7% of total profits, respectively, but their profitability falling far short of banks' \$0.98bn or 11.5%
 - During the same period, Korean banks **achieved high profitability in NFTF account opening and lending services** in AEM
- ❖ **Need to expand digital strategies in AEM, such as NFTF asset mgmt., mobile brokerage services**
 - AEMs such as China, India, Vietnam, Indonesia, etc. with **many young customers** in their 20s to 30s, and **a high share of mobile savvy clients** are expected to have high demand for NFTF capital market services
 - NFTF asset mgmt services via robo advisors, and mobile stock trading such as MTS could be promising

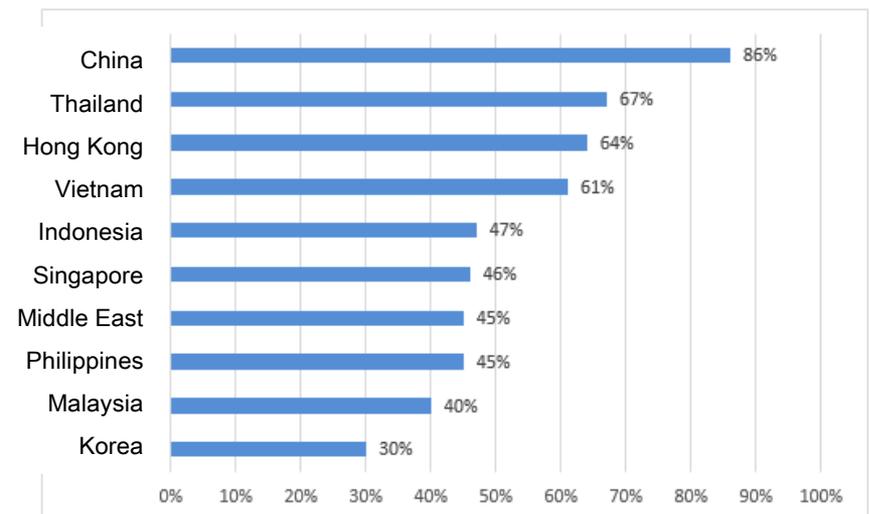
Profits from Overseas Operations



Source: FSS

Banks / Securities firms / Asset managers

% of Clients with Mobile Payment and Settlement Experience



Source: Statista, Bank of Korea, as of 2018

Digital-based New Business

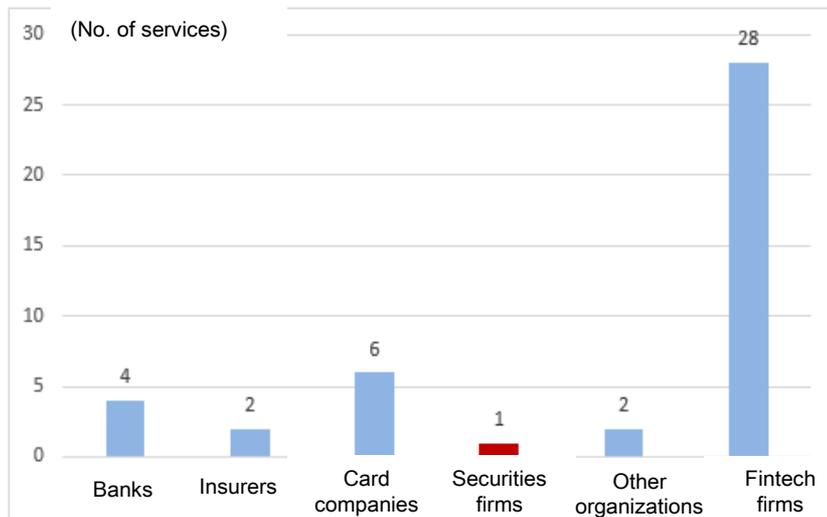
❖ Financial investment companies lack interest in innovative financial services

- As part of fintech facilitation efforts, Korea's government unveiled a regulatory sandbox scheme offering special provisions and exclusive operating rights
- As of end-September 2019, the scheme designated a total of 42 innovative financial services, of which only one, a small-sum investment service, is from the securities industry, showing the industry's lack of interest in this area compared to other financial sectors such as banks, insurers, card companies, etc.

❖ Korea's financial investment industry needs to nurture capital market-focused fintech unicorns and thus improve the industry's competitiveness

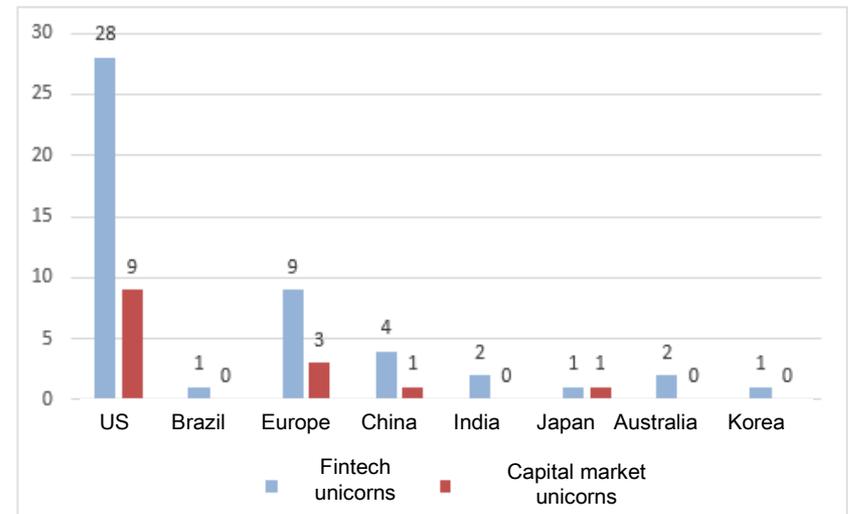
- More and more fintech unicorns emerged in the capital market segment such as trade execution, data analysis, etc., e.g., 28 in the US and 9 in Europe
- Fintech unicorns are operating in Asia as well, including four in China, two in India, and one in Korea

Designated Innovative Financial Services by Sector



Source: FSC, joint participation counted as separate cases

Size of Fintech Unicorns by Market



Source: CB Insights, as of end-June 2019

Fintech Unicorns Worldwide (14 in capital markets out of total 48 unicorns)

US

Stripe
 Coinbase
 Carta
 Affirm
 Sofi
 Oscar
 Brex
 Lemonade
 Circle
 Plaid
 Dataminr
 Bill.com
 Gusto
 ROOT
 Marqueta
 Robinhood
 Credit Karma
 AvidXchange
 Kabbage
 Clover
 Chime
 Hippo
 Symphony
 TradeShift
 Avant
 DevotedHealth
 Zenefits
 Toast
 Nubank

Europe

Transferwise (UK)
 Checkout.com(UK)
 Revolut (UK)
 iValua (UK)
 Monzo (UK)
 oakNorth (UK)
 Greensill (UK)
 N26 (Germany)
 Klarna (Sweden)

Asia

LU.com (China)
 TDW.cn (China)
 CGTZ.com China)
 Tongdun.cn (China)
 Liquid (Japan)
 Toss (Korea)
 PolicyBazaar (India)
 Paytm (India)

Australia

Airwallex
 Judobank

Capital Market Unicorns (2Q 2019)

Asset mgmt	Robinhood
Trade execution	Symphony, Circle, Coinbase, Liquid
Corporate/data analysis	Tradeshift, Carta, Plaid, Dataminr, iValua, oakNorth, Greensill, Tongdun
Others	Zenefits

For Digitalization, Korea's Securities Industry Needs to...



1

Digital Innovation Strategies of Global IBs

2

Diagnosis and Suggestions for Korea

3

Future Directions for Korea

Digital Innovation Strategies of Korea's Financial Investment Industry



Strengths

Capital accumulation via earnings
Superb human resources
Flexible organization structure

Weaknesses

Lack of investment in ICT
Lack of distribution channels
Lack of differentiation

Opportunities

Rising asset mgmt. demand
Growth in New Southern markets
Abundant digital service experience

SO Strategies

- ✓ Agile corporate culture
- ✓ Cost reduction via ICT investment

WO Strategies

- ✓ NTF asset mgmt platforms
- ✓ Digital-based overseas expansion

Threats

ICT firms' entry into securities business
Lower entry barriers to the industry
More regulation on business activities

ST Strategies

- ✓ More PI in fintech
- ✓ Strategic alliance via open labs

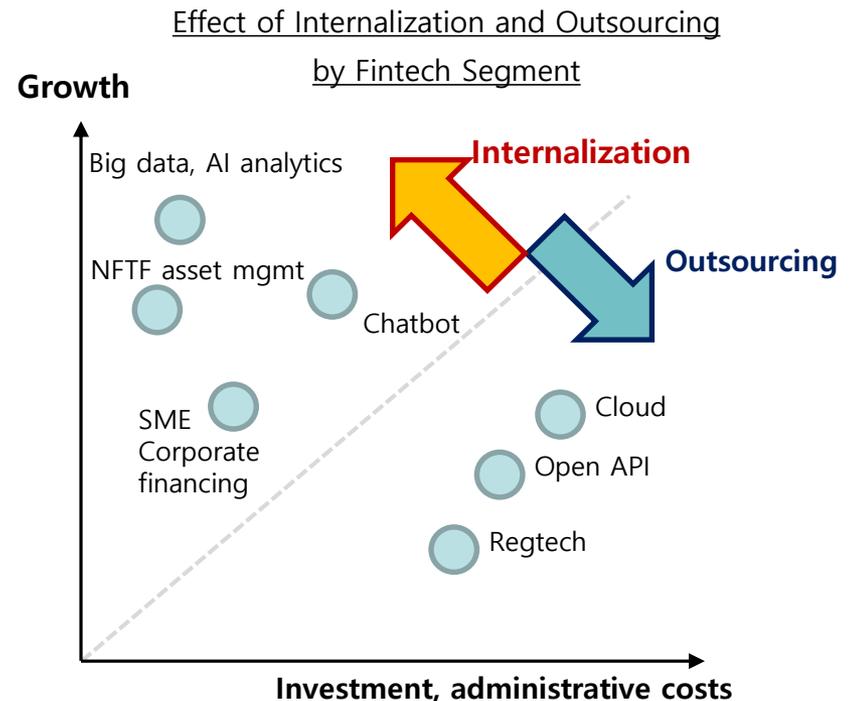
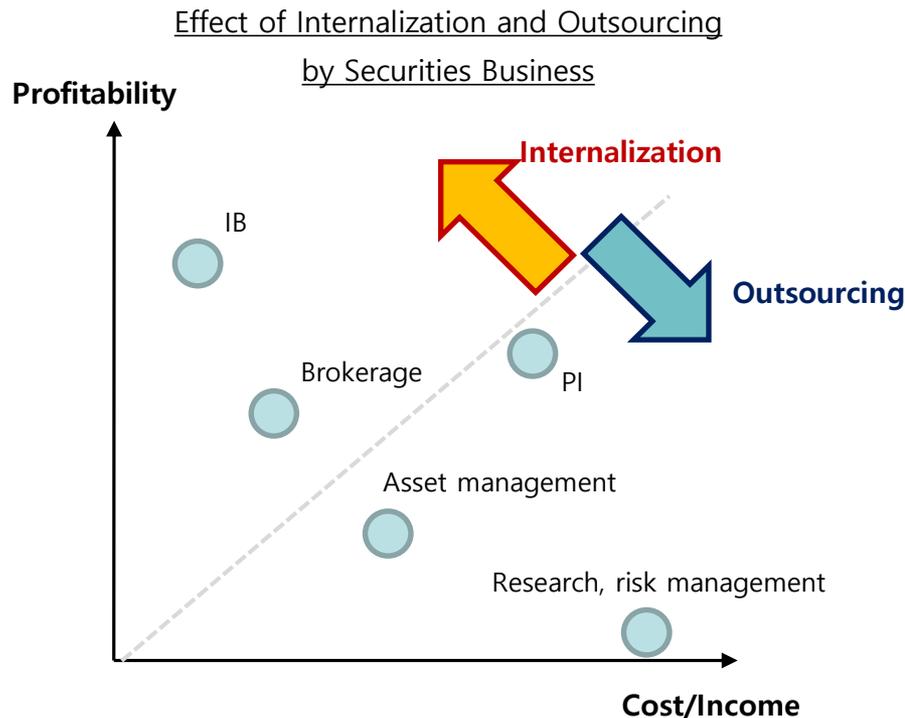
WT Strategies

- ✓ Outsourced fintech technology
- ✓ More investment in regtech

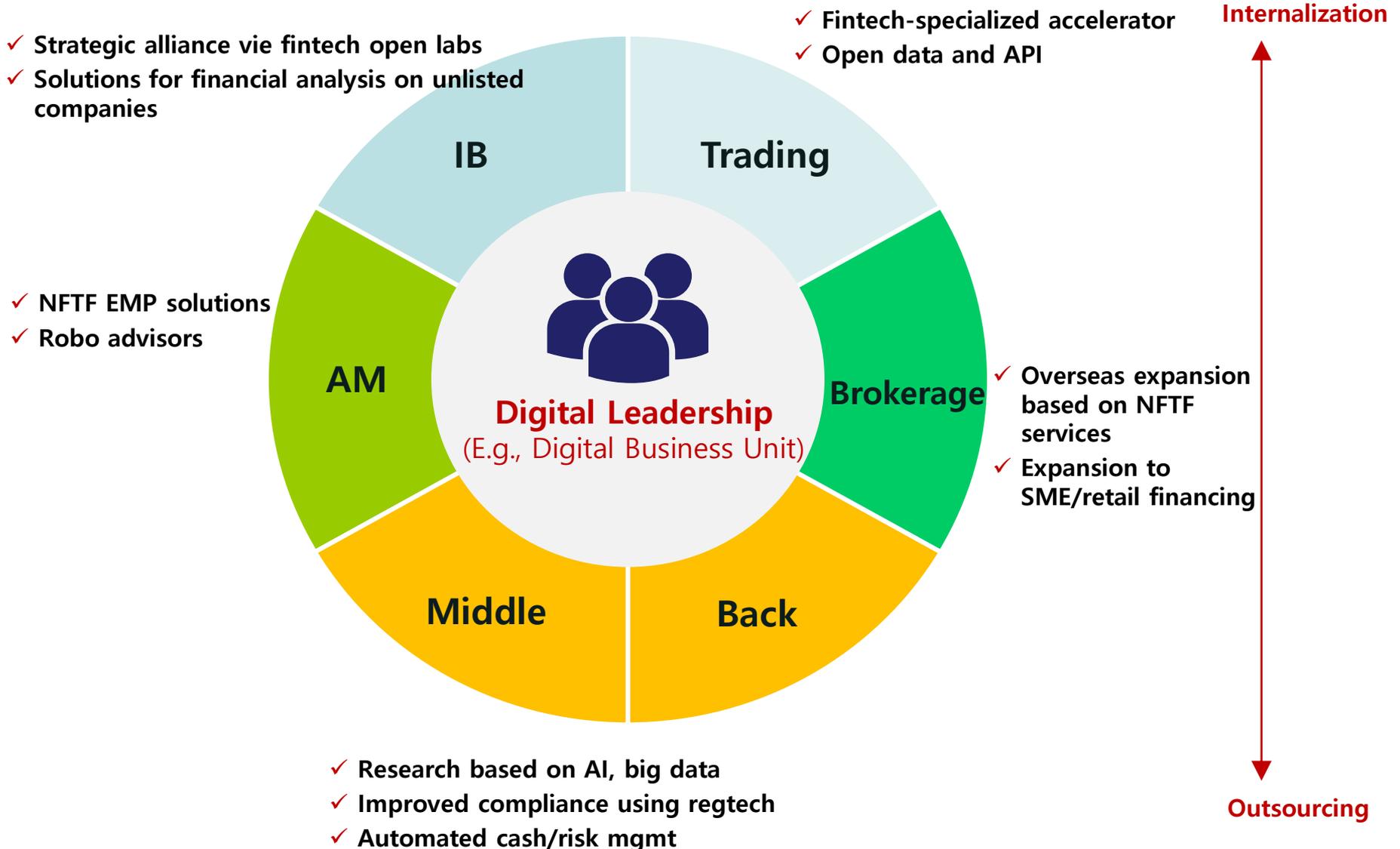
Internalization and Outsourcing of Fintech Technologies

❖ Secure digital competitiveness via M&A and outsourcing of fintech technologies

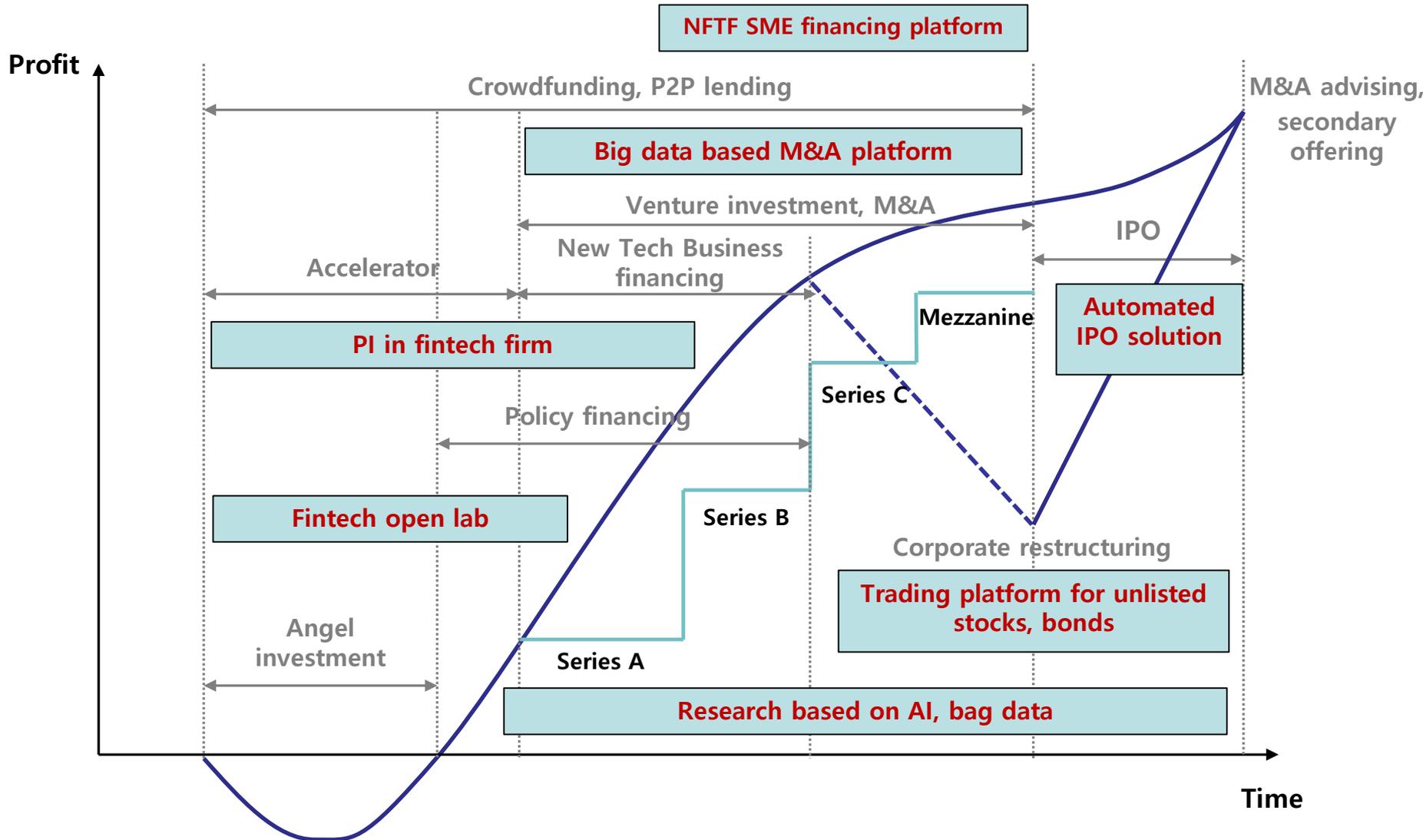
- Internalize **functions closer to the core**, outsource **peripheral functions**
 - E.g., call center, facility management, IT security, accounting, etc.
- Outsource **commercialized IT infrastructure or services requiring specialized IT workforce**
 - E.g., cloud service, open API, regtech, etc.
- **Internalize** via equity investment or M&A for areas with **great growth potential and convergence synergy**
 - E.g., big data and AI analytics, NTF asset mgmt platforms, SME corporate financing, chatbots, etc.



Digital Strategies for Korea by Business Unit



Digital Strategies for Personalized, Lifecycle Fintech Services



Regulatory Improvement for Fintech Ecosystem

√ Allow for financial investment firms to act as an accelerator

√ Ease the restriction on equity investment in fintech firms

√ Improve the unreasonable calculation method for NCR risk levels

E.g., 1) Exclude LP investments made in the “New Technology Business Investment Association” GP from the calculation of risk levels

2) Ease the rule requiring higher risk levels for equity concentration

3) Improve the rule on risk levels required for privately placed corporate bonds

Enhance Global Competitiveness of Korea's Financial Investment Industry

Digital Innovation

Creative Destroyer

- ✓ Advance into new fintech business
(E.g., Non-face-to-face asset management, retail financing)
- ✓ Enhanced efficiency via fintech M&A
- ✓ More investment in ICT workforce

Partner of Innovative Growth

- ✓ Wider role to play as fintech accelerator
- ✓ Expand overseas with startups
- ✓ Strategic partnership via outsourcing of fintech technologies, M&A advising, etc.

Ecosystem Creator

- ✓ Support for fintech firms providing personalized services for customer lifecycle management
- ✓ Open data platform
- ✓ Improved regulatory infrastructure