MARKET WATCH

Korea Venture Investment Corporation
Semi-Annual Journal

KVIC Korea Venture Investment Corp

Disclaimer

MARKET WATCH

1H 2020 VOL.03

Korea Venture Investment Corp.'s Semi-Annual Journal

AN INTRODUCTION TO KVIC & KOREA FUND OF FUNDS

Market Watch

Fund Manager : Korea Venture Investment Corp.

Korea Venture Investment Corp. (KVIC) was established with the aim of stimulating investment for the growth and development of small and medium-sized enterprises (SMEs) and startups. KVIC serves as a general partner (GP) of government-backed funds of funds and direct co-investment funds pursuant to the Act on Special Measures for the Promotion of Venture Businesses.

A Glimpse into KVIC History & Milestones

2019	September	The Ministry of Land, Infrastructure and Transport became a Limited Partner (LP) in Korea Fund of Funds (KFoF).
	January	The Ministry of Oceans and Fisheries became an LP in KFoF.
2018	December	KVIC introduced new base bylaws for investee funds.
	August	Job Creation Scale-Up Fund was formed with USD 44 million in capital commitments.
	August	Hana-KVIC Fund was created with USD 95 million in capital commitments.
	June	Cumulative capital commitments to KFoF reached USD 3,455 million.
2017	August	Cumulative commitments to KFoF totaled USD 2,591 million.
	May	The Ministry of Education participated as an LP in KFoF.
	April	The Ministry of Environment became an LP in KFoF.
2016	October	KVIC launched Venture Investment Comprehensive System (VICS).
	June	Cumulative commitments to Foreign VC Investment Fund reached USD 864 million.
2015	August	KVIC opened its Korea Venture Investment Center in Singapore (KVIC Singapore Branch).
	May	Cumulative commitments to KFoF totaled USD 1,727 million.
	January	Korea Sports Promotion Foundation (KSPO) became an LP in KFoF.
2014	June	KVIC opened its Korea Venture Investment Center in China (KVIC China Branch).
2013	August	The Ministry of Health and Welfare became an LP in KFoF.
	August	KVIC launched its Korea Venture Investment Center in the United States (KVIC U.S. Branch).
2012	June	SME M&A Matching Fund was formed with capital commitments of USD 26 million.
2011	December	Korea Angel Matching Fund No. 1 was set up with USD 9 million in capital commitments.
	May	The Ministry of Employment and Labor participated as an LP in KFoF.
2010	August	The Korean Film Council joined as an LP in KFoF.
	June	The Korea Communications Commission became an LP in KFoF.
2009	September	Cumulative commitments to KFoF stood at USD 864 million.
2006	June	The Ministry of Culture, Sports and Tourism participated as an LP in KFoF.
	May	The Korean Intellectual Property Office (KIPO) joined as an LP in KFoF.
2005	June	KFoF, a government VC program, was launched, and KVIC was formed for the purpose of managing KFoF.
	June	KVIC was designated as a GP of KFoF.
2004	December	The legal basis of KFoF formation and operation was laid down by amendments to the Act on Special Measures for the Promotion of Venture Businesses.
	December	The government announced measures to vitalize startups.
	July	The government unveiled its comprehensive initiative to strengthen the competitiveness of SMEs.

Organizational Structure

KVIC has 6 divisions, 1 office, 14 teams and 3 offshore branches (as of December 31, 2019).

Figure 1

KVIC Organizational Chart
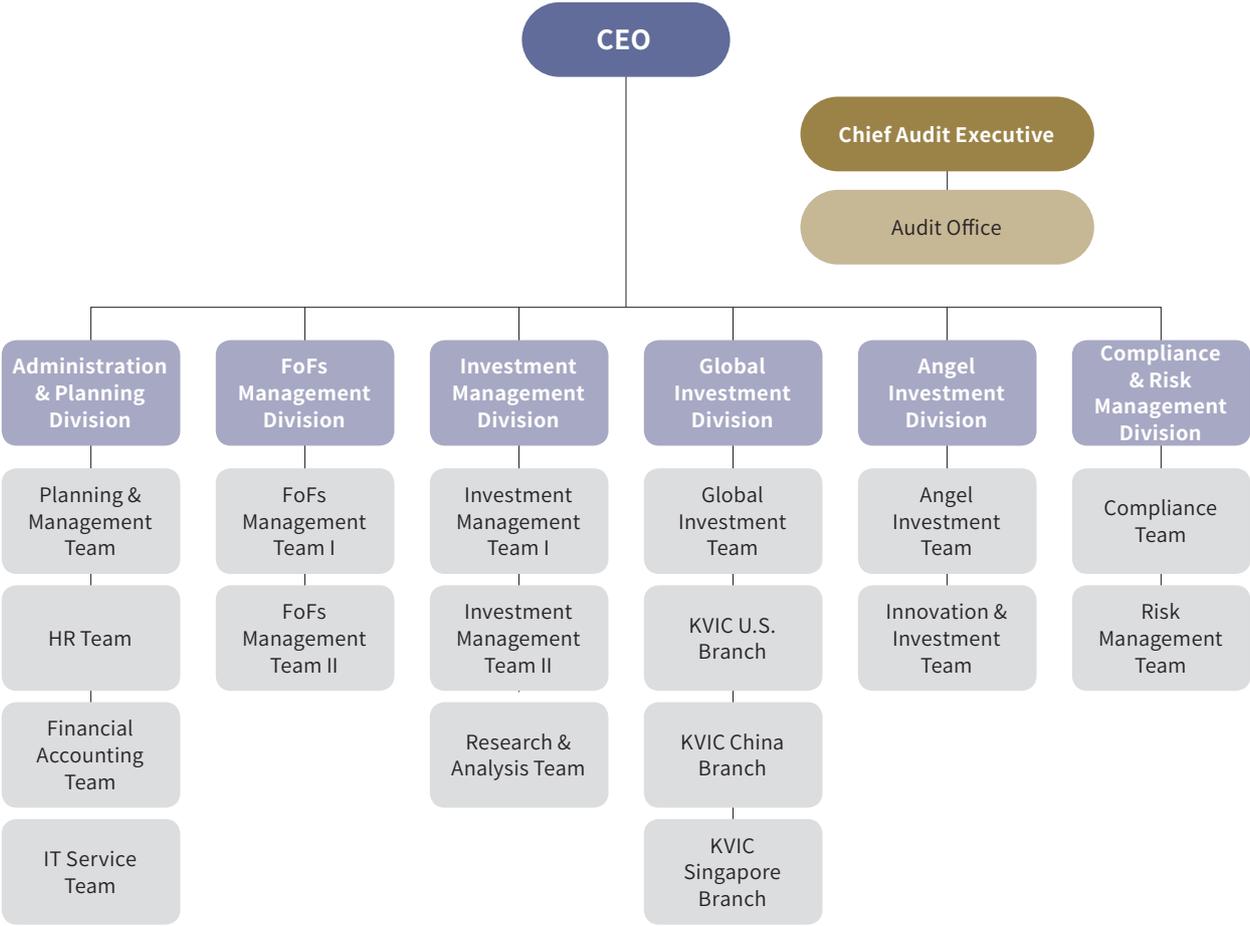
Source: KVIC

Korea Fund of Funds

Korea Fund of Funds (KFoF) is a government-backed fund of funds that invests in venture capital (VC) funds managed by private VC firms. Investors or limited partners (LPs) in KFoF are mainly government agencies that have committed capital for venture investments catering to their policy needs. The underlying VC funds invest in small and medium-sized companies (SMEs) and venture companies, playing an important part in creating a venture ecosystem.

Fund Overview

Date of Formation	July 15, 2005
Fund Size	USD 3,905 million (as of December 31, 2019)
Size of Underlying Funds	USD 21,473 million (cumulative, as of December 31, 2019)
Fund Term	30 years (2005-2035)
LPs (12 government agencies)	The Korea SMEs and Startups Agency; Ministry of Culture, Sports and Tourism; Korean Intellectual Property Office; Korean Film Council; Ministry of Science and ICT (formerly called Ministry of Science, ICT and Future Planning); Ministry of Employment and Labor; Ministry of Health and Welfare; Korea Sports Promotion Foundation; Ministry of Environment; Ministry of Education; Ministry of Land, Infrastructure and Transport*; Ministry of Oceans and Fisheries*
GP	KVIC

* The Ministry of Land, Infrastructure and Transport, and the Ministry of Oceans and Fisheries are the new LPs that have got into KFoF in 2019.

Fund Structure
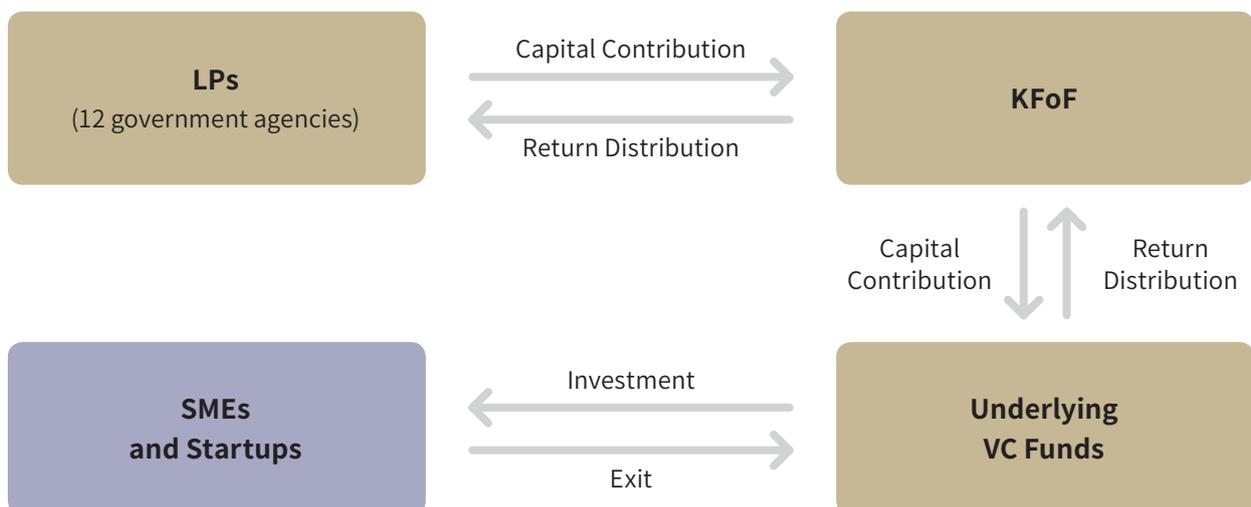
Other Funds of Funds

Foreign VC Investment Fund

Foreign VC Investment Fund (FVCIF) was first set up to invest in offshore VC funds managed by non-Korean VCs under the Measures to Develop a Virtuous Cycle in the Venture–Startup Funding Ecosystem, unveiled by the government on May 15, 2013. Its mandate is to help local SMEs and startups attract global investors and expand overseas.

	FVCIF I	FVCIF II
Date of Formation	October 4, 2013	July 15, 2016
Fund Size	USD 117 million (as of December 31, 2019)	USD 343 million (as of December 31, 2019)
Size of Underlying Funds	USD 2,544 million (cumulative, as of December 31, 2019)	
Fund Term	21 years (2013-2034)	19 years (2016-2035)
LPs	KFoF/KVIC	KFoF/KVIC
GP	KVIC	

Angel Fund of Funds

Established in 2015, the Fund invests solely in angel funds that concentrate on startup or early-stage small businesses.

	Fund Profile
Date of Formation	November 18, 2015
Fund Size	USD 64 million (as of December 31, 2019)
Size of Underlying Funds	USD 99 million (cumulative, as of December 31, 2019)
Fund Term	20 Years (2015-2035)
LPs	KFoF/KVIC
GP	KVIC

Hana-KVIC Fund

This Fund of funds has officially launched its operations in 2019, primarily financed by Hana Bank, with the aim of creating a venture ecosystem and nurturing unicorns. It makes indirect investments in SMEs and startups through its underlying funds.

	Fund Profile
Date of Formation	August 21, 2018
Fund Size	USD 95 million (as of December 31, 2019)
Size of Underlying Funds	USD 192 million (cumulative, as of December 31, 2019)
Fund Term	10 years (2018-2028)
LPs	Hana Bank/KFoF/KVIC
GP	KVIC

KEPCO Fund

The Fund is intended to foster the growth of the power and energy sectors and to identify and nurture not only SMEs and startup companies related to ICT applications in the power and energy sectors but also those in Gwangju and South Jeolla Province (Jeonnam region) in which the Energy Valley is located. The primary LP or investor in the Fund is Korea Electric Power Corporation (KEPCO).

	Fund Profile
Date of Final Close	August 19, 2015
Fund Size	USD 45 million (as of December 31, 2019)
Size of Underlying Funds	USD 76 million (cumulative, as of December 31, 2019)
Fund Term	10 years (2015-2025)
LPs	KEPCO/KFoF/KVIC
GP	KVIC

Other Funds

Other funds managed by KVIC include the Fund of Funds for Industrial Technology Commercialization (USD 22 million in assets under management or AUM), and KoFC-KVIC I and II (USD 104 million and USD 92 million in AUM, respectively). All the job creation funds, KoFC-KVIC I and II, are currently liquidating their investments.

Co-Investment Funds

Angel Investment Matching Fund

An angel investment matching fund in Korea refers to a public-private co-investment fund that is specially designed to nurture angel investors and angel clubs, thereby laying the foundation for startup creation and helping startup or early-stage companies fill their equity gaps. As of December 31, 2019, there were 16 angel investment matching funds with about USD 166 million in aggregate AUM.

KFoF		Local Governments, etc

Capital Contribution → ← Capital Contribution

| Angel Investment Matching Fund (GP: KVIC) | ← Co-investment Application | Angel Investors |

Co-investment ↓ ↓ Investment

Startup and Early-Stage Companies
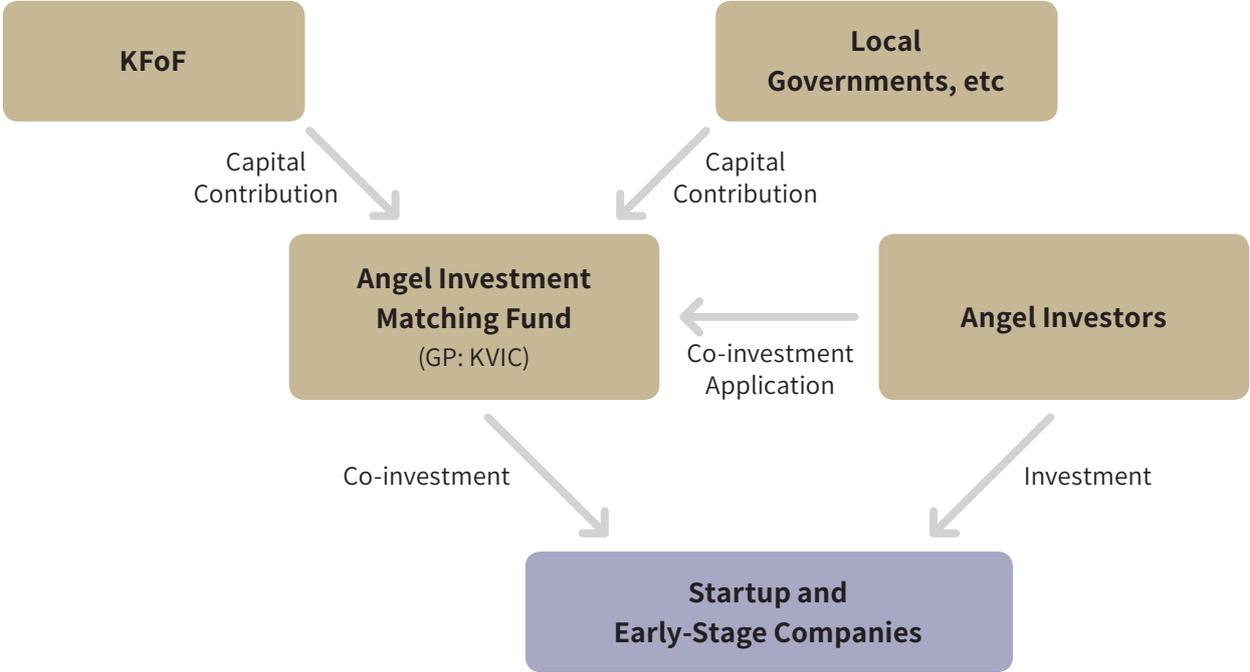
Job Creation Scale-Up Fund

In August 2018, the Fund was formed for the first time in Korea to co-invest alongside institutional investors in SMEs and scale-up companies that are designated as a good job creator.

Fund Profile	
Date of Formation	August 16, 2018
Fund Size	USD 44 million (as of December 31, 2019)
Fund Term	8 years (2018-2026)
LPs	KFoF/KVIC
GP	KVIC

Job Creation Scale-Up Fund (GP: KVIC)

❸ Approval for Co-investment

Institutional Investors*

❷ Co-investment Application

❹ Co-investment

❶ Search for Deals, and Investment

SMEs and Scale-ups
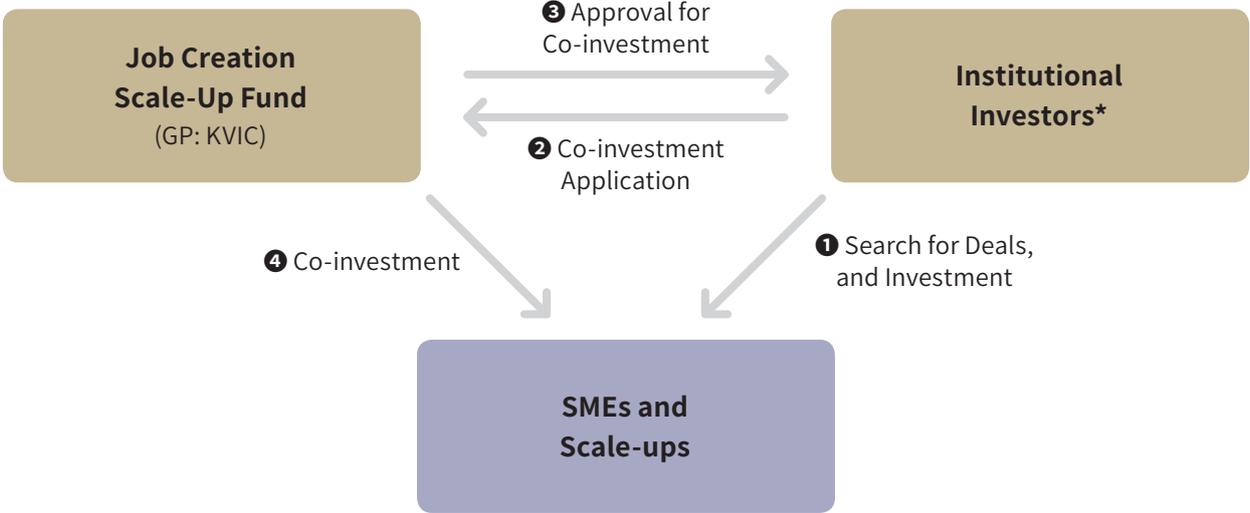
* Institutional investors that are qualified to manage small and medium enterprise establishment investment partnerships, Korea Venture Funds (KVFs), new technology venture investment partnerships, and private equity funds (PEFs).

2019 KOREAN VC INDUSTRY AT A GLANCE

Market Watch

This report does not include PE investment data and thus there may be some discrepancies between the overall VC market's performance and VC fund performance presented below.
The analysis results are based on December 2019 data.
For all figures in this report, the following USD/KRW conversion rate as of December 31, 2019 can be used for reference: USD 1=KRW 1,157.8.

Venture Capital Funds in Korea

Fundraising

Over the past five years, capital committed to venture capital (VC) funds[1] in South Korea has increased constantly, reaching its all-time high of USD 4,164 million in 2018. The year 2019 saw 170 new VC funds created with USD 3,550 million in aggregate committed capital. The number of new funds rose, but the total capital committed was down from a year ago.

Figure 1

5-year Trends in VC Fund Creation

Source: Korea Venture Capital Association (KVCA)
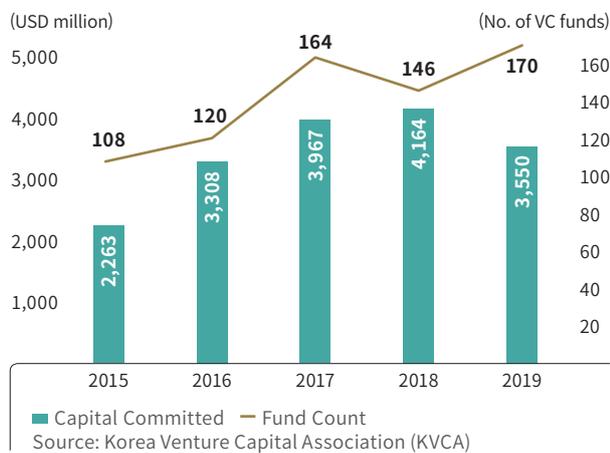
Figure 2

SME Establishment Investment Partnerships and KVFs vs. New Technology Venture Investment Partnerships (expressed as a percentage of the total capital committed to investment vehicles in the VC market)
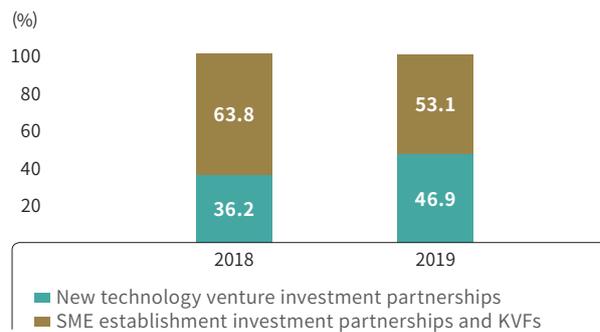
Table 1

Major Investment Vehicles in the Korean VC Market

Vehicle	SME Establishment Investment Partnership	KVF	New Technology Venture Investment Partnership
Applicable Law	Support for Small and Medium Enterprises Establishment Act	Act on Special Measures for Venture Businesses	Specialized Credit Finance Business Act
GP	SME establishment investment company, new technology venture investment company, limited company, limited liability company, etc.	SME establishment investment company, new technology venture investment company, limited company, limited liability company, etc.	New technology venture investment company
Competent Authority	Ministry of SMEs and Startups (MSS)		Financial Services Commission (FSC)

1) Major investment vehicles in the Korean VC market can be divided largely into small and medium enterprise (SME) establishment investment partnerships, Korea Venture Funds (KVFs) and new technology venture investment partnerships. The Ministry of SMEs and Startups (MSS) is the competent authority for the first two types of VC funds, and the Financial Services Commission (FSC) is the competent authority for the third type of VC funds. Each of the competent authorities collates and analyzes VC data, and produces VC statistics annually. Among the three types of VC funds, SME establishment investment partnerships and KVFs collectively accounted for 63.8% of the total committed capital in 2018, and 53.1% in 2019, exhibiting a slight year-over-year (YoY) decline. Still, however, those VC funds are playing a dominant role in the local VC market. This report, therefore, defines SME establishment investment partnerships and KVFs as VC funds. It has been prepared based on VC data from the Korea Venture Capital Association (KVCA).

Investments

Investments by VC Funds

Korean VC funds collectively invested USD 3,695 million in 1,608 companies during 2019, showing growth in both the amount invested and the number of investees when compared to the previous year. The average investment per company stood at USD 2.3 million, up slightly from USD 2.12 million a year earlier.

Figure 3

5-year Trends in Investments by VC Funds

■ Deal Value — Number of Investees
Source: KVCA / * The numbers above are based on data available as of December 31, 2019.
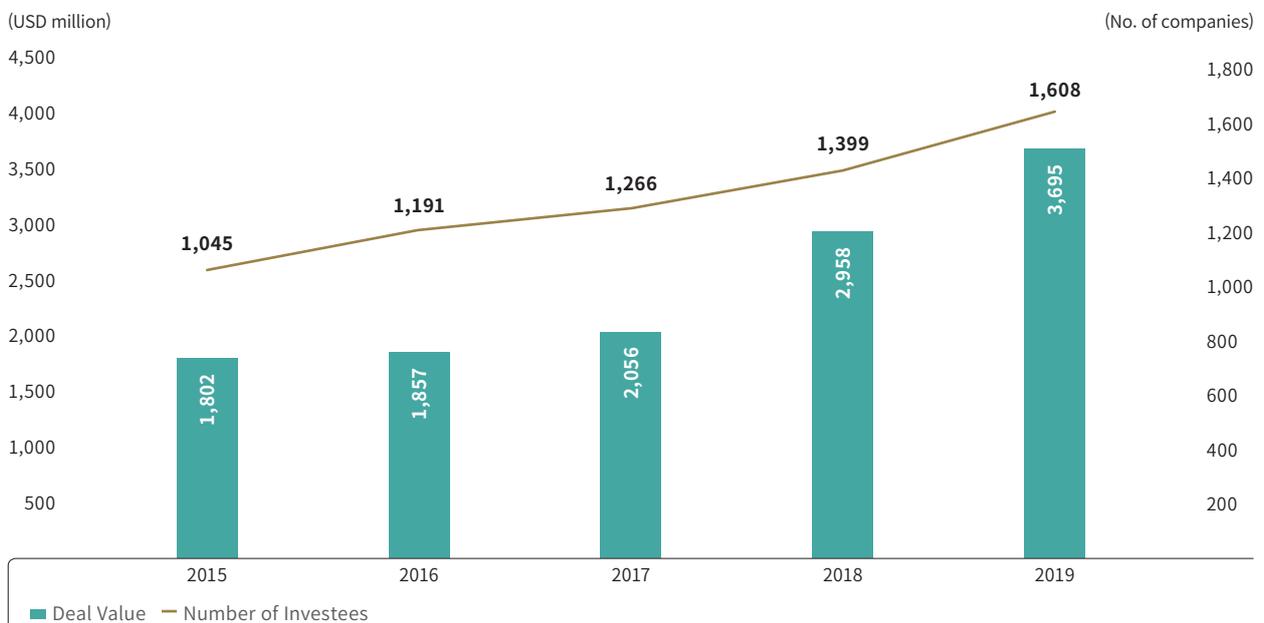
Deals by Stage and Industry
(January to December 2019)

Looking at VC deal activity in terms of deal value by stage[2] in 2019, VC funds deployed USD 1,525 million in expansion-stage companies (41.3% of the total deal value), USD 1,201 million in early-stage companies (32.5%) and USD 969 million in later-stage companies (26.2%). The breakdown of the number of investees by stage showed that early-stage, expansion-stage and later-stage companies constituted 44.3%, 34.1% and 21.6% of all investees, respectively.

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2) Stages of a startup are determined based on the duration between the date on which a company is founded and the time capital is invested in the company. This indicates information about what stage an investee company has raised capital from a VC fund (early stage: less than 3 years/expansion stage: 3-7 years/later stage: more than 7 years).

Figure 4

2019 Deal Activity by Stage - VC Funds

Later Stage **26.2**%

Early Stage **32.5**%

Expansion Stage **41.3**%

Deal Value

Later Stage **21.6**%

Early Stage **44.3**%

Expansion Stage **34.1**%

Number of Investees
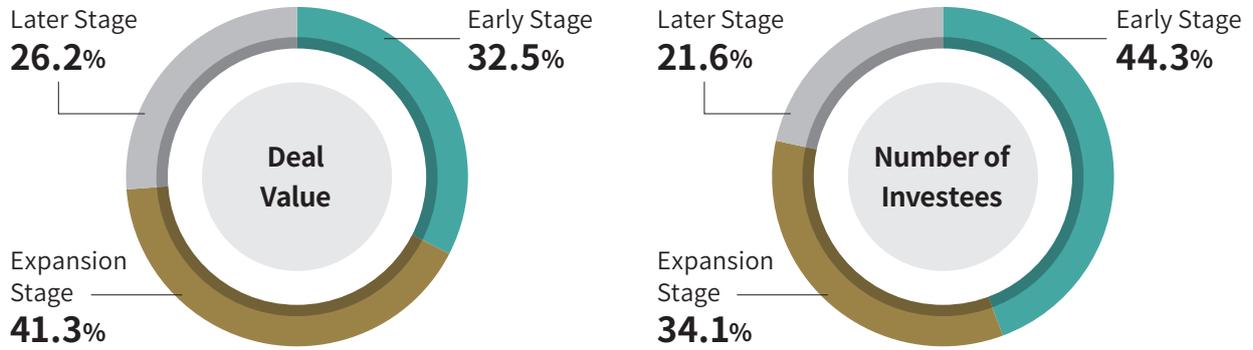
Source: KVCA

Figure 5

2019 Deal Activity by Industry - VC Funds

Deal Value

Number of Investees

No	Sector	% of Total
1	Biotech/Healthcare	25.8
2	ICT Services	24.4
3	Distribution/Services	19.0
4	Film and TV/Performing Arts/Recording	8.7
5	Other	8.2
6	Electrics/Machinery/Equipment	4.8
7	ICT Manufacturing	3.5
8	Chemicals/Materials	2.8
9	Game	2.8

No	Sector	% of Total
1	ICT Services	25.1
2	Distribution/Services	20.2
3	Biotech/Healthcare	16.9
4	Film and TV/Performing Arts/Recording	13.0
5	Other	7.0
6	Electrics/Machinery/Equipment	6.0
7	ICT Manufacturing	4.5
8	Game	3.7
9	Chemicals/Materials	3.5

Source: KVCA

Biotechnology/healthcare was the most active industry[3] for VC investments in 2019, attracting USD 953 million (25.8% of the total deal value), followed by ICT services with USD 902 million (24.4%) and distribution/services with USD 703 million (19.0%). For the number of investee companies broken down by industry, ICT services, distribution/services and biotechnology/healthcare represented 25.1%, 20.2% and 16.9% of all investees, respectively.

Industry*	Sub-Industry*
ICT Manufacturing	Semiconductor/other electronic components; computer/peripheral equipment; broadcasting and communications equipment; audio and video equipment
ICT Services	Communications; software; information services
Electrics/Machinery/ Equipment	Electrical equipment; general purpose machinery; transport equipment/parts; precision instruments
Chemicals/Materials	Chemical materials/products; rubber/plastics; metals; non-metallic minerals
Biotech/Healthcare	Medical devices; medical materials/pharmaceuticals; healthcare facilities/services
Film and TV/Performing Arts/ Recording	Publishing/broadcasting; audiovisual content; performing arts/exhibition/music
Game	Game software; sports/leisure
Distribution/Services	Wholesale and retail trade; transportation; accommodation/food services; education; professional services
Other	Food and beverages; textiles/clothing/leather; wood/paper/printing/furniture; energy/resources; construction; finance; real estate/renting and leasing; other

* KVCA and KVIC sort portfolio companies into 9 industries and 36 sub-industries, and collate data accordingly.

3) The industry classification above is based on the Korean Standard Industrial Classification published by Statistics Korea.

Exits

Exits by VC Funds

2019 saw 1,331 exits of VC-backed companies, aggregating to USD 2,006 million (including USD 1,159 million in initial investments and USD 846 million in returns) and delivering a 1.73x return. The initial investments exited and the number of companies exited went up by 5% and 0.2% YoY, respectively. However, the exit proceeds fell by 30% YoY, resulting in a decrease of 13% in the aggregate value of exits.

Figure 6

5-year Exit Trends

(USD million)

2015	2016	2017	2018	2019
1,796	1,700	1,552	2,313	2,006
1,126	1,256	1,199	1,328	1,331

(No. of companies)

■ Exit Value ── Number of Exited Companies
Source: KVCA / * The numbers above are based on data available as of December 31, 2019.
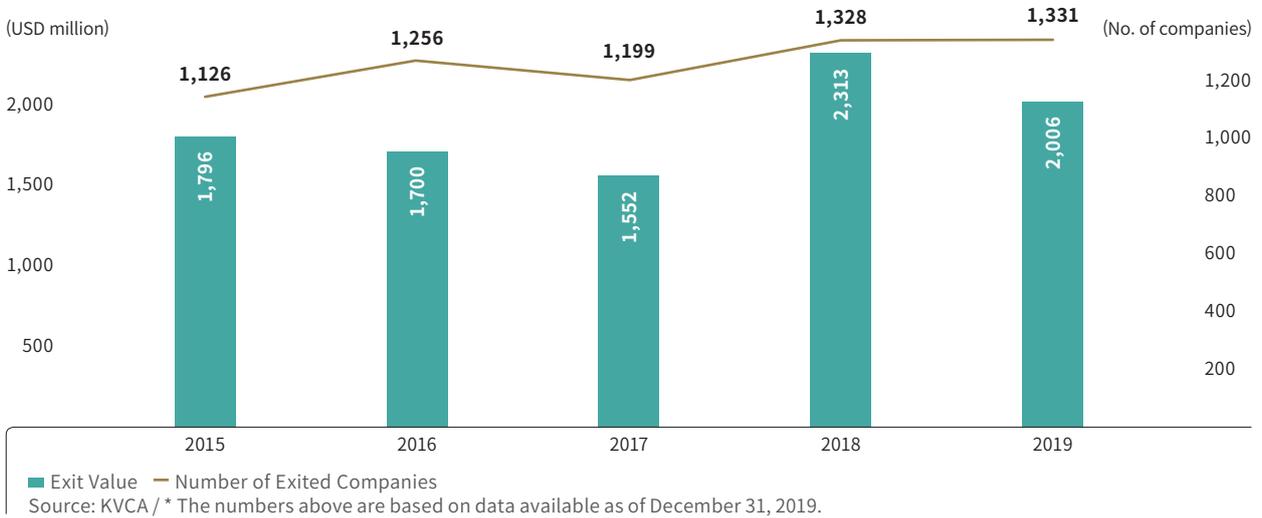
Exits by Route

Secondary stock sales and buybacks, and IPOs were the main exit routes for Korean VC funds in 2019, accounting for 37.3% (USD 748 million) and 36.7% (USD 736 million) of all exits, respectively.

Figure 7

Exits by Route
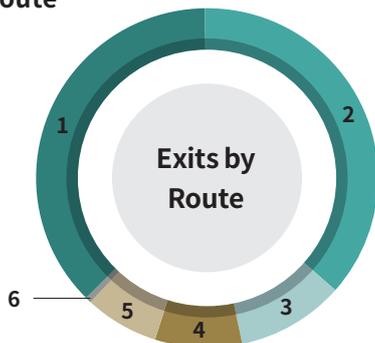
No	Sector	% of Total
1	Secondary sale and buyback-stocks	37.3
2	IPO	36.7
3	Project	10.2
4	Other	8.2
5	Secondary sale and buyback-bonds	7.0
6	M&A	0.5

Source: KVCA

KVIC

2019 KOREA FUND OF FUNDS:
Trends in Fundraising, Investments and Exits

Market Watch

This report is updated on a semi-annual basis and the findings presented here are based on December 2019 data.
For all figures in this report, the following USD/KRW conversion rate as of December 31, 2019 can be used for reference: USD 1=KRW 1,157.8.

Overview of Korea Fund of Funds

Korea Fund of Funds (KFoF) has raised USD 3.9 billion in cumulative capital commitments as of December 31, 2019. KFoF has so far set up 765 venture capital (VC) funds with total committed capital of USD 21.5 billion, on a cumulative basis, including USD 14.8 billion committed by external investors. Since its launch, KFoF has invested USD 15.7 billion in 6,035 companies* through its 765 underlying funds.**

Figure 1

KFoF at a Glance

KFoF's capital contributions
USD 6.6 bn

KFoF
USD 3.9 bn
in cumulative capital commitments

765 underlying funds**
USD 21.5 bn
in cumulative commitments

570 active underlying funds
USD 17.4 bn
in cumulative commitments

External investors' capital contributions
USD 14.8 bn
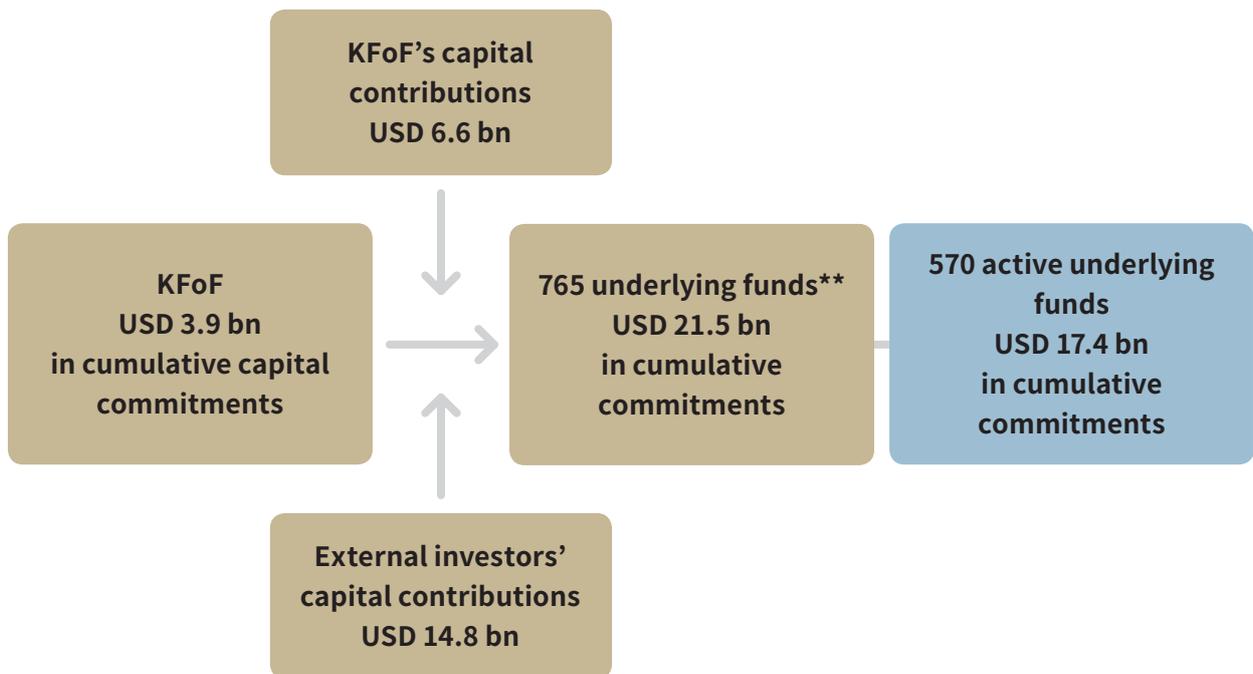
*   The number of investees above excludes overlapping companies.
** The underlying funds include small and medium enterprise (SME) establishment investment partnerships, Korea Venture Funds (KVFs), new technology venture investment partnerships, private equity funds (PEFs), corporate restructuring companies (CRCs), and private investment funds.

Fundraising

The last five years have seen an overall increase in the number of new VC funds created by KFoF and the total amount committed to the funds, both of which hit record highs in 2017 with 98 funds and USD 3 billion in committed capital. In 2019 alone, KFoF formed 93 new VC funds and committed USD 2.3 billion to them. On a year-over-year (YoY) basis, the number of newly created VC funds increased by 8.1% and the total committed capital declined by 14.5%.

Figure 2

5-year Trends in Fund Creation by KFoF

Committed Capital ── Fund Count
Source: KVIC
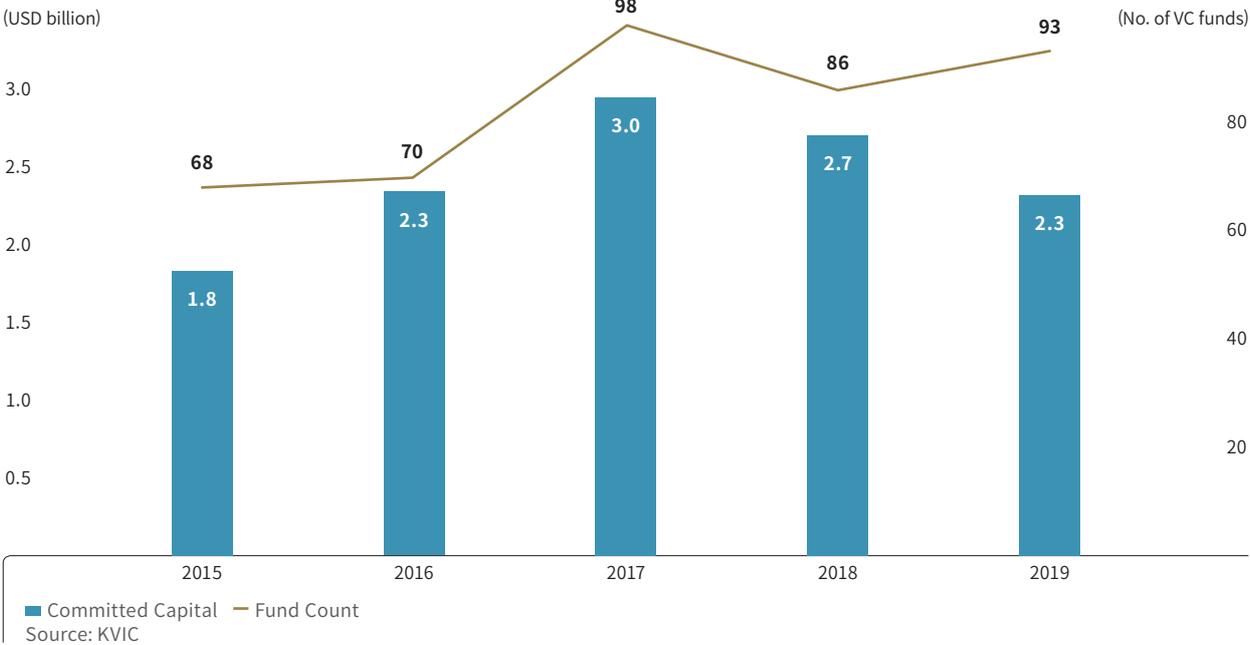
Investments

Investments by KFoF Underlying Funds

Throughout 2019, 348 KFoF underlying funds deployed a total of USD 2.6 billion to 1,348 companies. The amount invested and the number of investees (portfolio companies) rose by 25.5% and 19.9% YoY, respectively.

5-year and 2019 Trends in Investments by KFoF Underlying Funds

(USD billion)

(No. of companies)

Legend: Total Amount Invested / Number of Investees

Source: KVIC / * Based on data available as of December 31, 2019. / ** The number of investee companies above excludes overlapping companies.
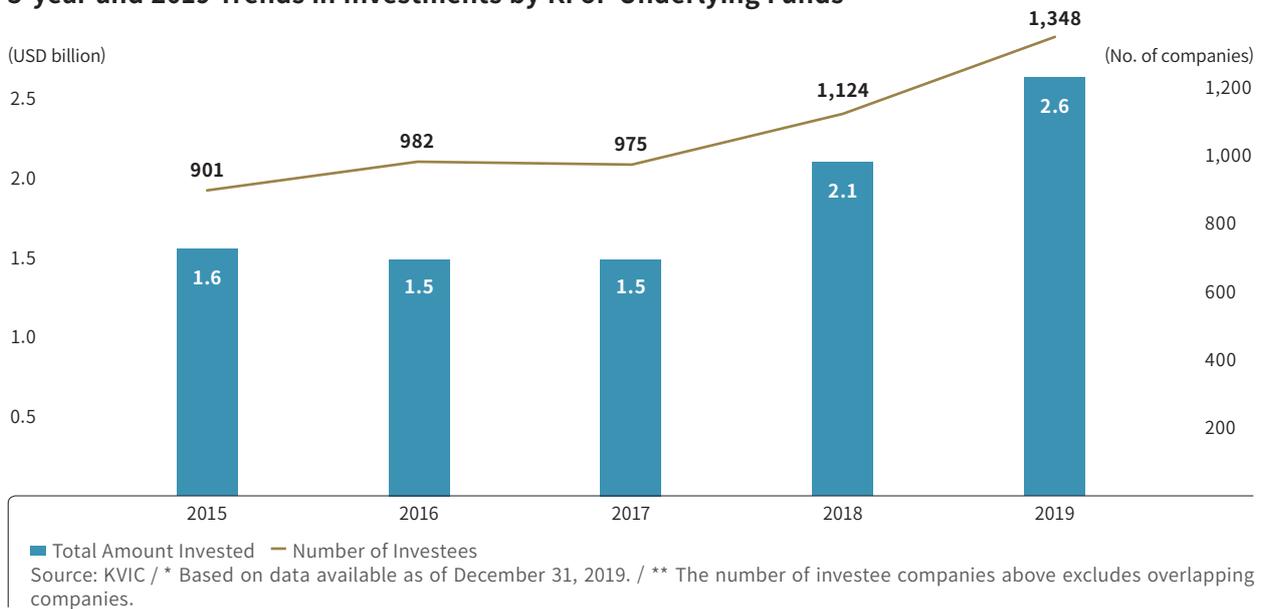
Top-Ranked Investees and Investment Sectors

The analysis of the overall investments made by the KFoF underlying funds in 2019 revealed that the average investee company received USD 1.96 million from 1.7 funds, and the average deal size for top 10 companies was USD 23.2 million. By investment sector, 20% (USD 530 million) of the total amount invested by the KFoF underlying funds went to medical materials/pharmaceuticals, 15.4% (USD 407 million) to software, 9.9% (USD 262 million) to information services, 9% (USD 239 million) to wholesale and retail trade, and 7.1% (USD 188 million) to professional services.

Deals by Stage
(January to December 2019)

When breaking down aggregate deal value in 2019 by stage, USD 877 million (33.2% of the total deal value) was invested in early-stage companies (less than 3 years old), USD 1,017 million (38.5%) in expansion-stage companies (3-7 years old), and USD 750 million (28.4%) in later-stage companies (more than 7 years old). Meantime, a detailed look at the number of investee companies broken down by stage showed that early-stage, expansion-stage and later-stage companies represented 44.1%, 33.9% and 22.0% of all investees, respectively.

Figure 4

2019 Deal Activity by Stage - KFoF Underlying Funds

Later Stage **28.4**%

Early Stage **33.2**%

Deal Value

Expansion Stage **38.5**%

Later Stage **22.0**%

Early Stage **44.1**%

Number of Investees

Expansion Stage **33.9**%
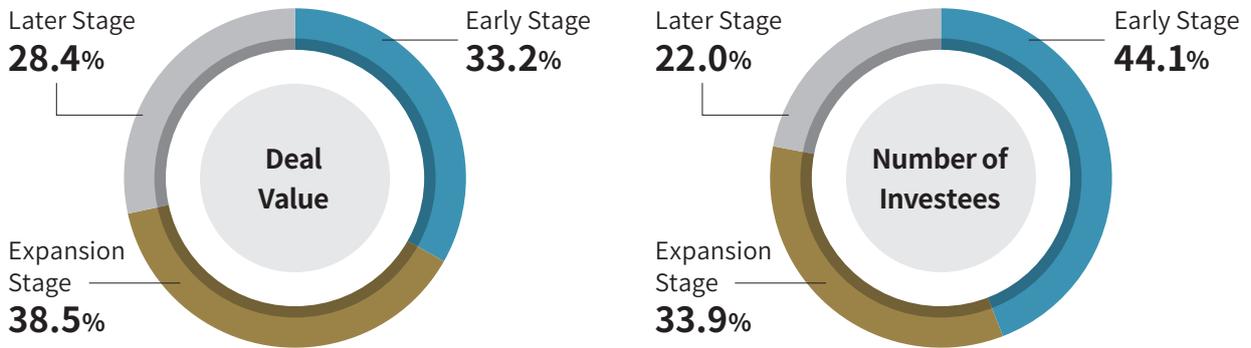
Source: KVIC

Deals by Industry
(January to December 2019)

With deals worth USD 697 million in total, ICT services took the largest share (26.4%) of the total VC funding from the KFoF underlying funds in 2019. Coming in second was biotechnology/healthcare with USD 660 million (25.0%) and third was distribution/services with USD 477 million (18.0%). When it comes to the number of investees by industry, ICT services was the most popular industry, accounting for 25.3% of all investee companies, followed by distribution/services (19.2%) and biotechnology/healthcare (18.7%).

Figure 5

2019 Deal Activity by Industry - KFoF Underlying Funds

Deal Value

Number of Investees
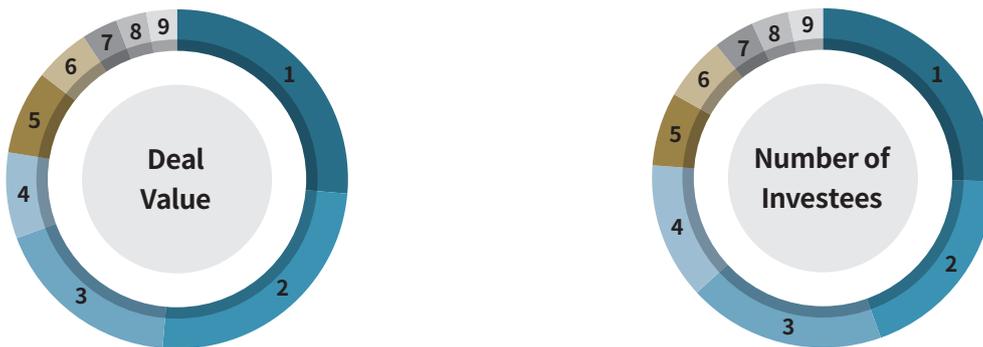
No	Sector	% of Total
1	ICT Services	26.4
2	Biotech/Healthcare	25.0
3	Distribution/Services	18.0
4	Film and TV/Performing Arts/Recording	8.2
5	Other	8.0
6	Electrics/Machinery/Equipment	5.3
7	ICT Manufacturing	3.4
8	Chemicals/Materials	2.9
9	Game	2.9

No	Sector	% of Total
1	ICT Services	25.3
2	Distribution/Services	19.2
3	Biotech/Healthcare	18.7
4	Film and TV/Performing Arts/Recording	13.0
5	Other	7.0
6	Electrics/Machinery/Equipment	6.1
7	ICT Manufacturing	3.9
8	Chemicals/Materials	3.5
9	Game	3.3

Source: KVIC

Exits

Exits by KFoF Underlying Funds

In 2019, 355 KFoF underlying funds raked in USD 1,552 million (USD 791 million in initial investments and USD 761 million in returns) from their exits across 983 companies, generating a gross return multiple of 2.0x. The exit value and the number of companies exited were down by 17.1% and 3.6% YoY, respectively.

Figure 6

5-year and 2019 Trends in Exits by KFoF Underlying Funds

(USD billion)   (No. of companies)

■ Exit Value — Number of Exited Companies
Source: KVIC / * The numbers above are based on data available as of December 31, 2019.
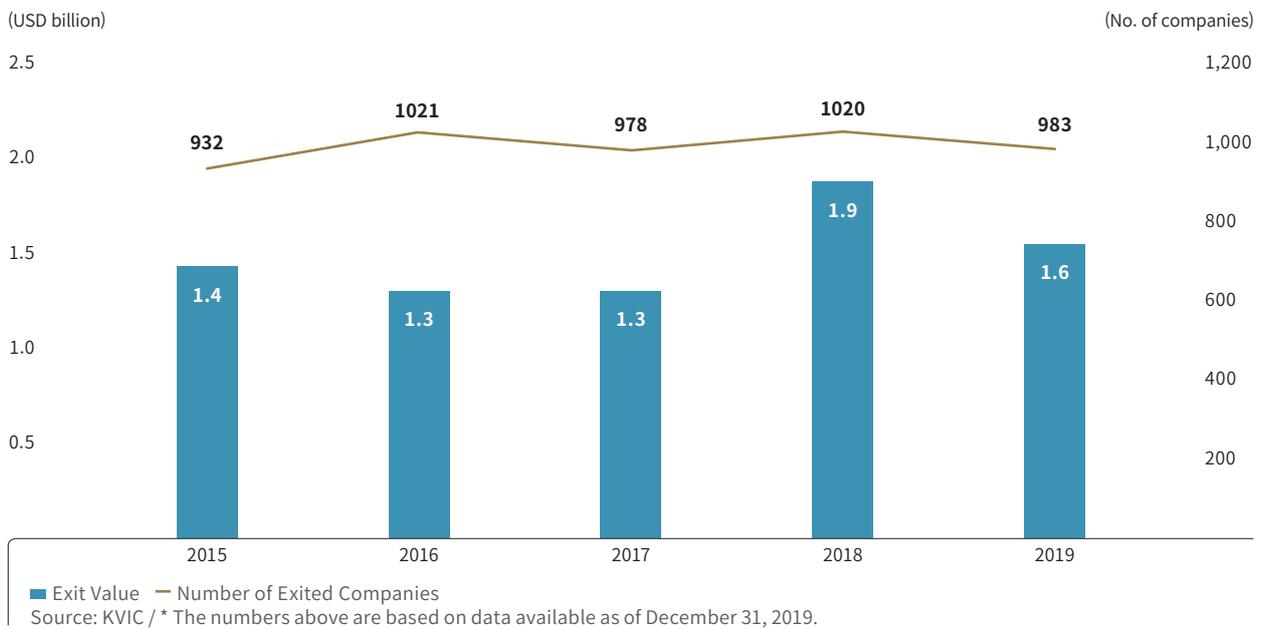
Exit Value and Exits by Industry

The largest exit in 2019 was valued at USD 54 million and the highest exit return was recorded at 31.2x. Looking at exits by industry, medical materials/pharmaceuticals accounted for 42.1% (USD 367 million) of the total, software 19.6% (USD 171 million), game software 13.3% (USD 116 million), professional services 12.5% (USD 109 million) and audiovisual content 11.4% (USD 99 million).

2H2019 KFOF INVESTMENTS BY INDUSTRY

Market Watch

(For all figures in the article, the following conversion can be used for reference: USD 1=KRW 1,157.8)

The second half of 2019 saw USD 1,468 million (up 24.8% HoH) invested across 799 companies and projects (up 15.6% HoH) by KFoF through its underlying funds. For the full year, VC investments reached USD 2,644 million, surpassing USD 2,102 million in 2018. This made 2019 a record-breaking year for KFoF's VC investments. The average amount invested per company in the second half of 2019 was USD 1.8 million, up 7.9% from USD 1.7 million in the first half.

KVIC Industry Classification Criteria

KVIC sorts portfolio companies into 9 industries and 36 sub-industries, and collates data accordingly.

▸ 9 industry categories: 1) biotechnology/healthcare; 2) ICT services; 3) distribution/services; 4) electrics/ machinery/ equipment; 5) ICT manufacturing; 6) game; 7) chemicals/materials; 8) film and TV/performing arts/recording; and 9) other.

▸ 36 sub-industry categories: 1) medical materials/pharmaceuticals; 2) medical devices; 3) healthcare facilities/services; 4) software; 5) information services; 6) communications; 7) wholesale and retail trade; 8) professional services; 9) transportation; 10) education; 11) accommodation/food services; 12) general purpose machinery; 13) transport equipment and parts; 14) precision instruments; 15) electrical equipment; 16) semiconductor/other electronic components; 17) broadcasting and communications equipment; 18) computer/peripheral equipment; 19) audio and video equipment; 20) game software; 21) sports/leisure; 22) chemical materials/products; 23) metals; 24) non-metallic minerals; 25) rubber/plastics; 26) audiovisual content; 27) publishing/broadcasting; 28) performing arts/exhibition/music; 29) food and beverages; 30) construction; 31) finance; 32) energy/resources, 33) wood/paper/printing/furniture; 34) real estate/renting and leasing; 35) textiles/clothing/leather; and 36) other.

Table 1

KVIC Industry and Sub-Industry Classification

Industry	Biotech/Healthcare	ICT Services	Distribution/Services
Sub-Industry	Medical devices; medical materials/ pharmaceuticals; healthcare facilities/services	Software; information services; communications	Wholesale and retail trade; professional services; transportation; education; accommodation/food services
Industry	Electrics/Machinery/Equipment	ICT Manufacturing	Game
Sub-Industry	General purpose machinery; transport equipment/parts; precision instruments; electrical equipment	Semiconductor/other electronic components; broadcasting and communications equipment; computer/peripheral equipment; audio and video equipment	Game software; sports/leisure
Industry	Chemicals/Materials		Film and TV/Performing Arts/Recording
Sub-Industry	Chemical materials/products; metals; non-metallic minerals; rubber/plastics		Audiovisual content; publishing/ broadcasting; performing arts/ exhibition/music
Industry	Other		
Sub-Industry	Food and beverages; construction; finance; energy/resources	Wood/paper/printing/furniture; real estate/renting and leasing; textiles/ clothing/leather; other	

Figure 1

2H2019 KFoF Investment Activity by Industry and Sub-Industry

(USD million)

Aggregate Deal Value
by Industry

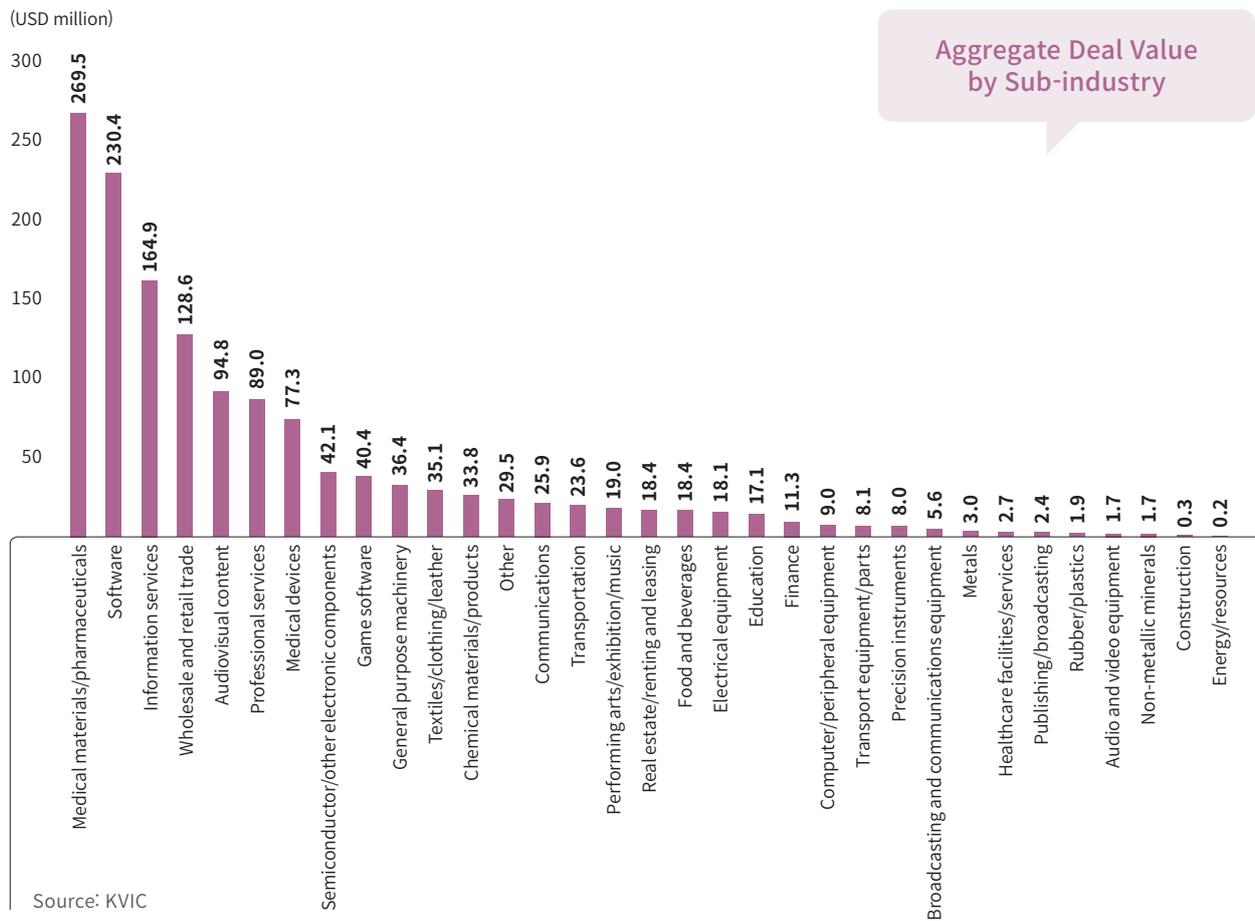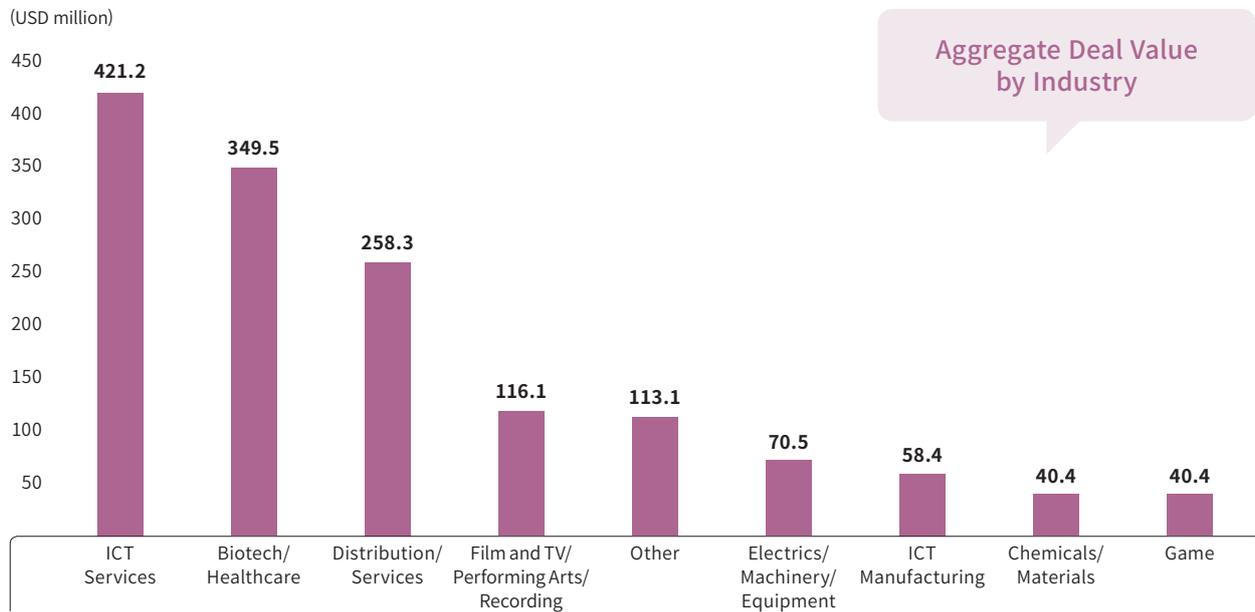| Industry	Value
ICT Services	421.2
Biotech/Healthcare	349.5
Distribution/Services	258.3
Film and TV/Performing Arts/Recording	116.1
Other	113.1
Electrics/Machinery/Equipment	70.5
ICT Manufacturing	58.4
Chemicals/Materials	40.4
Game	40.4

(USD million)

Aggregate Deal Value
by Sub-industry

| Sub-industry	Value
Medical materials/pharmaceuticals	269.5
Software	230.4
Information services	164.9
Wholesale and retail trade	128.6
Audiovisual content	94.8
Professional services	89.0
Medical devices	77.3
Semiconductor/other electronic components	42.1
Game software	40.4
General purpose machinery	36.4
Textiles/clothing/leather	35.1
Chemical materials/products	33.8
Other	29.5
Communications	25.9
Transportation	23.6
Performing arts/exhibition/music	19.0
Real estate/renting and leasing	18.4
Food and beverages	18.4
Electrical equipment	18.1
Education	17.1
Finance	11.3
Computer/peripheral equipment	9.0
Transport equipment/parts	8.1
Precision instruments	8.0
Broadcasting and communications equipment	5.6
Metals	3.0
Healthcare facilities/services	2.7
Publishing/broadcasting	2.4
Rubber/plastics	1.9
Audio and video equipment	1.7
Non-metallic minerals	1.7
Construction	0.3
Energy/resources	0.2

Source: KVIC

Looking at VC investments by industry, ICT services (USD 421.2 million, up 52.6% HoH), biotechnology/healthcare (USD 349.5 million, up 12.5% HoH), and distribution/services (USD 258.3 million, up 18.1% HoH) were at top in terms of investment value. In the South Korean VC market, ICT services, biotechnology/healthcare, and distribution/services remained hot areas of investment over the past five years. This trend continued in 2019.

The number of companies that attracted at least KRW 10 billion (USD 8.6 million) in aggregate VC investment during the second half of 2019 was 26. That number for the full year of 2019 was 44, a sharp increase from 22 in 2017 and 29 in 2018. Of the 44 companies, 17 companies are involved in ICT services, 12 in biotechnology/healthcare, 6 in distribution/services, 3 in other, 2 in electrics/machinery/equipment, and 1 each in game, chemicals/materials, ICT manufacturing, and film and TV/performing arts/recording.

Figure 2

2019 Industry Breakdown of Companies with KRW 10 Billion+ (USD 8.6 Million+) VC Funding from KFoF through its Underlying Funds

Breakdown of Companies Raising KRW 10 Billion or More in VC funding by Industry (2019)
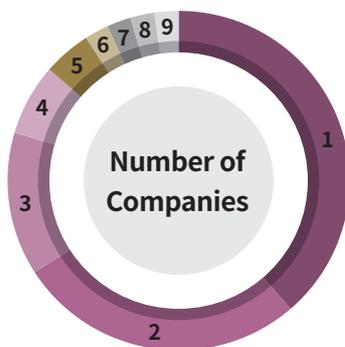
No	Sector	Number of Companies
1	ICT Services	17
2	Biotech/Healthcare	12
3	Distribution/Services	6
4	Other	3
5	Electrics/Machinery/Equipment	2
6	Game	1
7	Chemicals/Materials	1
8	ICT Manufacturing	1
9	Film and TV/Performing Arts/Recording	1

Source: KVIC

An ICT company that brings mobile wealth management services to retail customers was the largest recipient of VC investments by KFoF through its underlying funds in 2019.

Table 2

2H2019 KFoF Investment Activity

(USD million)

	2H2019	1H2019	HoH	Number of portfolio companies	Average amount invested
Total	**1,467.90**	**1,176.40**	**24.80%**	**799**	**1.8**
ICT Services	421.2	276	52.60%	219	1.9
Software	230.4	176.5	30.50%	150	1.5
Information services	164.9	97.5	69.10%	87	1.9
Communications	25.9	2	1202.30%	1	25.9
Biotech/Healthcare	349.5	310.5	12.50%	155	2.3
Medical devices	77.3	49.7	55.60%	46	1.7
Healthcare facilities/services	2.7	0.9	214.60%	1	2.7
Medical materials/pharmaceuticals	269.5	260	3.70%	112	2.4
Distribution/Services	258.3	218.7	18.10%	166	1.6
Education	17.1	3.2	438.40%	11	1.6
Wholesale and retail trade	128.6	110	16.90%	76	1.7
Accommodation/food services	-	1.7	-100.00%	-	-
Transportation	23.6	5.2	350.50%	15	1.6
Professional services	89	98.6	-9.70%	68	1.3
Film and TV/Performing Arts/Recording	116.1	99.8	16.40%	117	1
Performing arts/exhibition/music	19	10	89.20%	23	0.8
Audiovisual content	94.8	85.6	10.70%	90	1.1
Publishing/broadcasting	2.4	4.1	-41.30%	5	0.5
Other	113.1	97.7	15.70%	58	1.9
Construction	0.3	-	-	1	0.3
Finance	11.3	4.9	129.20%	6	1.9
Other	29.5	15.2	93.60%	20	1.5
Wood/paper/printing/furniture	-	4.3	-100.00%	-	-
Real estate/renting and leasing	18.4	33	-44.30%	6	3.1
Textiles/clothing/leather	35.1	8.2	326.30%	9	3.9
Energy/resources	0.2	14	-98.50%	1	0.2
Food and beverages	18.4	18	1.80%	15	1.2
Electrics/Machinery/Equipment	70.5	69.6	1.30%	51	1.4
Transport equipment/parts	8.1	27.1	-70.20%	8	1
General purpose machinery	36.4	20.1	81.00%	22	1.7
Electrical equipment	18.1	11.5	56.60%	13	1.4
Precision instruments	8	11	-26.70%	9	0.9
ICT Manufacturing	58.4	32.5	79.70%	33	1.8
Semiconductor/other electronic components	42.1	23.8	77.00%	28	1.5
Audio and video equipment	1.7	1.8	-4.40%	1	1.7
Computer/peripheral equipment	9	-	-	1	9
Broadcasting and communications equipment	5.6	6.9	-18.80%	3	1.9
Chemicals/Materials	40.4	36.3	11.40%	28	1.4
Rubber/plastics	1.9	3.5	-44.50%	3	0.6
Metals	3	3.5	-12.70%	3	1
Non-metallic minerals	1.7	-	-	1	1.7
Chemical materials/products	33.8	29.4	15.10%	21	1.6
Game	40.4	35.2	14.70%	22	1.8
Game software	40.4	31.1	30.00%	22	1.8
Sports/leisure	-	4.1	-100.00%	-	-

Source: KVIC

As shown in Table 2, information services, one of sub-industries within the ICT services industry, recorded the largest increase in VC investment in terms of value (up USD 67.4 million or 69.1% HoH), with 87 companies attracting USD 1.9 million on average. Software within ICT services saw the second largest increase (up USD 53.9 million or 30.5% HoH), followed by medical devices within biotechnology/healthcare (up USD 27.6 million or 55.6% HoH).

Communications within ICT services had the biggest percentage rise in VC investment in the latter half of 2019 compared to the first half of 2019. KFoF's investment in communications skyrocketed by 1202.3% HoH, with USD 25.9 million invested in one value added network (VAN) supplier in the second half of 2019 versus USD 2 million invested in two companies in the first half of 2019.

In terms of the number of investee companies, ICT services was the most popular industry where 219 companies received VC funding during the second half of 2019. Within ICT services, software was the most preferred sub-industry with 150 companies attracting VC funding. The average amount invested was the highest in communications within ICT services. As described earlier, the massive investment in the VAN company led to the strong uptick in the average amount invested in that sub-industry.

Table 3 lists the keyword hashtags describing the features of a product or service developed, produced or provided by the portfolio companies receiving KRW 5 billion (USD 4.3 million) or more in VC funding from KFoF in the latter half of 2019. These hashtags aim to help readers better understand the characteristics of portfolio companies in the KFoF underlying funds.

Table 3

Keyword Hashtags for Portfolio Companies with KRW 5 Billion+ (USD 4.3 Million+) VC Funding from the KFoF Underlying Funds in 2H2019

ICT Services	#Mobile Wealth Management Service for Individuals #VAN Business #e-Book Platform #Trading Platform for Secondhand Goods #Mobile Video Streaming #Housing Information Sharing Platform #Mobile Financial Service #Audio Streaming Platform #Customer Management Solution #Workspace Information Platform #Medical Diagnostic Imaging #Peer-to-Peer (P2P) Project Finance for Small and Medium-sized Real Estate Development #Dental Insurance Benefits Eligibility Verification #Solar Power Generation Business #Mobile Medical Platform #AR Solution for Industrial Applications #Live Chat Solution for Sales #App Design Tool #AI Solution for Medical Data Analysis #Data Generation for AI Training #Surgery Center #Ad-network Business # Internet Newspapers
Biotech/ Healthcare	#Anticancer and Antibody Drugs #Veterinary Test Kit for In Vitro Diagnostic Use #Microbiome Therapy #DNA Vaccine #Novel Biomaterials Produced by Microbial Fermentation # In Vitro Diagnostics #Platform Technology-Based Drug Development #Surgical Hemostat #Automated Cell Analyzer #Equipment for Skin Cancer Diagnosis #New Drug Development #Cancer Vaccine #Blood Glucose Meter #Chimeric Antigen Receptor (CAR) T-Cell Therapy #Biologic Agent #Rapid Cooling Anesthesia Device #Point of Care Testing #Gene Medicine #Synthetic Drug #In Vitro Immunodiagnostic System #Lung Cancer Screening Kit #Molecular Diagnosis
Distribution/ Services	#Ready-to-Eat & Cook Products #Online Sale_Women's Clothing #Customer-to-Customer (C2C) Marketplace #Patent Management and Commercialization Services #Industry Data Forecasting Solution #Clothing Rental Subscription Service #Online Cashback #e-Sports Training Platform #Luxury e-Commerce #Shared Kitchen #Kids Content
Film and TV/ Performing Arts/ Recording	#Drama Production
Other	#Apparel OEM #Mobile Payment #Shared Apartment #Fitness Equipment #Shared Office Space
Electrics/Machinery/ Equipment	#Air Purifier Filter
ICT Manufacturing	#Automotive Electronics #Semiconductor Consumables
Chemicals/Materials	#Semiconductor/Display Materials
Game	#Shooting Game #Mobile Game Development & Publishing #Fantasy Action Game

Source: KVIC

ANALYSIS OF UNICORNS AND UNICORN CANDIDATES IN KOREA

Market Watch

(For all figures in the article, the following conversion can be used for reference: USD 1=KRW 1,157.8)

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This report provides a semi-annual analysis of portfolio companies with high valuations in KFoF investee funds with a particular focus on company characteristics. This issue of KVIC MarketWatch offers a glimpse into unlisted portfolio companies valued at KRW 200 billion (USD 172.7 million) or more as of June 2019.

Introduction

A unicorn is an imaginary creature depicted as a horse with a single horn in the middle of the forehead. What is a unicorn in the business world? The term was first used in 2013 by Aileen Lee, founder of Cowboy Ventures, a venture capital firm in the United States. Currently, the term "unicorn" is often used to describe an unlisted or privately held company with a value of USD 1 billion or more.

As of February 20, 2020, there were 452 unicorns around the world, with a collective worth of nearly USD 1,329.9 billion, according to the Global Unicorn Club report published by CB Insights, a U.S.-based market research firm. Korea is home to 10 unicorns, including Musinsa, Viva Republica (Toss), Yanolja, Aprogen, L&P Cosmetics, Yello Mobile, Wemakeprice, GPClub, Coupang and Krafton (formerly Bluehole).

KVIC MarketWatch began featuring unicorns and unicorn candidates among portfolio companies in the underlying funds of Korea Fund of Funds (KFoF) on a semi-annual basis.

In this report, we have analyzed the distribution of 29 unicorns and unicorn candidates worth KRW 200 billion (USD 172.7 million) or more by valuation range, funding amount, industry, age and revenue. The selection of these unicorns and unicorn candidates are based on the semi-annual valuation of portfolio companies in KFoF's underlying funds as of June 30, 2019.

Valuation

The aggregate valuation of unicorns and unicorn candidates rose by 2.5% at the end of June 2019 when compared with the end of December 2018. The average and median valuations of companies in all of the valuation ranges remained unchanged or increased over the same period. The 29 unicorns and unicorn candidates we analyzed were collectively worth USD 17.679 billion. The average valuation of the companies was USD 609.6 million, and the median valuation was USD 351.7 million. Delving into the unicorns and unicorn candidates after dividing them into 3 groups based on valuation, the average and median values for 5 companies valued at KRW 1 trillion (USD 0.86 billion) or more as of June 30, 2019 were about USD 1.8 billion and USD 1.2 billion, respectively. The average and median values for 6 companies with valuation between KRW 500 billion and KRW 1 trillion (USD 431.9 million - USD 0.86 billion) were USD 658.5 million and USD 658.4 million, respectively. Those for 18 companies valued between

KRW 200 billion and KRW 500 billion (USD 172.7 million - USD 431.9 million) were USD 262.6 million and USD 232.6 million, respectively.

The total number of the portfolio companies classified as unicorns or unicorn candidates in our analysis decreased by 2 half-on-half (HoH) from 31 to 29. The number of companies valued at KRW 1 trillion (USD 0.86 billion) or more stayed unchanged at 5. The number of companies valued between KRW 500 billion and KRW 1 trillion (USD 431.9 million - USD 0.86 billion) edged up by 1 from 5 to 6. The number of those with valuation between KRW 200 billion and KRW 500 billion (USD 172.7 million - USD 431.9 million) dwindled from 21 to 18.

Table 1

Valuation Distribution

Valuation Range	Number of Companies (▲ indicates a HoH increase; ▼ indicates a HoH decrease)		
KRW 1 trillion (USD 0.86 billion) or more	5 (-)		
KRW 500 billion - KRW 1 trillion (USD 431.9 million - USD 0.86 billion)	6 (▲1)	Valuation Range	No. of Companies
		KRW 900 bn - KRW 1 tn (USD 777.3 mn - USD 0.86 mn)	1 (▲1)
		KRW 800 bn – KRW 900 bn (USD 691 mn - USD 777.3 mn)	2 (-)
		KRW 700 bn – KRW 800 bn (USD 604.6 mn - USD 691 mn)	2 (▲2)
		KRW 600 bn – KRW 700 bn (USD 518.2 mn - USD 604.6 mn)	0 (▼1)
		KRW 500 bn – KRW 600 bn (USD 431.9 mn - USD 518.2 mn)	1 (▼1)
KRW 200 billion - KRW 500 billion (USD 172.7 million - USD 431.9 million)	18 (▼3)	KRW 400 bn – KRW 500 bn (USD 345.5 mn - USD 431.9 mn)	4 (-)
		KRW 300 bn – KRW 400 bn (USD 259.1 mn - USD 345.5 mn)	4 (▲2)
		KRW 200 bn – KRW 300 bn (USD 172.7 mn - USD 259.1 mn)	10 (▼5)
Total	**29 (▼2)**		

Source: KVIC

Table 2

Total, Average and Median Valuations

Valuation Range	Total Valuation (USD million)	Average Valuation (USD million)	Median Valuation (USD million)
KRW 1 trillion (USD 0.86 billion) or more	9,001.8	1,800.4	1,205.5
	(-0.2% HoH)	(-0.2% HoH)	(0.0% HoH)
KRW 500 billion - KRW 1 trillion (USD 431.9 million - USD 0.86 billion)	3,951.0	658.5	658.4
	(34.9% HoH)	(12.4% HoH)	(25.1% HoH)
KRW 200 billion - KRW 500 billion (USD 172.7 million - USD 431.9 million)	4,725.9	262.6	232.6
	(-10.9% HoH)	(4.0% HoH)	(8.8% HoH)
Total	**17,678.8**	**609.6**	**351.7**
	(2.5% HoH)	**(9.5% HoH)**	**(30.3% HoH)**

Source: KVIC

Funding Amount

Until the end of February 2020, the 29 unicorns and unicorn candidates have received a total of USD 452 million in funding from the underlying funds of KFoF and other FoFs managed by KVIC. The average investment deal per company stood at approximately USD 15.6 million.

Looking at the unicorns and unicorn candidates separated into three different valuation ranges, the average and median deal sizes were USD 16.2 million and USD 8.6 million for companies worth KRW 1 trillion (USD 0.86 billion) or more, USD 19.6 million and USD 14.7 million for those worth between KRW 500 billion and KRW 1 trillion (USD 431.9 million - USD 0.86 billion), and USD 14.1 million and USD 9.4 million for those worth between KRW 200 billion and KRW 500 billion (USD 172.7 million - USD 431.9 million), respectively.

For the valuation range of KRW 1 trillion (USD 0.86 billion) or more, all of the companies have remained the same on the list since the latter half of 2018, and thus the total, average and median deal sizes have remained unchanged from the results derived from our previous analysis. For the valuation range of KRW 500 billion to KRW 1 trillion (USD 431.9 million - USD 0.86 billion), the average deal size for three new comers reached USD 32.1 million, dramatically increasing the total, average and median sizes for companies in that range to USD 117.6 million (up 167.5% HoH), USD 19.6 million (up 122.9% HoH), and USD 14.7 million (up 66.7% HoH), respectively.

The average and median deal sizes for companies valued between KRW 500 billion and KRW 1 trillion (USD 431.9 million - USD 0.86 billion) were 1.2x and 1.7x larger than those valued at KRW 1 trillion (USD 0.86 billion) or more, and 1.4x and 1.56x lager than those valued between KRW 200 billion and KRW 500 billion (USD 172.7 million - USD 431.9 million), respectively. The average and median deal sizes for unicorns worth at least KRW 1 trillion (USD 0.86 billion) were not significantly different from those for unicorn candidates worth between KRW 200 billion and KRW 500 billion (USD 172.7 million - USD 431.9 million).

Table 3

Total, Average and Median Deal Sizes

Valuation Range	Total Deal Value (USD million)	Average Deal Value (USD million)	Median Deal Value (USD million)
KRW 1 trillion (USD 0.86 billion) or more	81.2 (0.0% HoH)	16.2 (0.0% HoH)	8.6 (0.0% HoH)
KRW 500 billion - KRW 1 trillion (USD 431.9 million - USD 0.86 billion)	117.6 (167.5% HoH)	19.6 (122.9% HoH)	14.7 (66.7% HoH)
KRW 200 billion - KRW 500 billion (USD 172.7 million - USD 431.9 million)	253.2 (7.9% HoH)	14.1 (25.9% HoH)	9.4 (67.1% HoH)
Total	**452.0** **(25.7% HoH)**	**15.6** **(34.3% HoH)**	**9.1** **(23.9% HoH)**

Source: KVIC

Industry

The analysis of the companies broken down by industry and sub-industry according to KVIC Industry Classification (see the last page of this report for more details) showed that ICT services, and distribution/services were the top industries for the birth of unicorns and unicorn candidates, representing 41.4% (12) and 27.6% (8) of the 29 companies, respectively. The combined proportion (and number of companies) went up HoH from 54.8% (17) to 69% (20). Biotechnology/healthcare produced 3 unicorns and unicorn candidates, followed by game (2), other (2), film and TV/performing arts/recording (1), and chemicals/materials (1).

By sub-industry, we found 8 unicorns and unicorn candidates in software, 5 in wholesale and retail trade, 4 in information services, and 3 in professional services. Compared with the prior HoH analysis, one thing that is notable in the industry distribution is the addition of one company in textiles/clothing/leather (within other industries category) to the list of unicorns and unicorn candidates.

Table 4

Industry Distribution According to KVIC Industry Classification

Industry Classification	Number of Companies (▲ indicates a HoH increase; ▼ indicates a HoH decrease)		
		Sub-Industry Classification	Number of Companies
ICT Services	12 (▲1)	Software	8 (-)
		Information services	4 (▲1)
Distribution/Services	8 (▲2)	Wholesale and retail trade	5 (-)
		Professional services	3 (▲2)
Biotechnology/Healthcare	3 (▼2)	Medical materials/pharmaceuticals	2 (▼2)
		Medical devices	1 (-)
Game	2 (▼2)	Game software	2 (▼2)
Other	2 (▲1)	Real estate/renting and leasing	1 (-)
		Textiles/clothing/leather	1 (▲1)
Film and TV/Performing Arts/Recording	1 (-)	Performing arts/exhibition/music	1 (-)
Chemicals/Materials	1 (▼2)	Chemical materials/products	1 (▼2)
Total	**29 (▼2)**		

Source: KVIC

As for the industry distribution of the unicorns and unicorn candidates according to the Korean Standard Industrial Classification (KSIC), 7 of the 29 companies are from application software publishing, 3 each from database and online information provision, and electronic commerce on a fee or contract basis via internet, 2 from online game software publishing, and 1 each from other 14 industries.

As compared with the previous HoH analysis, companies involved in activities of management consultancy, manufacture of other textiles n.e.c., maintenance and repair services of electrical, electronic and precision equipment, and computer programming services newly joined the list of unicorns and unicorn candidates. On the other hand, the companies in manufacture of medicinal chemicals and antibiotics, and wholesale of electrical machinery and related materials dropped off the list due to an exit through an IPO or secondary sale.

Table 5

Industry Distribution According to the KSIC

Korean Standard Industrial Classification (KSIC)	No. of Companies*	Korean Standard Industrial Classification (KSIC)	No. of Companies*
Application software publishing	7 (-)	Music and sound recordings publishing	1 (-)
Database and online information provision	3 (-)	Manufacture of medical supplies and related other medicaments	1 (-)
Electronic commerce on a fee or contract basis via internet	3 (▲1)	Research and experimental development on medical sciences and pharmacy	1 (▼1)
Online game software publishing	2 (▼2)	Renting of motor vehicles	1 (-)
Activities of management consultancy	1 (▲1)	Maintenance and repair services of electrical, electronic and precision equipment	1 (▲1)
Manufacture of other textiles n.e.c.	1 (▲1)	Computer programming services	1 (▲1)
Manufacture of other medical and surgical equipment and orthopedic appliances n.e.c.	1 (-)	Wholesale of cosmetics and related products	1 (-)
Other professional services	1 (-)	Manufacture of perfumes and cosmetics	1 (▼2)
System software publishing	1 (-)	Manufacture of medicinal chemicals and antibiotics	0 (▼1)
Retail sale of eyeglasses and lens	1 (-)	Wholesale of electrical machinery and related materials	0 (▼1)

Source: KVIC
* ▲ indicates a HoH increase in number; ▼ indicates a HoH decrease in number.

Company Age

The average age of the 29 unicorns and unicorn candidates as of February 29, 2020 was 8.4 years. The age distribution according to valuation range indicates that the average age was 9.3 years for the 5 companies with a value of KRW 1 trillion (USD 0.86 billion) or more, 10 years for the 6 companies with a value between KRW 500 billion and KRW 1 trillion (USD 431.9 million - USD 0.86 billion), and 7.5 years for the 18 companies with a value between KRW 200 billion and KRW 500 billion (USD 172.7 million - USD 431.9 million). The age of the companies varied greatly, ranging between 1.7 years (the youngest) and 22.8 years (the oldest). Much like our first and second HoH analyses, this analysis showed: the higher the valuation range, the smaller the age gap between the youngest and oldest companies.

The unicorns and unicorn candidates analyzed as of February 29, 2020 were younger, on average, than those analyzed as of June 30, 2019.

Moreover, one may expect that the average age of companies worth KRW 1 trillion (USD 0.86 billion) or more is the highest, assuming that a company grows over time. However, as in our last HoH analysis, companies valued at KRW 1 trillion (USD 0.86 billion) or more were younger, on average, than those valued between KRW 500 billion and KRW 1 trillion (USD 431.9 million - USD 0.86 billion). This suggests that company age and company value are not always proportional to each other.

Table 6

Company Age as of February 29, 2019

Valuation Range	Average Company Age (number of years)	Oldest	Youngest
	(▲ indicates a HoH increase; ▼ indicates a HoH decrease)		
KRW 1 trillion (USD 0.86 billion) or more*	9.3 (▲0.7)	12.9 (▲0.7)	6.5 (▲0.7)
KRW 500 billion - KRW 1 trillion (USD 431.9 million - USD 0.86 billion)	10.0 (▼0.9)	15.1 (▲0.7)	5.2 (▼1.5)
KRW 200 billion - KRW 500 billion (USD 172.7 million - USD 431.9 million)	7.5 (▼1.7)	22.8 (▲0.7)	1.7 (▼1.7)
Total	**8.4 (▼1.0)**	**22.8 (▲0.7)**	**1.7 (▼1.7)**

Source: KVIC
* Companies in the valuation range of KRW 1 trillion (USD 0.86 billion) or more in this analysis remained the same as in the previous HoH analysis. A rise (▲0.7) in the average age of those companies indicates the time lapse between the end of June 2019 and the end of February 2020.

Revenue

We analyzed the revenues of the 29 companies recognized and calculated according to each company's accounting policy as of December 31, 2018. The analysis showed that the average revenue was USD 136.4 million. More specifically, the average revenue amounted to USD 405.2 million for the companies in the KRW 1 trillion (USD 0.86 billion) or more valuation range, USD 132.4 million for those in the KRW 500 billion - KRW 1 trillion (USD 431.9 million - USD 0.86 billion) range, and USD 63 million for those in the KRW 200 billion - KRW 500 billion (USD 172.7 million - USD 431.9 million) range. While some of the 29 companies generated less than KRW 500 million (USD 0.43 million) in revenue, others generated more than KRW 1 trillion (USD 0.86 billion), exhibiting that revenues are widely distributed across the companies, as in the prior HoH analysis.

For FY2018, the average revenue of the 29 unicorns and unicorn candidates in this analysis was smaller than that of the 31 in the previous analysis.

Table 7

FY2018 Average Revenue

Valuation Range	Average Revenue (USD million)
KRW 1 trillion (USD 0.86 billion) or more	405.2 (0.0% HoH)
KRW 500 billion - KRW 1 trillion (USD 431.9 million - USD 0.86 billion)	132.4 (-28.3% HoH)
KRW 200 billion - KRW 500 billion (USD 172.7 million - USD 431.9 million)	63.0 (-14.5% HoH)
Total	**136.4 (-6.1% HoH)**

Source: DART, etc.

Table 8

FY2018 Revenue Distribution

Revenue Range	Number of Companies (▲ indicates a HoH increase; ▼ indicates a HoH decrease)
KRW 100 billion (USD 86.4 million) or more	13 (▼3)
KRW 50 billion – KRW 100 billion (USD 43.2 million - USD 86.4 million)	8 (▲1)
KRW 10 billion – KRW 50 billion (USD 8.6 million - USD 43.2 million)	4 (-)
Less than KRW 10 billion (USD 8.6 million)	4 (-)
Total	**29 (▼2)**

Source: DART, etc.

Key Takeaways

We have analyzed the 29 unlisted unicorns and unicorn candidates valued at KRW 200 billion (USD 172.7 million) or more among portfolio companies in the KFoF underlying funds. The findings suggest that the average company is an 8.4-year-old ICT services company making USD 136.4 million in revenue in 2018, receiving USD 15.6 million in funding, and reaching a valuation of USD 609.6 million.

While the number of unicorns and unicorn candidates dropped by 2 HoH, the average valuation rose by 9.5% HoH and the average funding amount jumped by 34.3% HoH. The distribution of the companies by industry is similar to that in the previous HoH analysis. In addition, the average age fell by one year and the average revenue shrank by 6.1%.

We hope that KVIC's semi-annual analysis updates will offer a great opportunity to gain insights into Korean unicorns and unicorn candidates.

KVIC Industry Classification Criteria

KVIC sorts portfolio companies into 9 industries and 36 sub-industries, and collates data accordingly.

▸ 9 industry categories: 1) biotechnology/healthcare; 2) ICT services; 3) distribution/services; 4) electrics/ machinery/ equipment; 5) ICT manufacturing; 6) game; 7) chemicals/materials; 8) film and TV/performing arts/recording; and 9) other.

▸ 36 sub-industry categories: 1) medical materials/pharmaceuticals; 2) medical devices; 3) healthcare facilities/services; 4) software; 5) information services; 6) communications; 7) wholesale and retail trade; 8) professional services; 9) transportation; 10) education; 11) accommodation/food services; 12) general purpose machinery; 13) transport equipment and parts; 14) precision instruments; 15) electrical equipment; 16) semiconductor/other electronic components; 17) broadcasting and communications equipment; 18) computer/peripheral equipment; 19) audio and video equipment; 20) game software; 21) sports/leisure; 22) chemical materials/products; 23) metals; 24) non-metallic minerals; 25) rubber/plastics; 26) audiovisual content; 27) publishing/broadcasting; 28) performing arts/exhibition/ music; 29) food and beverages; 30) construction; 31) finance; 32) energy/resources, 33) wood/paper/printing/furniture; 34) real estate/renting and leasing; 35) textiles/clothing/leather; and 36) other.

Table 9

KVIC Industry and Sub-Industry Classification

Industry	Biotech/Healthcare		ICT Services		Distribution/Services
Sub-Industry	Medical devices; medical materials/pharmaceuticals; healthcare facilities/services		Software; information services; communications		Wholesale and retail trade; professional services; transportation; education; accommodation/food services
Industry	Electrics/Machinery/Equipment		ICT Manufacturing		Game
Sub-Industry	General purpose machinery; transport equipment/parts; precision instruments; electrical equipment		Semiconductor/other electronic components; broadcasting and communications equipment; computer/peripheral equipment; audio and video equipment		Game software; sports/leisure
Industry	Chemicals/Materials				Film and TV/Performing Arts/Recording
Sub-Industry	Chemical materials/products; metals; non-metallic minerals; rubber/plastics				Audiovisual content; publishing/broadcasting; performing arts/exhibition/music
Industry	Other				
Sub-Industry	Food and beverages; construction; finance; energy/resources		Wood/paper/printing/furniture; real estate/renting and leasing; textiles/clothing/leather; other		

K-UNICORNS

Market Watch

(1) Rainist
(2) Mathpresso

K-UNICORNS (1) Rainist
MyData-based Financial Service Platform

Highlights

▸ Building a new data ecosystem for financial services centering around the rights of individuals to access, delete and move their personal data.

▸ Addressing information asymmetry and offering customized product recommendations for customers through financial curation based on sophisticated data analysis.

Company Overview

Rainist Co., Ltd. operates a financial platform that got started as a personal finance management service, the first of its kind in South Korea. In addition to fintech services, which are expected to grow rapidly thanks to the transition to mobile financial services and advancements in data-driven personalization technology, the company has expanded the scope of its financial platform to include financial intermediation that connects finance to customers. Rainist's MyData-based financial platform called Banksalad enjoyed rapid and robust growth with 6.7 million cumulative downloads as of March 2020. It is projected to create a large user pool that helps solidify a meaningful position in the market down the road.

Data-driven money management platform
In August 2014, Banksalad was first launched by Rainist as a web-based personalized credit card recommendation service. This data-driven fintech service provides the best financial solutions in the eyes of Korean customers based on their financial situation. In June 2017, Rainist also rolled out its personal finance management app (the new mobile enhanced version of Banksalad) that requires a one-time user authentication using a public key certificate. It is said to have led the popularization of personal finance management service, which was once only available for top asset owners.

In recent years, with the advancement of insurtech, meaning insurance technology, Banksalad has brought innovations to the insurance industry, such as Switch Insurance (on-demand insurance), which allows customers to turn insurance on and off whenever they want so as to minimize the inconvenience of purchasing insurance. In particular, Banksalad has data on more than 6,000 financial instruments currently available in Korea, including credit cards, bank deposits, insurance products, loans, peer-to-peer (P2P) finance and cash management accounts (CMAs), and offers customized

financial solutions for individuals based on their financial assets and consumption.

Leading the innovation - DATA DRIVEN FINANCE
In June 2018, Banksalad was officially selected as a pilot business model in the financial sector under the MyData initiative run by the Ministry of Science and ICT. With Banksalad being designated as an innovative financial service in 2019, Rainist has focused more on creating the infrastructure for data-driven finance. Taking the lead in the Working Group on Application Programming Interface (API), Rainist has played a vital role in discussions on regulatory issues as well as data and technology standards, which are necessary to establish a data ecosystem for financial services. Furthermore, it has significantly contributed to laying the business and regulatory groundwork for South Korea to usher in a new era of MyData that gives consumers the ownership of their personal data. Prior to the implementation of MyData, Rainist will build a data-based financial infrastructure to create innovative services that connect customers and finance through customized data convergence for both customers and finance.

Company Brief	
CEO	Taehoon Kim
Date of Foundation	July 2, 2012
Location	9th Floor, 16 Gukjegeumyung-ro 8-gil, Yeongdeungpo-gu, Seoul, South Korea
Number of Employees	139 (as of March 2020)
Main Service	MyData Financial Platform, 'Banksalad'
Contacts	Website: https://banksalad.com/ Blog: https://blog.banksalad.com/ Recruitment: career.banksalad.com E-mail: hello@banksalad.com

Market Opportunities

Personal financial management (PFM) refers to the service that provides advice on financial behavior most suitable for consumers based on analysis of their financial data. Individuals' financial information was in the possession of financial institutions licensed to engage in different segments of the financial sector. Because such financial data were not interoperable or aggregated across financial institutions, it was impossible for consumers to manage their financial assets. The European Union (EU) adopted the revised Payment Services Directive (PSD 2) which allows non-financial companies such as fintech companies and ICT companies to gain access to the financial data of consumers on which governments or financial

institutions have long held a monopoly. The introduction of the PSD 2 gives consumers the right to data portability, opening new doors to data curation in the financial services sector.

As PFM startups emerged and gained popularity among mobile generations in the United States, Japan and other countries, PFM apps started to replace existing finance apps. Consumers began putting their trust in PFM that compares financial products from different financial institutions based on their financial data. That is because consumer financial data, apart from product data, are the key to delivering product recommendations.

Built upon the trusted platform, Banksalad has been seeking to expand into the field of MyData. MyData means giving data ownership to people, allowing them (data subjects) to manage their own data and use the data for their own purposes (for example, credit management and financial analysis). Discussions about the MyData industry began in earnest with the passage of three data bills, that is, the Personal Information Protection Act, the Act on Promotion of Information Communications Network Utilization and Information Protection, and the Use and Protection of Credit Information Act, at the National Assembly in January 2020. MyData has been receiving attention as the central piece of the Korean government's policy to build a data economy.

Compared with other countries, South Korea is making faster progress in MyData implementation through the government's strong policy support and efforts. Moreover, South Korea puts its focus on MyData development, going one more step further than Finland that first launched the MyData initiative with a particular focus on compliance with the EU General Data Protection Regulation. Compared with the United States that has only recently put in place policies on the right to data portability, South Korea is poised to become a global leader in MyData with its MyData policy praised for being innovative.

Existing PFM service is designed to analyze a user's financial information and provide the user with the most relevant offers and recommendations, as well as a comprehensive view of the financial data spread across multiple financial institutions in one single app. As the broad adoption of MyData allows people to gain access to their personal data held by the government or corporations anytime, personalized solutions are put in the limelight in that these are likely to reach out beyond finance to all aspects of people's lives.

Table 1

A Peek into Overseas PFM companies

	Credit Karma	**Mint**	**NerdWallet**	**Money Forward**
Country	United States	United States	United States	Japan
Inception Year	2007	2006	2009	2012
Service	Free credit score service and financial products recommendation	Asset management	Free credit score service and financial products recommendation	Budget planner/asset management (B2C) and corporate accounting (B2B)
Revenue Model	Commissions from the sales of financial products	Commissions from the sales of financial products	Commissions from the sales of financial products	Paid plan revenue, API usage fees, and SaaS accounting software

1. Credit Karma

Credit Karma offers users free access to credit scores and credit reports from Equifax and TransUnion, two of the three major credit bureaus in the United States. The biggest advantage of using Credit Karma is that users can access their credit reports more frequently for free. As it has expanded into financial product recommendation (B2B2C), tax preparation and other areas, it has become the number one finance app in the U.S. The app enables users to monitor their credit reports for changes and to manage their bank accounts, credit cards, bills, mortgages, loans, credit scores and more in one online account.

Credit Karma provides users with product recommendations based on their credit profiles to help them save money, and it earns commissions when users take offers through Credit Karma.

2. Money Forward

Founded in 2012, Money Forward is a fintech company providing the most popular PFM app in Japan. In September 2017, the company went public on the Tokyo Stock Exchange. With the vision to become the financial platform for all, Money Forward offers a wide range of solutions including PFM service for B2C customers and accounting solution for B2B customers.

Money Forward provides its paid users with differentiated PFM services in terms of the number of financial institutions a user can link the app to and the time period the user can specify to view necessary data, to name a few.

Main Services

## 1. Banksalad and related technologies

Banksalad is Rainist's MyData-based PFM platform that collects and analyzes the scattered asset data of users and offers customized financial solutions to the users along with product recommendations. At the phase of aggregating and analyzing user asset data, Banksalad uses scraping and API to bring users' financial data together in one place and assess their asset allocation, investment and spending patterns. Based on the analysis results, Banksalad recommends ways to improve credit scores and spend money wisely, and further makes personalized recommendations for financial products (such as credit cards, loans, insurance and assets) that best fit the needs of the users.

Figure 1

Banksalad Usage Trends

1.3 million monthly active users (MAUs) in just two years since the app launch

-
App downloads as of December 2019

App 3.0 launch in June 2017

6 million downloads
1.3 million MAUs
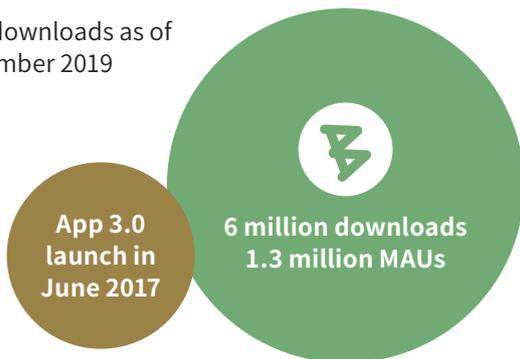
Source: Rainist

An 18-fold increase from KRW 10 trillion in February 2018 to KRW 180 trillion in December 2019

-
Data as of December 2019

KRW 10 trillion in 2018

Linked Asset Amounts via the app: KRW 180 trillion in 2019

Source: Rainist

To make that happen, Rainist sorts data on financial products, which are expressed in different ways, according to Banksalad's standardized criteria and processes text data into a form suitable for its engine. Moreover, the company constantly sorts and refines the data according to the detailed criteria depending on consumer needs. These data collection and storage technologies enable the app to offer more personalized and more appropriate services. API and scraping technologies are also used to collect and store consumer data. After obtaining the consent of a customer to log into the websites of his or her financial institutions on the customer's behalf, the app scrapes and aggregates the customer data from the financial institutions. Then, Banksalad matches the collected data with financial product data and recommends the most suitable product for the customer.

2. Banksalad's services

Using its scraping technology, Banksalad allows users to view their account information from almost any banks, credit card companies, insurance companies, credit reporting agencies and pension providers, and to obtain pricing information in real time on non-financial assets such as real estate and cars. Going forward, it will add more asset types to the list of assets that can be linked to the platform. What's more, Banksalad helps users easily keep track of their spending and changes in net assets through auto-generated reports on their income and expenses whose data are automatically tracked and saved. Banksalad currently makes individually-targeted recommendations for credit cards, credit loans and insurance, based on sophisticated analysis of both data on users' spending, assets and loans, and data on financial products.

Additionally, Banksalad allows users to manage and monitor their credit scores, and provides Switch Insurance service which streamlines the process of purchasing insurance. Switch Insurance allows customers to buy or cancel an insurance policy at any time. It has been selected as one of innovative financial services by the Financial Services Commission in April 2019. The notable characteristic of the service is that it enables consumers to purchase insurance coverage when they need it and only for as long as they need it. At present, Banksalad offers car and travel insurance products under the Switch Insurance category.
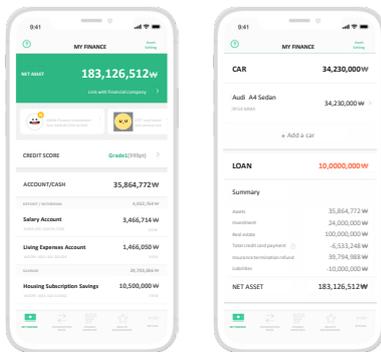
Figure 2

**My Finance
Tab Pages**
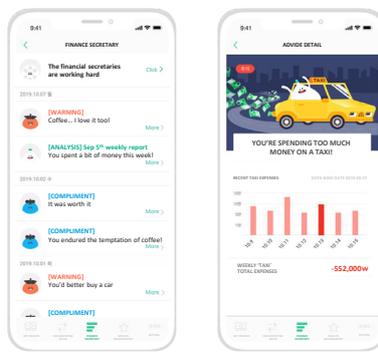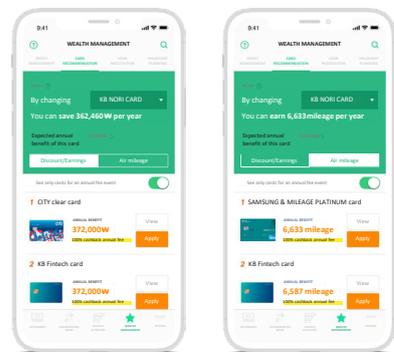
Figure 3

**Finance Secretary
Tab Pages**

Figure 4

**Wealth Management
Tab Pages**

3. Strengths of Banksalad's services

Banksalad is the financial platform that has grown with its popular budget planner service. The early adopters of Banksalad were mostly budget planner users with a strong need to actively manage their assets, income and expenses. Banksalad has been going through continuous enhancements to better collect users' financial data and offer financial solutions tailored to their needs, and to act as a financial navigator that shows users the best way to reach their individual financial goals.

Banksalad recommends financial products its users can benefit most from. Rather than letting users be exposed to financial products in the order of ad rank determined by cost per click, Banksalad is capable of making product recommendations which will be most beneficial to users based on user data and recommendation algorithms, and delivering personalized recommendations. These strengths enable Banksalad to achieve a high sales conversion rate.

Business Model /Funding

Through Banksalad, Rainist recommends financial products such as credit cards, loans, insurance and investment products to users based on their financial information and receives commissions if the users purchase a product through one of the recommendations. As for product recommendations, the company targets users accurately at the time when their product reaches maturity and new demand occurs, and timely suggests financial products that satisfy both users and advertisers. As a result, users perceive Banksalad's product recommendations as information, not advertisements.

Rainist has been highly praised as a leading fintech startup. Further, it has already established itself as the market leader in MyData-based finance that aggregates and leverages consumer data to bring benefits to consumers. The company has raised KRW 63.9 billion (USD 55.2 million) in cumulative funding from domestic VC investors until 2019 as it has unleashed its growth potential through additional business development tapping into state-of-the-art technologies such as artificial intelligence.

Table 2

Funding

Stage	Year of Funding Round(s)	Funding Amount	Investors (VC)
Series C	2019	KRW 45 bn (USD 38.9 mn)	Intervest, Gorilla Private Equity, IMM Investment, Stonebridge Ventures, Atinum Investment, Company K Partners, KB Investment, Kiwoom Investment, Murex Partners, and Bass Investment
Series B	2018	KRW 14 bn (USD 12.1 mn)	Company K Partners, Dunamu & Partners, Atinum Investment, KB Investment, Murex Partners, and Bass Investment
Series A	2017	KRW 3 bn (USD 2.6 mn)	KB Investment, and Kiwoom Investment
Angel/Seed	2015	KRW 1.9 bn (USD 1.6 mn)	-

Strategies Going Forward

Rainist plans to implement diverse strategies to improve its revenue model while enhancing Banksalad's existing features and adding new features to it. This plan aims to attract new users and boost user retention. Banksalad will evolve gradually into a MyData-based financial platform as the company strives to overcome the limitations of currently used scraping technology by increasing API linkages between its platform and a wide range of financial institutions.

As a personalized financial service provider offering the best custom solutions based on users' financial data, Rainist is recruiting a large number of talents to become the top-ranked platform provider in South Korea on the back of the latest series C funding.

Enhancements of existing features	- Make enhancements to the Asset Overview and Budget Planner.
	- Smartify Card & Loan recommendations
Addition of new features	- Health data analysis
	- Robo-advisor for savings recommendations
	- Personalized insurance/investment recommendation
Other	- Launch new financial products exclusively through Banksalad.
	- Launch a paid subscription service.

Leadership

CEO Taehoon Kim
Currently serve as CEO of Rainist and the second vice president of the Korea Fintech Industry Association.

- 2019: Received the President's Award on the 4th Anniversary of Finance Day.
- 2018: Received the Minister of Science and ICT Award.
- 2016: Served as the first vice president of the Korea Fintech Industry Association.
- 2012: Established Rainist.
- Education: Bachelor's degree in business administration, Sogang University

Taehoon Kim early realized the importance of data in decision-making and focused on areas where many people find it inconvenient to use services due to fragmented information. He found that consumers in the area of financial services had difficulties finding product information from different financial institutions when purchasing financial products, and they also struggled to manage their finances because of their transaction data scattered across financial institutions. Kim embarked on overseas case studies with the question of whether or not financial institutions' monopoly over their consumer data can be justifiable. In the end, he launched a new financial platform called Banksalad based on the concept of MyData that data ownership should be put back into the hands of consumers. He is endeavoring to make Banksalad the service that makes financial consumers smarter, on the belief that MyData not only empowers individuals to access and use their own data, but also offers ways to build new infrastructure that helps individuals become smarter.

K-UNICORNS (2) Mathpresso
The #1 Education Search Platform, Mathpresso

> **Highlights**
>
> ▸ Emerging as an education search platform for students, which boasts of its overwhelming search success rate on the back of a virtuous cycle of computer vision and natural language processing (NLP) applications, and database accumulation.
> ▸ Offering personalized, instantly delivered and affordable educational content with the aim of building a global e-learning platform that promotes equal access to educational opportunities.

Company Overview

Mathpresso was founded in June 2015, aiming to create an educational content platform that collects education resources around the world and delivers personalized content to its users by leveraging artificial intelligence (AI) technology. In Mathpresso's view, there is still a long way to go until educational content gets fully digitized for the e-learning market. Existing digital educational content just means the content put online, which is not different from offline lectures or printed workbooks. Although putting content online has led to a reduction in the marginal cost of delivering content, current e-learning content fails to unleash its full potential as digital content. Mathpresso felt the reason for the insufficient digitization of e-learning content was that nobody has made any attempts to segment content, analyze students and help the students see content that is relevant to them.

The delivery of e-learning content tailored to students' individual needs requires a platform that can accumulate data, and AI technology. More specifically, learning content should be automatically segmented and precisely delivered to students. Also, the use of sophisticated AI should be preceded by the creation of a content platform that accumulates huge volumes of educational content and students' learning data. Mathpresso thought that asking questions is the starting point for building such a platform. It takes some time for students to ask questions to their teacher and get answers. Searching questions and answers online is not always easy and convenient. What's more, asking help from a private tutor can be costly. This led Mathpresso to launch Qanda that allows students to snap a photo of a problem and upload it to receive instructions on how to solve it. With Qanda making a great leap forward in terms of service, traffic and subscriber count, the company has raised cumulative funds of KRW 2.3 billion (USD 21.2 million), expanding its service globally. Qanda reported over 2.3 million monthly active users in five countries including South Korea, Japan and Vietnam.

Company Brief	
Co-Founders & Co-CEOs	Ray Lee and Jake Lee
Date of Foundation	June 3, 2015
Location	12 Floor, 132, Teheran-ro, Gangnam-gu, Seoul, South Korea
Number of Employees	82
Main Service	AI-powered search platform for instant solutions (Qanda)
Contacts	Website: https://mathpresso.com/ E-mail: support@mathpresso.com

Market Opportunities

Education Search Market

Asking questions in the process of learning is a very common behavior of learners when there is something they don't understand. Types of questions can be largely divided into questions about concepts and questions about solutions to specific problems. In case of concept-related questions, students can use search engines to easily find the answers to them.

However, in case of questions related to problem-solving, students struggle to find detailed explanations of steps to solve problems by using search engines because of user experience (UX) restrictions. As a result, the pain points of students are still left unaddressed. It is hard for them to receive instant solutions. Typing in or uploading mathematical expressions is cumbersome, making it too much of a hassle to enter questions or answers. On top of that, keyword searching is not easy.

Advances in AI technology over the last few years make it possible to solve these pain points. Optical character recognition (OCR), a kind of image recognition technology, allows students to upload problems by taking photos of them, instead of typing them in, so as to accurately search the problems and solutions they are looking for.

Chinese online education company Zuoyebang offers OCR-based search service for students who seek answers to questions with explanations. The company reportedly had 120 million monthly active users across the mainland China (China Daily, October 25, 2019, Zuoyebang gets big boost from online user traffic). Given that such solution search service is proven to be commercially viable in the Chinese market, demand for the service is expected to grow further in tandem with a focus on science, technology, engineering and mathematics (STEM) education, and demand for e-learning in not only South Korea but also the rest of the world.

Table 1

A Peek into Overseas Education Technology Companies

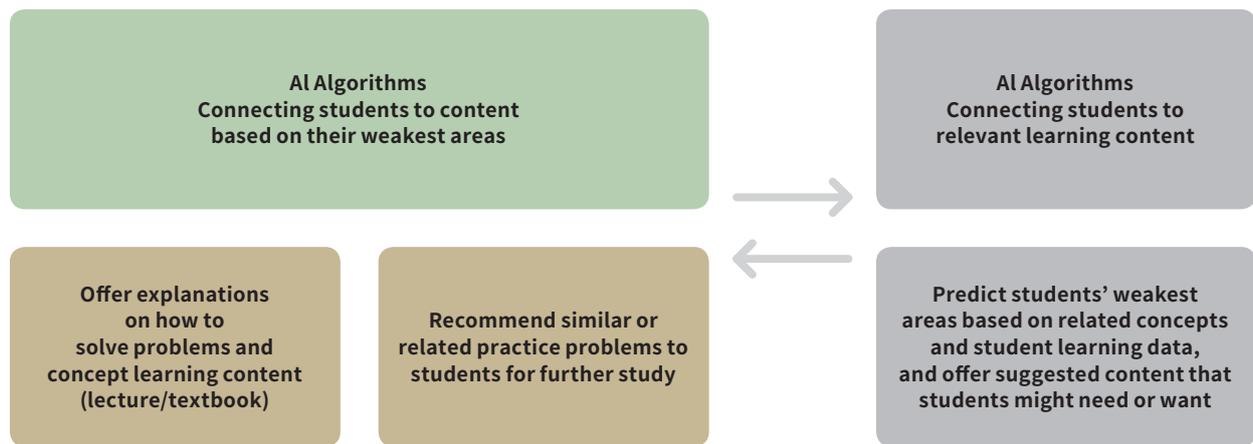|	Problem solving	Access to workbooks with concepts	Access to video lectures	Access to similar questions
Photomath	Automatic problem-solving	-	-	-
Google (Socratic)	Automatic solvation	Firsthand & Web Search	Web Search	-
Microsoft (Math Solver)	Automatic problem-solving	Web Search	Web Search	Web Search
Baidu (Zuoyebang)	Firsthand explanations	-	Firsthand	Firsthand
Tencent (Yuansouti)	Firsthand explanations	-	-	-
Mathpresso (Qanda)	Automatic problem-solving & Firsthand explanations	Firsthand & Web Search	Web Search & Platform	Firsthand & Platform
Tencent (Doubtnut)	Automatic problem-solving (Wolfram) & Firsthand explanations (videos)	Web Search	-	-

Source: Mathpresso

Main Services

Qanda, an AI-powered instant solution-search platform
Qanda instantly provides solutions within 5 seconds and explanations from tutors studying at top universities within 7 minutes. All students need to do is simply take a photo of a problem. Qanda also connects students to relevant free or paid video lectures, workbooks or practice problems on the same topic. Students can even immediately connect with teachers online if necessary.

Qanda's search engine utilizes computer vision and NLP technologies to analyze problems and find relevant content. In addition, Qanda features AI-powered, automatic problem-solving solution called Auto Solver, a module that generates step-by-step solutions to math problems using the same steps as a human would use to solve them. The Auto Solver answers math problems involving mathematical operations, faced by students in elementary school through the first year of high school in South Korea.

Above all, Mathpresso has made its own ecosystem of solutions that do not exist anywhere else online. Workbooks and video lectures of the highest quality will be found in Qanda.

AI Algorithms
Connecting students to content
based on their weakest areas

AI Algorithms
Connecting students to
relevant learning content

Offer explanations
on how to
solve problems and
concept learning content
(lecture/textbook)

Recommend similar or
related practice problems to
students for further study

Predict students' weakest
areas based on related concepts
and student learning data,
and offer suggested content that
students might need or want

Core Technology and Achievements

Optical Character Recognition (OCR) Technology

Mathpresso has continued to increase Qanda's search success rate by adding the features of recognizing handwriting and sorting algebraic and verbal expressions from problem images uploaded by users who want to get solutions, which is in line with recent trends in deep learning research. And the company has strived to improve the search engine employing algorithms and deep learning. To make the mathematical expression recognition engine running real-time on mobile devices, it undertook model optimization and compression, significantly reducing its model size to 1/12 and the number of floating point operations per second (FLOPS) to 1/100.

Development of Content Recommendation Engine

Mathpresso developed a content recommendation engine based on clustering, vectorization and NLP techniques. This system examines user-content connections and analyzes the hierarchical structure of problems and associations among them, thereby suggesting content a particular user might need or be interested in.

Monthly Active Users (MAUs)

Mathpresso has grown exponentially after closing its series A funding, as evidenced by a dramatic increase in the number of Qanda monthly active users (MAUs) from 40,000 MAUs as of August 2018 to 2.3 million MAUs as of April 2020. Moreover, the company made inroads into Japan and Vietnam, garnering 400,000 and 550,000 MAUs, respectively. Currently, Qanda has its global presence in over 50 countries with more than 2.3 million MAUs.

The sharp growth in MAU count is attributed mainly to Qanda's high search success rate, underpinned by the creation of a virtuous cycle of data. When solution search returns no results, the search query becomes a question submitted to tutors from top universities to be answered. Once the answer is provided, the search query and related content are stored in the database. This virtuous cycle has continually boosted the search success rate, making a decisive difference in UX between Qanda and late-coming competitors, and building formidable data barriers against latecomers. According to Mathpresso, the search success rate is approximately 90% in Korea when invalid requests are taken into account.

UX differentiation has led to a persistent increase in the one-month user retention rate of Qanda (the percentage of users who return to an app this month after installing and using it last month). Its user retention rate hovers around 70% well above that of other mobile services, which attests that Qanda has taken root as an essential service for students.

Business Model /Funding

Business Model
This year Mathpresso will start its online marketplace for educational content while introducing a subscription model. Mathpresso will monetize Qanda by providing value for content connectivity and instant problem solving. To that end, it will embrace a new business model in the third quarter of 2020 with the goal of converting 1% of its monthly active app users into revenue. The company expects to achieve a 5% conversion rate by the end of 2020.

Table 2

Funding

Stage	Year of Funding Round(s)	Funding Amount	Investors (VC)
Series B	2019	USD 14.5 million	Legend Capital, InterVest, NP Investments, and Mirae Asset Venture Investment
Series A	2018	USD 5.3 million	Samsung Ventures, Softbank Ventures Asia, Mirae Asset Venture Investment, Smilegate Investment, and Mega Investment
Angel/Seed	2016	USD 1.4 million	Softbank Ventures Asia, and Mega Investment

Strategies Going Forward

1. Content Platform - encouraging the participation of educational content providers and delivering customized content to users

Mathpresso will encourage traditional education companies creating practice problems or lectures to participate in the Qanda platform as content providers. With the addition of content production, which is the strength of existing education companies, Mathpresso is putting its best effort into research and development in order for the platform to provide users with similar problems as well as three-to-five-minute-long videos containing personalized instruction.

2. Global Expansion Strategy

Starting out as a local service in South Korea in 2017, Qanda became the #1 education app in 2018. Mathpresso has launched the service in Japan and Vietnam and became #1 in both markets much faster than Mathpresso did in its home country. In 2020, the company is planning to expand its service to Thailand, India, Indonesia, the United States, and South America. Traditional education will be disrupted with advancements in technology. AI will automatically solve problems in natural language, just like Google Translate. AI will connect students to specific educational content more effectively than any teacher. Having secured the biggest education data ahead of any other player, Mathpresso hopes to be able to create that future.

Leadership

Co-Founder Ray Lee
June 2015-present: Co-CEO, Mathpresso

- 2012: Math Instructor for High School Students, Apgujeong's Thinking Bull
  (private after-school math academy)
- Hanyang University
  Bachelor's degree in Electronic Engineering
- Incheon Science High School

Co-Founder Jake Lee
2015-present: Co-CEO, Mathpresso

- December 2014–February 2015: Developer Intern, TNT Crowd
- Seoul National University
  Bachelor's degree in Electrical and Computer Engineering
- Incheon Science High School

Mathpresso's founding team, which consists primarily of young entrepreneurs who graduated in the same year from Incheon Science High School, a prestigious high school for students gifted in math and science, has accumulated business experience in the fields of AI technology and e-learning since 2015. Through arduous efforts, they have built a huge database of math problems for K-12 students, while developing OCR to recognize mathematical expressions. The team that developed high performance OCR is a rarity. The co-founders keep moving forward with the strong belief that technology will be a driving force for innovation in the education market. They have been invited to speak at conferences hosted by Google, proving that Mathpresso's prowess in AI technology is being widely recognized.

MARKET
WATCH

Korea Venture Investment Corporation
Semi-Annual Journal