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# Derivatives Issue

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## 2020 outlook

### Liquidity paradox and volatility risk

#### Lower end of range of volatility is higher in 2019

Volatility in the world's stock markets has stabilized this year as central banks in developed countries have turned to monetary easing and investors have responded to lessons learnt from 2018's spikes in volatility. That said, bond market yield curves have become inverted, commodity prices have struggled amid an economic slowdown, and the yuan has slid past the key psychological level of CNY7/USD. Reflecting financial market jitters, the lower end of the range of volatility has increased to a 5-year high and trading volume in Korea's derivatives markets has increased by around 5% this year.

At end-May 2019, Korea's financial authorities announced measures to develop the derivatives markets (marking a complete about-face from their previous approach), which lays the groundwork for qualitative growth in 2020 by boosting market accessibility for retail investors, permitting the listing of new products, and stimulating improvements in market infrastructure. A recent controversy over derivatives-linked funds has offered an opportunity for derivatives-linked products to readjust their growth trajectory.

#### 2020: Expecting a liquidity paradox and volatility risk

'Liquidity risk' has emerged as a key factor in asset pricing since 2018 as central banks have lost room to maneuver. Macro liquidity remains ample, but we have seen increasing numbers of financial incidents caused by micro liquidity shortages. This is the liquidity paradox. Amid rising volatility, the once-overlooked liquidity risk should begin to be fully reflected in pricing in 2020. In sum, volatility and liquidity asymmetry should dominate the market next year. With uncertainties growing, the market should suffer tail risk due to rising volatility and liquidity risk.

We forecast that the VKospi will average 18% in 2020, with the lower end of its range (which has been elevated since 2019) remaining flat y-y and the upper end rising slightly.

#### Make portfolios resilient to tail risk and to herd mentality

We expect ETF fund flows to favor stability and profitability in 2020, given structurally rising volatility and frequent liquidity lapses. With the bottom end of the range of volatility likely to remain higher than 2018 levels, unexpected events (eg, political developments, economic data surprises) could result in tail risk (eg, liquidity lapses). Hedging tail risk is essential if investors are to make systematic decisions in the most stressful circumstances.

We expect the Samsung Investment Risk Index to continue to fluctuate around the baseline next year, albeit staying in risk-off mode more often than not. For 2020, we recommend diversifying investments and hedging, as that may mitigate a rise in volatility.

Given the high likelihood of 'negative volatility cycle'-driven financial market confusion, investors ought to secure liquidity, limit portfolio volatility to a certain level, and seek diversified investments to bolster portfolio resilience.

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## 2019 market review

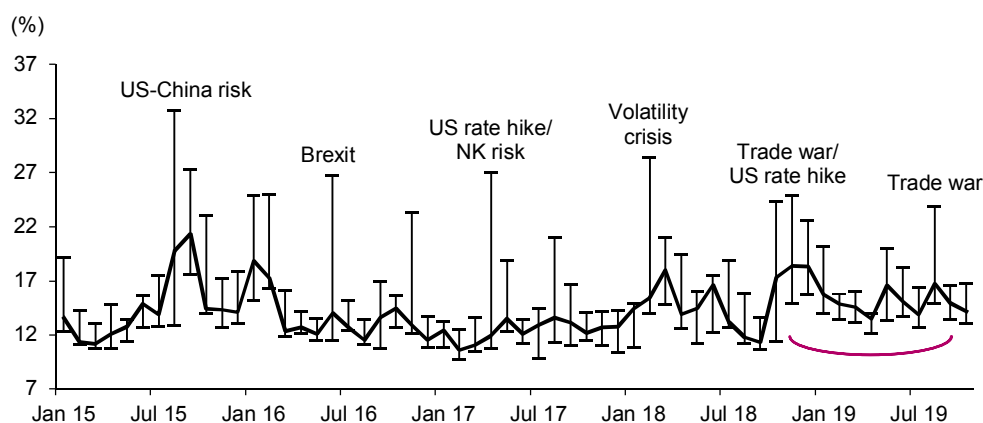
### Lower end of volatility enhanced

Major market indices worldwide—particularly the S&P 500, the EuroStoxx 50, and the Nikkei 225—saw gains of around 20% this year as US-China trade tensions eased, as developed countries’ central banks pursued accommodative monetary policies, and as the market responded to lessons learnt from 2018’s spikes in volatility. The stock market strength served to limit the upside of volatility, leading to y-y easing of the VIX spike. In short, global financial markets gained back stability in 2019, unlike expectations a year ago that central bank tightening and trade wars would bring on a full-blown era of uncertainty.

Despite the world’s stock markets being in a risk-on mode, we have detected risk signals in various asset classes. An inverted yield curve in the US bond market is viewed by many as a sign of an impending recession. China-related anticipation has weakened amid the yuan sliding past the key psychological level of CNY7/USD, escalating geopolitical risk in the global financial hub of Hong Kong, and economic slowdowns in Greater China. Stock markets in East Asia (including in Korea, Thailand, Hong Kong, and Indonesia) have yet to break from relative weakness, and commodity prices that are closely linked to global economic trends (eg, crude and copper) have remained stagnant. Further, safe asset precious metals (eg, gold)—tools for hedging traditional assets—have seen prices stay strong despite controversially high valuations.

With markets worldwide being risk-on, spikes in the VIX have eased and the lower bound of its range has edged up. As for the VKospi, the lower end of its range has averaged 12.09% since 2015, but that lower-bound average rose to 13.32% over Jan-Oct 2019. The lower end of the range averaged 12.60% in 2015 (when stock markets were crushed by G2 risk) and 12.64% in 2018 (when jitters about interest rate hikes prevailed). Now, the average is at its highest level in five years. In short, despite strength in stock markets around the world, Korea’s volatility index is still jittery over downside risk.

### VKospi



Note: Bold line is monthly average; bars mark monthly high and low  
 Source: KRX, Samsung Securities

The VKospi rose from a monthly average of 12.3% in 2017 to 15.2% in 2018, as quantitative tightening by the US Fed and escalating trade tensions involving the US raised concerns over investments in risk assets in 2018 (whereas, in 2017, interest rate cuts by central banks in developed countries and economic stimulus measures in emerging markets led to sharp rises in stock markets globally). The VKospi has hit a monthly average of 14.9% ytd in 2019, remaining high amid trade-related uncertainty and economic slowdowns. Fundamentally, in our view, instability of investment sentiment is behind the rising lower end of the VKospi's range.

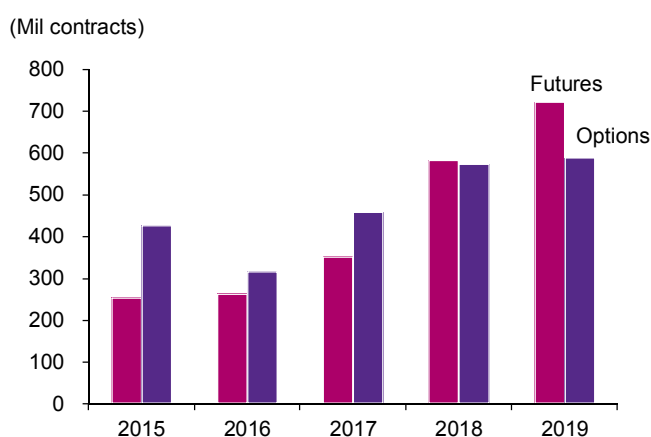
Fluctuations in volatility have served to provide more trading opportunities in derivatives markets. Over Jan-Oct 2019, the combined trading volume and value of all KRX-listed futures and options hit a respective 1.31b contracts and KRW9,968t. On a full-year basis, these metrics should reach 1.4b contracts and KRW10,500t (vs 1.15b contracts and KRW9,528t in 2018). The trading of KRX-listed derivative products should rise 5% this year.

Korea's derivatives markets (futures and options) saw liquidity hit a multi-year high in 2019. The futures markets has witnessed trading volume and value grow 23% and 2% *pa*, respectively, since 2015—trading volume growth far outsized growth in trading value thanks to: 1) a decline in the multiplier; and 2) increases in trading of mini products and single stock options. The options markets has seen trading volume grow 6% *pa* since 2015, where trading value has fallen 7% *pa* over the same period. We attribute the slide in trading value to a fall in the multiplier.

The spot markets saw y-y weakness in liquidity this year as the Kospi suffered. Kospi 200 components' trading value averaged KRW69t per month over Jan-Oct 2019 (down 30% from KRW99.8t over Jan-Oct 2018). Kosdaq 150 components' trading value averaged KRW26.3t per month over Jan-Oct 2019 (down almost 40% from KRW41.8t over Jan-Oct 2018).

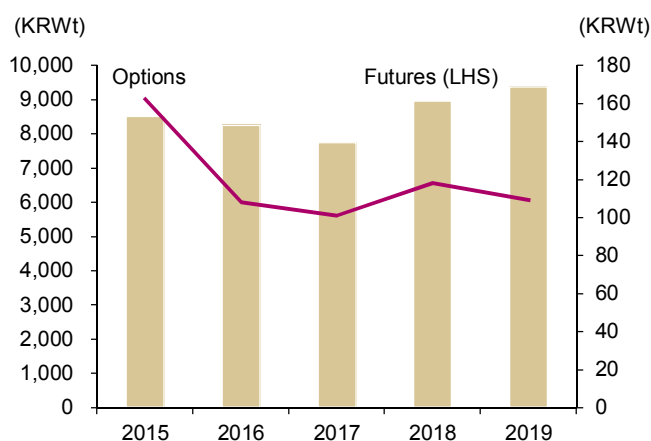
Spot market liquidity has declined and derivatives market liquidity has increased, which indicates that investors—facing uncertainty—have been aggressively using derivatives products. In particular, in place of spot markets and their shrinking liquidity, derivatives products have been used not only to track and hedge traditional products, but also as alternative investments.

**Futures and options: Trading volume (January-October)**



Source: KRX, Samsung Securities

**Futures and options: Trading value (January-October)**



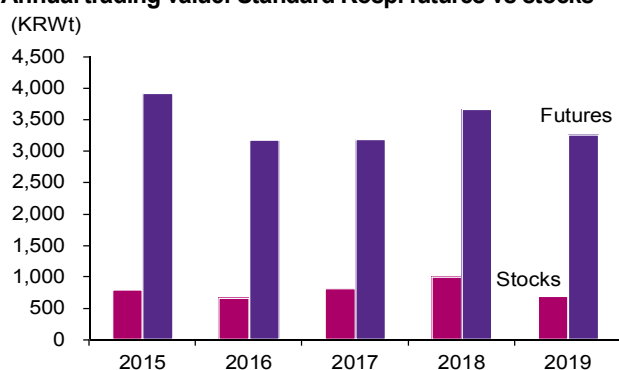
Source: KRX, Samsung Securities

### Standard Kospi 200 futures and mini futures

Trading value in the standard Kospi 200 futures market edged down from KRW3,600t over Jan-Oct 2018 to KRW3,200t over the same months of 2019, as the spot market remained range-bound. Trading value in spot markets also declined by more than 30% y-y over Jan-Oct 2019, and, accordingly, the spot-futures ratio for trading value rose from 3.6x in 2018 to 4.7x in 2019. This indicates that derivatives products used in the standard Kospi 200 futures market sharply exceeded spot market liquidity.

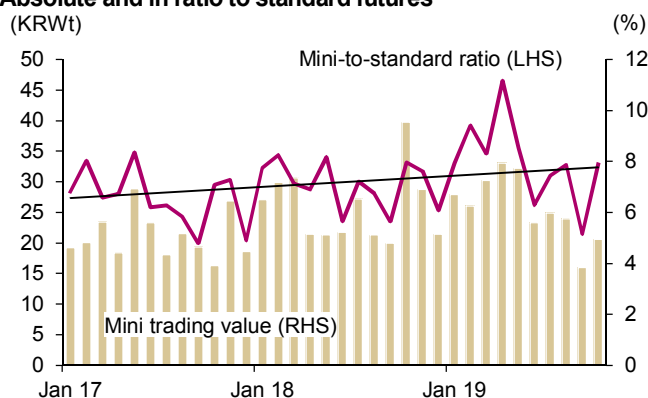
Mini Kospi 200 futures market liquidity has improved steadily. Trading value of mini Kospi 200 futures in ratio to standard futures rose from 7% over Jan-Oct 2018 to 8% over Jan-Oct 2019. In particular, the ratio hit 11.2% in Apr 2019, which shows how well mini futures have performed since their launch. Furthermore, the much-feared cannibalization of standard futures by mini futures has not materialized.

#### Annual trading value: Standard Kospi futures vs stocks



Source: January-October  
Source: KRX, Samsung Securities

#### Mini Kospi 200 futures trading value: Absolute and in ratio to standard futures



Source: KRX, Samsung Securities

Foreign investors have been consolidating their dominance of the mini and standard Kospi 200 futures markets, accounting for a larger portion of standard Kospi 200 futures market trading y-y. The retail portion of trading value of has been shrinking gradually for standard Kospi 200 futures and has been plunging for mini futures.

For standard Kospi 200 futures, the financial institution portion of trading has remained sluggish, while for mini Kospi 200 futures it has increased sharply—we read this as evidence of there being more liquidity providers in the mini market and a rise in arbitrage trading using mini futures. The pension fund and ITC portions of trading value (in the standard and mini markets) have increased gradually this year, on rising investment demand to create profit from arbitrage trading and hedging.

#### Kospi 200 standard and mini futures: Portion of trading value, by investor type

(%)	2018		2017	
	Standard	Mini	Standard	Mini
Foreign investors	65.3	64.2	64.1	62.3
Retail	21.6	9.6	20.6	10.4
Brokers	8.1	25.9	10.7	26.9
ITCs	2.2	0.1	2.3	0.1
Pensions	1.0	0.0	0.7	0.0
Non-financial institutions	1.4	0.2	1.1	0.3

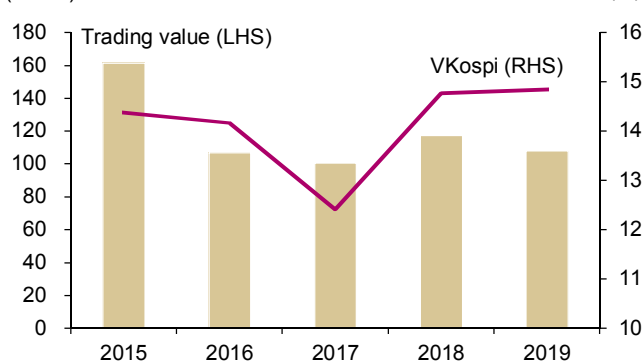
Note: January-October  
Source: KRX, Samsung Securities

### Equity index options

The standard Kospi 200 options market saw trading value decline 9% from KRW117.4t over Jan-Oct 2018 to KRW107.7t over Jan-Oct 2019. Trading volume inched up from 543m contracts to 545m contracts over the same period. In 2018, bouts of volatility (popularly termed ‘Vol-mageddon’) put increasing upward pressure on options prices. Meanwhile, with the lower end of the VKospi’s range rising in 2019, demand for OTM options increased, leading to greater trading volume y-y.

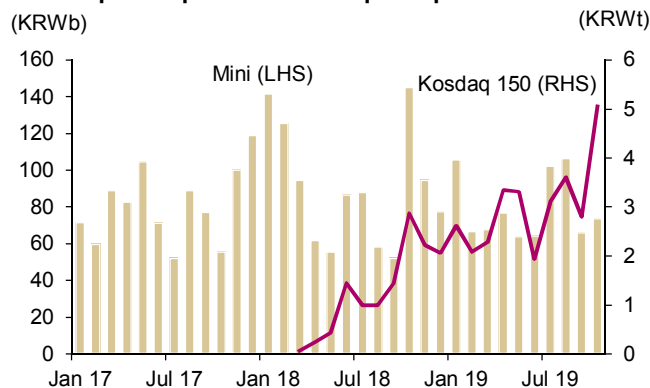
The mini Kospi 200 options market saw trading value decline from KRW908b over Jan-Oct 2018 to KRW792b over Jan-Oct 2019. Liquidity was buoyed by arbitrage trading demand from liquidity providers, but it will suffer unless retail investors participate more aggressively in the market.

**Trading volume of standard Kospi 200 options vs annual average of VKospi (KRWt)**



Note: January-October  
Source: KRX, Samsung Securities

**Monthly trading value: Mini Kospi 200 options vs Kosdaq 150 options (KRWb)**



Note: Kosdaq 150 options market began in March  
Source: KRX, Samsung Securities

Foreign investors have strengthened their dominance of the standard Kospi 200 options market (where liquidity is ample) as they can profit via volatility trading and reduce their participation in the mini market, where investors with no financial information hardly participated.

The domestic investor portion of trading value in the standard and mini Kospi 200 options markets has fallen significantly ytd. Meanwhile, with retail investors leaving the mini market, the financial institution portion of trading value has risen. ITCs and pension funds have been inactive in Kospi 200 options (but have actively used Kospi 200 futures), which we attribute to trading restrictions and a lack of strategies.

**Kospi 200 standard and mini options: Portion of trading value, by investor type**

(%)	2018		2017	
	Standard	Mini	Standard	Mini
Foreign investors	65.5	55.2	62.7	50.3
Retail	26.9	9.7	27.5	14.2
Brokers	5.3	35.0	7.5	35.3
ITCs	0.3	0.0	0.4	0.0
Pensions	0.0	0.0	0.0	0.0
Non-financial institutions	1.9	0.0	1.9	0.1

Source: January-October  
Source: KRX, Samsung Securities

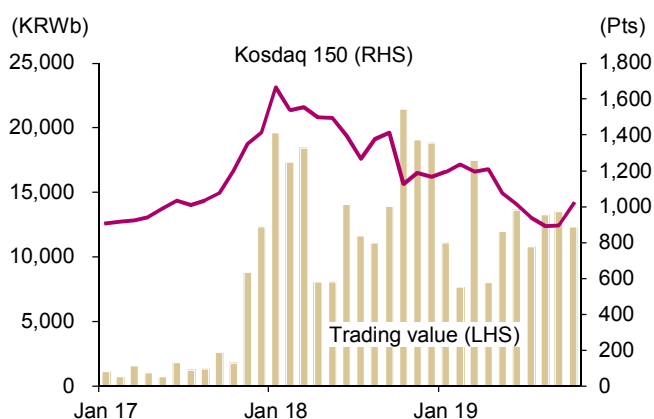
### Kosdaq 150 futures and options

The Kosdaq 150 index has seen a double-digit percentage decline in 2019 for a second year running (falling 12.3% y-y over Jan-Oct 2019 vs a 17.5% y-y decline in full-year 2018), after having surged a massive 51% in 2017. The index underperformed the Kosdaq in 2018 and 2019 due to weakness in tech stocks. The sharp decline in the Kosdaq 150 index led transaction value of Kosdaq 150-based derivatives products to decline from a monthly average of KRW15t in 2018 to KRW12t over January-October in 2019.

The sluggish Kosdaq 150 performance led to a decline in the net asset value of Kosdaq 150-based leverage/inverse ETFs from KRW2t at end-2018 to KRW1.7t at end-Oct 2019 (vs KRW1.3t at end-2017). Meanwhile, open interest for Kosdaq 150 futures rose amid increasing arbitrage trading based on Kosdaq 150 futures and more opportunities for hedging/directional investments.

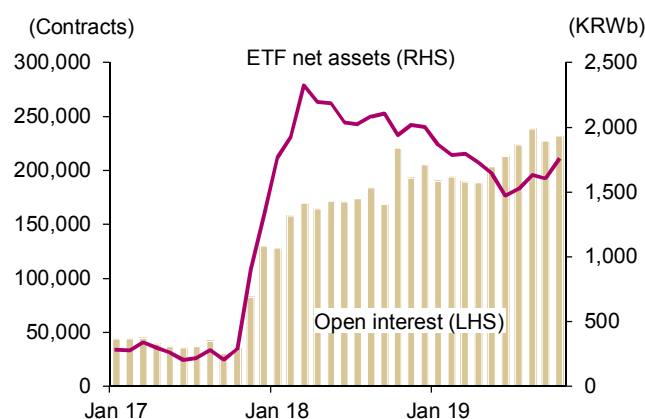
Kosdaq 150 options liquidity has increased gradually, with transaction value hitting KRW30b over Jan-Oct 2019 (vs KRW12.7b over Mar-Dec 2018), driven by Kosdaq 150 futures-linked arbitrage trading and the participation of liquidity providers in the Kosdaq 150 options market (see chart on page 5).

**Kosdaq 150: Index vs futures trading value**



Source: KRX, Samsung Securities

**Kosdaq 150 futures open interest vs  
Kosdaq 150 leverage ETF net assets**



Source: KRX, Samsung Securities

The foreign investor portion of Kosdaq 150 futures trading value has surged ytd, which we attribute to growing investment demand for the spot Kosdaq 150 index and rising demand for hedging/directional investment. Also, Kosdaq 150 futures are increasingly being used for arbitrage trading by financial institutions and pension funds, and for proxy/hedging trading by ITCs. Retail investors' participation in the Kosdaq 150 futures market has fallen, while non-financial institutions' participation has increased.

**Kosdaq 150 futures: Portion of trading value, by investor type**

(%)	Foreign investors	Retail	Brokers	ITCs	Pensions	Non-financial institutions
2018	36.9	17.4	27.4	15.4	2.4	0.5
2017	13.0	22.3	43.3	18.1	3.1	0.1

Note: January-October

Source: KRX, Samsung Securities

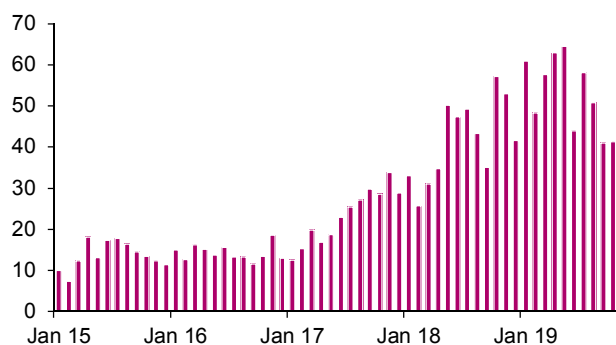
### Single stock futures and options

At end-Oct 2019, Korea's range of single stock futures (SSFs) had 138 underlying assets (120 Kospi constituents and 18 Kosdaq constituents), four of which were added as recently as Jul 2019 (3 Kospi constituents and 1 Kosdaq constituent). SSF trading volume grew 30% from a monthly average of 40.7m contracts over Jan-Oct 2018 to 52.99m contracts over Jan-Oct 2019. Monthly contract volume peaked at a record-high 64.55m contracts in May 2019. In 2H19, however, with stock market volatility falling, SSF trading volume decreased.

At end-Oct 2019, Korea's range of single stock options (SSOs) had 33 underlying assets (32 Kospi constituents and 1 Kosdaq constituent), of which 2 (both Kospi constituents) were added in Jul 2019. SSO trading volume rose 21% from a monthly average of 1.64m contracts over Jan-Oct 2018 to 1.99m contracts over Jan-Oct 2019, which we attribute to the increasing role of market makers.

#### SSFs: Trading volume

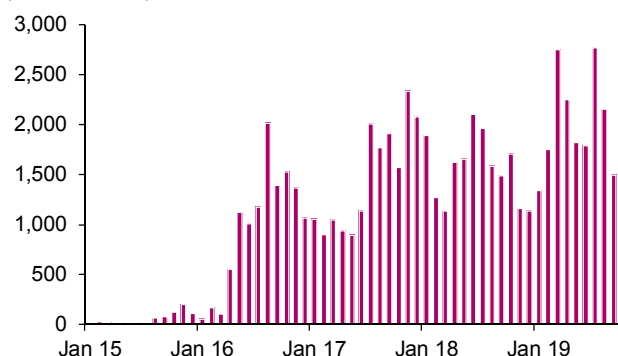
(Mil contracts)



Source: KRX, Samsung Securities

#### SSOs: Trading volume

('000 contracts)



Source: KRX, Samsung Securities

Foreign investors did not participate in the SSO market at all in 2019, while retail investors participated aggressively. It seems that there is growing demand for institutional reform to encourage the participation of foreign and domestic institutional investors.

The pension fund portion of SSF market trading value has surged, as Korea Post has expanded its arbitrage trading from index-linked products into SSFs. Moreover, the foreign investor portion of the SSF market has surged as foreign investors have engaged in statistical arbitrage trading based on high-frequency trading (HFT) strategies.

#### SSFs and SSOs: Portion of trading value, by investor type

(%)	Single stock futures		Single stock options	
	2018	2017	2018	2017
Brokers	14.92	16.78	68.91	73.21
ITCs	3.92	4.30	3.88	0.24
Pension	9.79	4.78	0.00	0.00
Non-financial institutions	0.45	2.01	0.02	5.37
Retail	28.64	36.89	27.02	21.04
Foreign investors	42.34	34.27	0.16	0.14

Note: January-October

Source: KRX, Samsung Securities

### Treasury futures and currency futures

Global financial markets showed a dramatic turnaround in response to US Fed policy in 2018 and 2019. To weather an economic slowdown and decline in global trade volume amid the US-China trade war (see the 1Q FOMC statement, which underscored the need for patience), the US central bank ended interest rate hikes (which it had begun at end-2017) and implemented an ‘insurance cut’ in 2H. Accordingly, bond yields worldwide fell below levels seen at end-2018.

#### 10-year government bond yields, by country

(%)	US	Germany	Japan	Korea
End-2018	2.683	0.2386	(0.0051)	1.945
Jun 2019	2.005	(0.3279)	(0.1667)	1.602
Oct 2019	1.687	(0.407)	(0.1444)	1.735

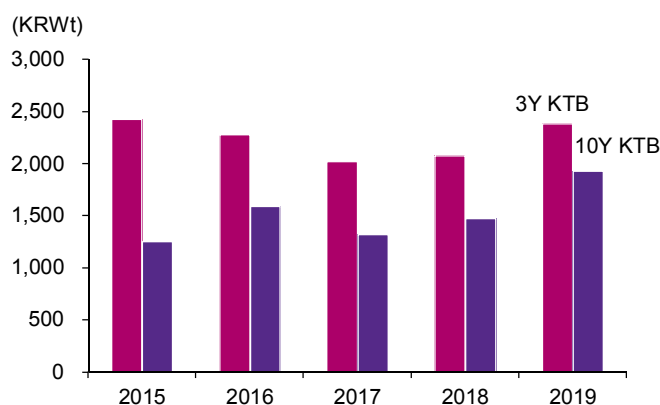
Source: Bloomberg, Samsung Securities

With bond market volatility increasing around the globe, Korea’s bond futures market saw liquidity spike. The trading value of 3-year KTB futures hit KRW2,385t over Jan-Oct 2019 (up 14.8% from KRW2,076t over Jan-Oct 2018), while the trading value of 10-year KTB futures increased 30.9% from KRW1,472t to KRW1,928t over the same period. With long-term yields falling below short-term yields in bond markets worldwide, volatility increased mainly in the long-term segment, leading to an explosive increase in trading of 10-year KTB futures.

Amid the surge in trading value, foreign investors’ participation in the KTB futures market has increased sharply. The foreign investor portion of trading value over Jan-Oct 2018 stood at 36.5% in the 3-year KTB futures market and 34.2% in the 10-year KTB futures market, but these figures rose to a respective 42.2% and 41.7% over Jan-Oct 2019. Foreign investors use KTB futures as a proxy for emerging-market government-bond derivatives products.

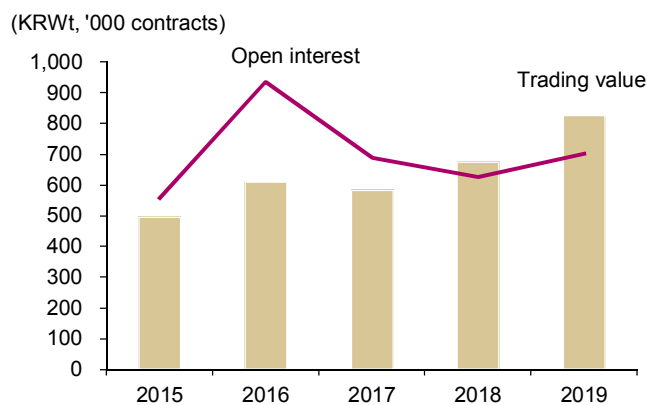
Since the US Fed’s shift in monetary policy has caused the US dollar to depreciate further against major currencies, USD futures-based hedging/directional investment demand has sharply increased. Trading value in Korea’s USD futures market leapt 22% y-y to a record-high KRW825t over Jan-Oct 2019. Foreign investors’ participation in the market has surged. The foreign investor portion of Korea’s USD futures market hit 47.6% over Jan-Oct 2019, up from 42.5% over Jan-Oct 2018. We attribute this more to a rise in short-term trading demand (eg, HFT) than to currency hedging.

Korea treasury bond futures: Trading value



Note: January-October  
Source: KRX, Samsung Securities

Korea’s USD futures: Trading value and open interest



Note: January-October  
Source: KRX, Samsung Securities



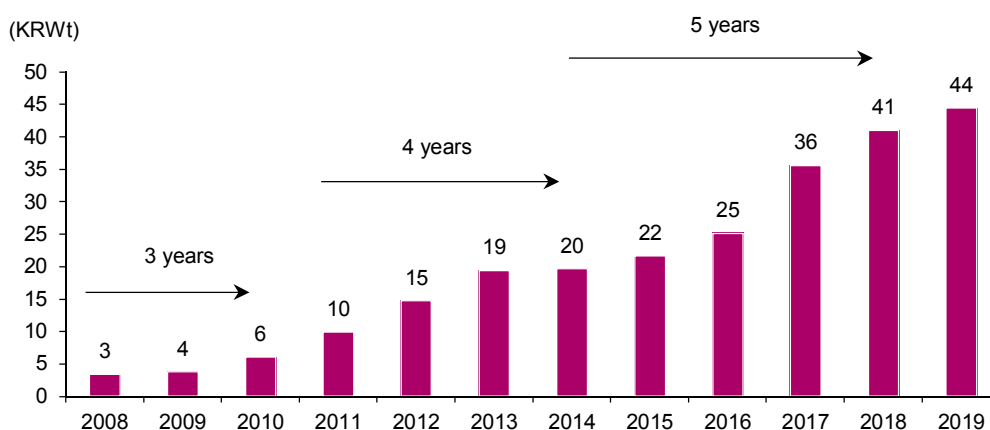
### ETF market

As of end-October, the ETF market boasted assets of KRW44.4t and 445 listed products (up 8.3% and 7.7%, respectively, from KRW41t and 413 products at end-2018). Domestic ETFs' net assets topped KRW20t in 2015.

Korea's ETF market has been growing every year, albeit more slowly in recent years (it now takes longer to double in size; see chart below). Korea's ETF market still boasts ample growth potential from ETFs based on overseas assets and Korean non-equity assets, but there seems to be little upside for ETFs based on Korean equities.

As the growth of Korea's ETF market is slowing, it is mainly bond-type ETFs that have enjoyed a y-y increase in net assets this year. This suggests the domestic ETF market is upgrading, following in the footsteps of developed markets (where ETFs have moved from equities to bonds). Meanwhile, it is mostly equity index-linked ETFs that suffered a visible decline in net assets. In sum, investors seem to be moving towards strategic ETFs for asset allocation (vs focusing on passive products, previously).

### ETF market AUM, by year



Source: KRX, Samsung Securities

### ETF AUM: Top-10 increases and decreases over Jan-Oct 2019

(KRWm)	Increase	Decrease
Kodex Active Bond	744,692	Kodex 200 (1,222,367)
Tiger Top-10	709,675	Tiger 200 (690,360)
Hanaro 200	559,961	Kodex MSCI Korea TR (559,259)
Kodex Short-term Bonds	543,037	KB Star Short-term CSB (192,888)
Smart 200TR	348,786	Kodex Kosdaq 150 Leverage (174,762)
Tiger Short-term CSB	329,592	Tiger Kosdaq 150 (169,842)
Kodex 200TR	300,108	Kodex Kosdaq 150 (115,526)
Kodex 200 Futures Inverse 2x	297,425	KB Star KTB 3-year Inverse (95,951)
KB Star Kospi	160,722	Tiger Large-cap Value (90,394)

Source: KRX, Samsung Securities

**ETN market**

The total indicative value of the exchange-traded note (ETN) market rose from KRW7.2t to KRW7.3t between end-2018 and end-October, with the number of listed products falling from 206 to 192 over the same period. While the ETN market saw robust growth in total indicative value and number of listed products in 2018, it stagnated in 2019. This year, ETN product development was more sluggish than was ETF product development (which entered a minor growth phase). The chart below shows that 36 ETFs listed this year, while only 13 ETNs did so.

**ETN market: Total indicative value and total products**

	2015	2016	2017	2018	2019*
Total indicative value (KRWb)	1,930	3,470	5,212	7,208	7,346
Total products	78	132	137	206	192

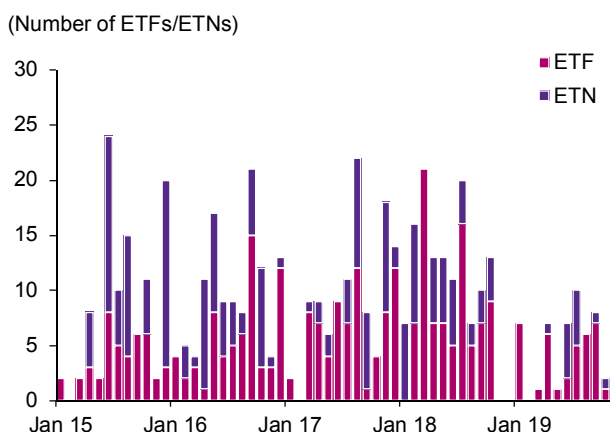
Note: \*January-October

Source: KRX, Samsung Securities

It is weakness in short-strangle ETNs (ones that seek profit by selling both call and put options) that was mainly behind ETN market sluggishness this year. The total indicative value of True Kospi Short Strangle 5% (based on number of shares sold; reckoned by deducting number of shares held by LPs from number of listed shares) shrank from KRW830b at end-2018 to KRW723b at end-Jun 2019 and KRW325b at end-Oct 2019. Transaction value rose from KRW826b over Jul-Dec 2018 to KRW899b over Jan-Oct 2019. A number of similar products have listed since 2H18, but weakness in flagship products has kept related products depressed as well.

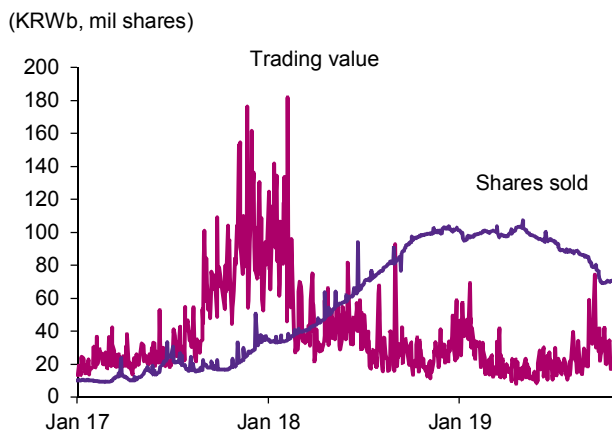
The relative illiquidity of the ETN market is also evidenced by the decline (over 30% y-y) in number of ETN shares sold (from 101m at end-2018 to 69m at end-Oct 2019). Such a decline implies an increase in the number of shares unsold. Although more products have been issued, investors have accumulated less volume, which suggests their interest in the ETN market has waned.

**Number of ETF and ETN launches, by month**



Source: KRX, Samsung Securities

**ETN trading value and number of shares sold**



Source: KRX, Samsung Securities

**ELW market**

In contrast to the ETN market, the equity-linked warrant (ELW) market has enjoyed relatively stable liquidity. Trading value hit KRW23.6t over Jan-Oct 2019 (for a daily average of KRW115b) vs KRW24.4t over Jan-Oct 2018 (KRW120b/day on average). The overall market cap of the ELW market edged up from KRW13.2t to KRW14.8t between end-2018 and end-Oct 2019, and the number of listed products rose from 2,534 to 3,225.

Together, retail and foreign investors account for 70% of ELW market trading value. The retail investor portion has slumped since 2017, while the foreign investor portion has increased. It is interesting to note that non-financial institutions remain active participants in the ELW market, accounting for 6.7% of trading value (vs 8.6% in 2018)—still half as much as that of financial institutions (LPs).

**ELW market: Portion of trading value, by investor type**

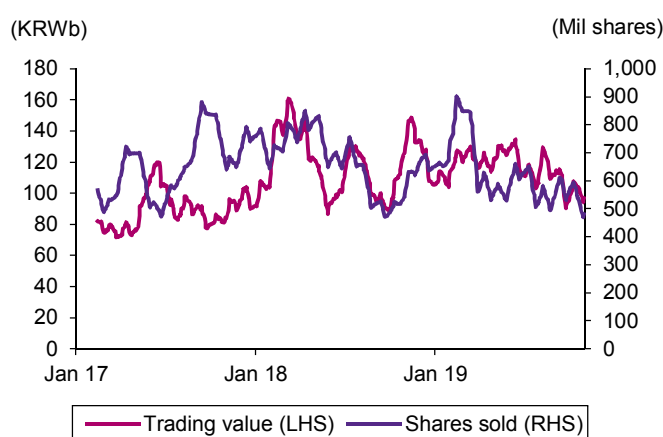
(%)	2019*	2018	2017	2016
Retail	47.5	49.6	55.9	53.3
Foreign investors	32.6	30.9	21.6	24.8
Brokers	12.8	10.5	14.6	14.5
Non-financial institutions	6.7	8.6	4.9	5.9

Note: January-October

Source: KRX, Samsung Securities

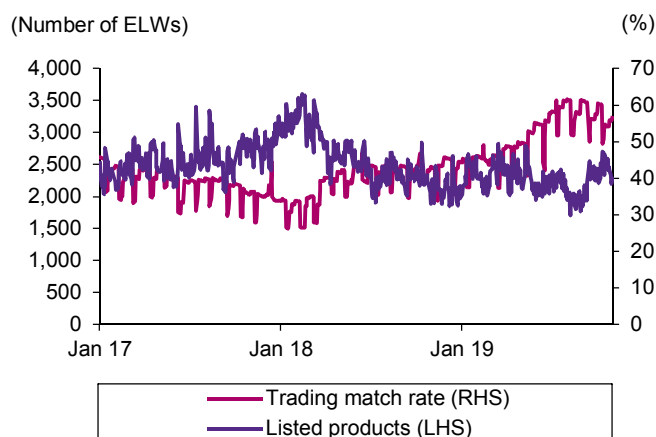
With stock market volatility easing in 2019, the ELW market has shrunk both in terms of trading value and number of shares sold (whereas in 2018, volatility spiked frequently, ELW trading was more active). The traded portion of ELWs has risen steadily since 2018 (see chart below), which reflects the normalization of the ELW market. In short, the ELW market has grown in qualitative terms this year.

**ELW: Trading value and shares sold**



Note: 30day rolling average  
Source: KRX, Samsung Securities

**ELWs: Shares listed and trading match rate\***



Note: \*Traded products/listed products  
Source: KRX, Samsung Securities

### ELS and DLS

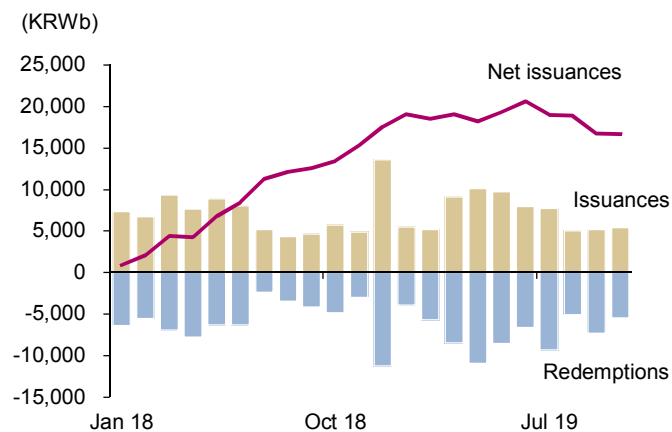
Equity-linked securities (ELS) and equity-linked bond (ELB) issuances totaled KRW71t over Jan-Oct 2019, up from KRW68.1t over the first ten months of 2018. ELS based on major stock indices including HSCEI exceeded 80% of total issuances, but ELS issuances declined sharply in 2H as the HSCEI plunged amid escalating US-China trade tensions and growing geopolitical risk involving Hong Kong. Accordingly, redemptions have exceeded issuances in 2H (a reversal of the trend seen in 1H).

Debt-linked securities (DLS) and debt-linked bond (DLB) issuances reached KRW23.3t over Jan-Oct 2019, down slightly from KRW25.1t over Jan-Oct 2018. Redemptions soared KRW21.8t over Jan-Oct 2018 to KRW25.5t over Jan-Oct 2019, while issuances declined. In particular, a controversy over derivatives-linked funds (DLF) involving some commercial banks caused issuances to hit a post-Dec 2015 low of KRW1.3t as of Sep 2019. Accordingly, redemptions exceeded issuances in 2H19.

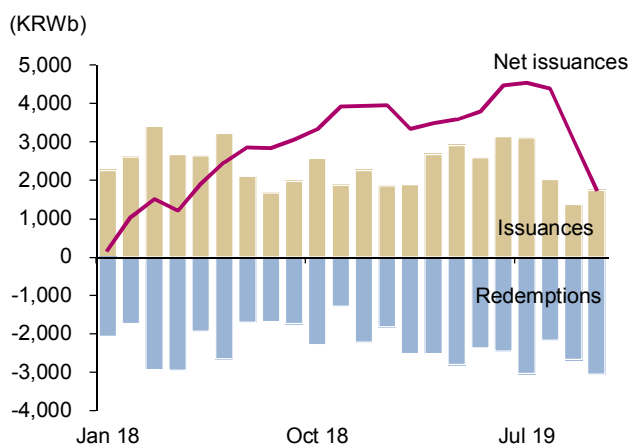
The recent DLF controversy highlighted the importance of distribution channels. Bank's equity-linked trust (ELT) balance stood at KRW44.9t in 1Q19, accounting for the largest portion of funds in trusts after the KRW52.9t that is in money market trusts (MMT). More than 50% of ELS and DLS issuances are distributed via banks to retail investors. If banks with strong sales power fail to understand DLS and protect investors, it would affect consumer demand for the products as well.

Trading value in Korea's DLS/DLB markets exceeded KRW100t in 2015, and this figure increased to KRW111t in 2017 and KRW115t in 2018. As of Oct 2019, total issuances stood at KRW94t, suggesting it will remain above the KRW100t-mark on a full-year basis. Yet, the DLS/DLB markets (previously considered to be promising alternatives to ELS/ELB) are likely to face structural limitations arising from declining market confidence and the growing popularity of rival products.

**ELS/ELB: Issuances and redemptions**



**DLS/DLB: Issuances and redemptions**



Source: KRX, Samsung Securities

### Trends in Korean investors' trading of foreign derivatives products

Korean investors' trading value and volume of foreign derivatives products hit USD4.07t and 7.81m contracts, respectively, over Jan-Sep 2019, up 20% and 13% (from USD3.37t and 6.92m contracts) over Jan-Sep 2018 and 81% and 55% from Jan-Sep 2017 levels. With more domestic capital investing in overseas assets, domestic investors have increased their investment in overseas derivatives products every year. Meanwhile, retail investors and prop trading explain a majority of foreign product trading.

Retail investors focused on equity index-, commodity-, and currency-linked products, while prop traders dealt with equity index- and bond-linked products for ELS and DLS hedging. In terms of trading volume, this year, retail investors were the most active of investors trading Kospi 200 Options/Futures listed on the Eurex (just as in 2018). Retail investors also actively invested in US equity index futures, WTI/gold futures, and foreign currency (EUR, AUD, and JPY) futures. In terms of trading value, they mainly invested in equity index-, WTI/gold-, and EUR/USD and JPY/USD-based products.

Ytd, prop trading has focused on EuroStoxx 50, HSCEI, and US Treasury futures for ELS and DLS hedging. Specifically, 2- and 10-year USTs have seen the greatest trading value in 2019 (vs HSCEI and EuroStoxx 50 futures in 2018), since bond market volatility has increased this year (whereas stock market volatility surged in 2018).

We find it interesting that the retail investor portion of FX margin trading value and volume rose y-y (to USD56.8b and 0.42m contracts over Jan-Sep 2019 vs USD34b and 0.29m contracts over Jan-Sep 2018). We attribute this to a surge in investment demand for forex-related derivatives products amid US dollar weakness and the yuan's sliding past the key psychological level of CNY7/USD.

### Domestic investors' trading volume and value: Foreign derivatives products

Trading volume ('000 contracts)				Trading value (USDm)			
Product	Investor type	Exchange	Trading volume	Product	Investor type	Exchange	Trading value
Kospi 200 Options (overnight)	Retail	Eurex	12,415	Nasdaq 100 E-mini	Retail	CME	613,809
Crude Oil, WTI	Retail	NYMEX	9,804	Crude Oil, WTI	Retail	NYMEX	549,083
Silver	Non-financials	LBMA	9,522	S&P 500 E-mini	Retail	CME	274,137
Nasdaq 100 E-mini	Retail	CME	4,276	US Treasury Note, 2-year	Brokers	CBOT	187,726
EuroStoxx 50	Brokers	Eurex	3,142	US Treasury Note, 10-year	Brokers	CBOT	142,371
HSCEI	Brokers	HKFX	2,743	Gold, 100 oz	Retail	NYMEX	128,734
Silver	Brokers	LBMA	2,328	HSCEI	Brokers	HKFX	128,561
S&P 500 E-mini	Retail	CME	2,162	EUR/USD Futures	Retail	CME	124,243
Kospi 200 Options (overnight)	Futures	Eurex	1,614	Gold	Retail	LIFFE	118,177
US Treasury Note, 10-year	Brokers	CBOT	1,127	Hang Seng	Retail	HKFX	117,899
Gold, E-micro	Retail	NYMEX	1,058	US Treasury Note, 5-year	Brokers	CBOT	94,694
Micro E-mini Nasdaq-100 F	Retail	CME	1,035	Mini HSCEI	Retail	HKFX	91,758
Gold, 100 oz	Retail	NYMEX	963	JPY/USD Futures	Retail	CME	80,251
EUR/USD Futures	Retail	CME	884	Gold, TAS	Retail	NYMEX	80,077
AUD/USD Futures	Retail	CME	881	US Treasury Note, 10-year	Retail	CBOT	69,683

Note: Jan-Oct 2019; trading value is notional

Source: Korea Financial Investment Association, Samsung Securities

## Market characteristics in 2019

### Financial authorities propose measures to develop derivatives markets

At end-May 2019, the Financial Services Commission and Financial Supervisory Service, and related institutions (*ie*, KRX and Korea Financial Investment Association) announced measures to develop the derivatives markets so as to stimulate innovative growth and support the real economy. Most notably, the measures include lowering entry barriers for retail (to improve supply-demand dynamics), and listing new products. Lowering deposit requirements, cutting compulsory training hours and mock trading sessions, should boost market accessibility. Also, liquidity should benefit from new weekly options and KTB futures spread trading (prevalent in developed markets).

In their approach to derivatives markets, authorities have focused on regulating retail investors' entry and preventing excessive speculation—as evidenced by: 1) measures to increase oversight of exchange-traded options/ELWs/FX margin trading in 2011; 2) the raising of multipliers for Kospi 200 options and the strengthening of regulations on ELW liquidity-provider quotation submissions in 2012; and 3) the introduction of a qualified individual investor system in 2014. Such measures led to severe declines in trading value in the Kospi 200 futures and options markets from 2012, and thus those markets were unable to fulfil their normal functions (*ie*, derivatives-based risk management). This year's measures mark a sharp about-face from previous approaches, and targets more risk management for the spot market by reviving the crippled derivatives markets and encouraging greater financial innovation.

Based on the measures that were released in May, Kospi 200 weekly options listed at end-September, and KTB futures spread products should follow suit in December. Entry barriers for retail investors (*ie*, pertaining to deposit requirements, compulsory training, and mock trading) should be lowered in December. With the introduction of weekly options, the KRX has removed the mandatory disclosure of program trading quotations on futures and options expiry dates.

Separate from the May measures, qualifications for retail investors to register as professional investors have eased since November—being part of measures to ease entry barriers for retail investors released in Jan 2019. The May measures exempt professional investors from base deposits for derivatives trading. Therefore, the mix of easing regulations on professional investors and the May measures would encourage professional retail investors to become more active in the derivatives markets in 2020.

### Measures to develop Korean derivatives markets: 3 strategies and 15 tasks

#### Strategy 1. Securing stable market supply-demand dynamics

Task 1	Easing entry for retail investors	Lower deposit requirements; reduce mandatory training/mock trading
Task 2	Vitalizing institutional investors	Eased credit risk management requirements
Task 3	Easing trading for foreign investors	More algorithm-trading accounts, improved kill-switch systems
Task 4	Enhancing market-making	Mandatory market-making for stocks and higher incentives
Task 5	Developing new derivatives products	Weekly options, KTB Futures spread trades

#### Strategy 2. Granting market autonomy vis-à-vis development of new derivatives products

Task 6	Improving listing procedures	Negative regulation system
Task 7	Encouraging product development	Market-driven development of index and derivative products

#### Strategy 3. Enhancing market stability and integrity

Task 8	Enhancing crisis management	Improvement of stress test model & securing of FX liquidity
Task 9	Enhancing management of collateral assets	Limit usage of affiliate's securities/non-cash assets as collateral
Task 10	Expanding CCP's role	Gradual increase of trades subject to clearing by CCP
Task 11	Initiating trade repository	Set to go active in Oct 2020
Task 12	Preventing concentration in few underlyings	Enhanced risk management processes

Source: FSC, FSS, KRX, KOFIA

### Weekly options

Kospi 200 weekly options exist only for a week and expire every Thursday. They have the same contract specifications as standard options in terms of multiplier, price limits, and settlement on expiration, but they differ in terms of expiration cycle, exercise price, and listing criteria. Weekly options list every Thursday and expire the following Thursday. They do not list in the week of standard option expirations.

#### Example: Weekly options listing & expiration dates

Listing period	1st week Nov	2nd week Nov	3rd week Nov	4th week Nov	1st week Dec	2nd week Dec	3rd week Dec
Weekly	Oct 31-Nov 7	-	Nov 14-21	Nov 21-28	Nov 28-Dec 5	-	Dec 12-19
Monthly	Expire Nov 14				Expire Dec 12		

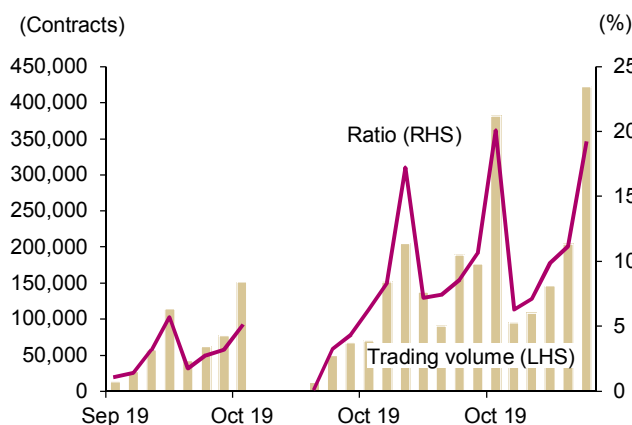
Source: KRX, Samsung Securities

Weekly options exist only for seven days and therefore they are priced at a third or half the price of monthly options, and they tend to be exposed to more gamma risk than one-month options. Weekly options buyers are able to invest in options at low prices, while sellers can limit loss risk given the short time to expiration. Meanwhile, weekly option buyers might trade at overvalued prices if speculative demand concentrates, while sellers may be exposed to higher gamma risk.

Kospi 200 weekly options (listed Sep 23) have quickly stabilized, fast absorbing short-term demand. As of Oct 31, their trading volume stood at 422,000 contracts and their trading value at KRW30.4b—both post-listing highs. For reference, Oct 31 was the fifth expiration date since listing.

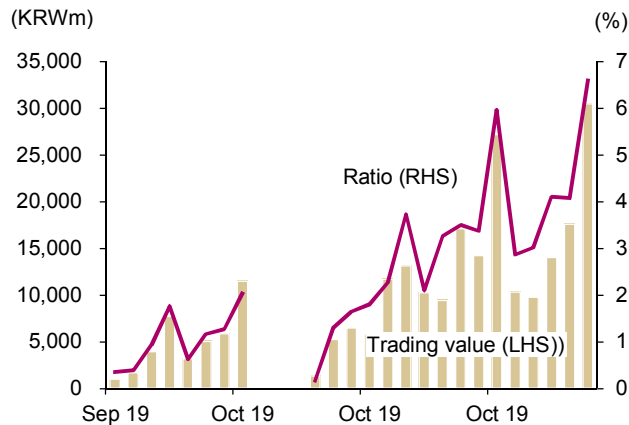
Comparing weekly options and standard options in terms of liquidity, we find the former's trading volume to be 20% of the latter's, while the former's lower prices keep trading value at around 5% of the latter's. Trading volume and value on non-expiration days has also been increasing gradually, indicating that weekly options are taking root well.

**Weekly options trading volume:**  
Absolute as in ratio to monthly Kospi 200 options



Source: KRX, Samsung Securities

**Weekly options trading value:**  
Absolute as in ratio to monthly Kospi 200 options



Source: KRX, Samsung Securities

At 40%, the retail investor portion of weekly options trading is almost double that of standard options (around 26%)—indicating that retail investors actively use weekly options to meet short-term investment demand. In particular, retail investors who traded weekly options before November (when entry barriers were lowered) also participated in the standard options market (including mini options). We believe retail investors who saw investment opportunities have added weekly options to their previous options investments.

Foreign investors' penetration of the weekly options market has been substantial—they account for 35% of trading volume and 50% of trading value. We understand that this is because they have already developed strategies that use weekly options (*eg*, weekly-standard options spread trading) in overseas markets. Financial institutions are less aggressive in weekly options trading than are non-financials.

#### Kospi 200 options (monthly & weekly) trading volume & value, by investor type (Sep 23-Oct 31)

(%)	Trading volume		Trading value	
	Monthly	Weekly	Monthly	Weekly
Foreign investors	55.9	34.8	66.7	50.1
Retail	27.2	45.3	26.5	42.1
Brokers	14.1	18.6	4.7	6.5
ITCs	0.3	0.1	0.3	0.1
Pension funds	0.0	0.0	0.0	0.0
Non-financial institutions	2.3	1.2	1.6	1.2

Source: KRX, Samsung Securities

The Kospi 200 weekly options market can already be considered successful in comparison to some of its overseas counterparts. According to an article presented at a Sep 27 seminar by the Korea Derivatives Association (KDA) and the Korea Capital Market Institute (KCMI), weekly options on S&P 500 futures, E-mini S&P futures, and Taiex (Taiwan) boasted higher trading volume than their standard counterparts over 2016-2017. Meanwhile, weekly options on the EuroStoxx 50 have remained weak, with their trading volume remaining at less than 10% that of standard options for years. Trading volume of Kospi 200 weekly options is already at 20% that of standard options. We therefore see a higher chance of Kospi 200 weekly options following the trajectory of their counterpart in the US and Taiwan.

#### Major exchanges' weekly options volume: Absolute in in ratio to monthly options volume

('0000 contracts)	S&P 500 W		E-mini S&P 500 W		EuroStoxx50 W		Taiex W	
	Vol	Ratio	Vol	Ratio	Vol	Ratio	Vol	Ratio
2014	146	0.17	3,011	0.41	1,430	0.06	6,002	0.66
2015	133	0.15	3,586	0.46	1,458	0.05	8,881	0.86
2016	540	0.95	6,474	1.1	1,522	0.05	8,483	1.03
2017	948	1.92	7,607	1.49	1,761	0.07	9,638	1.07
2018	611	1.54	8,710	1.19	2,185	0.08		

Note: Vol = trading volume;

Ratio = ratio of weekly volume to monthly volume;

Taiex data only available until 2017

Source: *Development of derivatives products correspondent to market needs* (KCMI, Sep 27, 2019)

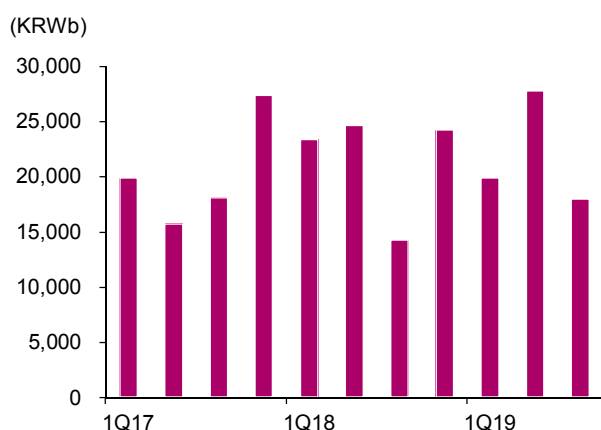


### ELS/ELB and DLS/DLB markets adjust growth trajectory

The ELS/ELB and DLS/DLB markets showed put in highly disparate performances in 1H and 2H. ELS/ELB issuances reached KRW47.6t in 1H (a post-1H18 high)—or a monthly average of KRW7.9t—amid interest rate cuts and rallies in stock market globally. But issuances shrank to a monthly average of KRW5.8t over July-October amid escalating US-China trade tensions and rising geopolitical risk in Hong Kong (which caused markets in mainland China and Hong Kong to plunge). Meanwhile, DLS/DLB issuances averaged KRW2.5t/month over January-August (before the emergence of the DLF controversy—in which some investors in products tied to German bond yields saw their entire investments wiped out) before plunging to KRW1.5t/month over September-October.

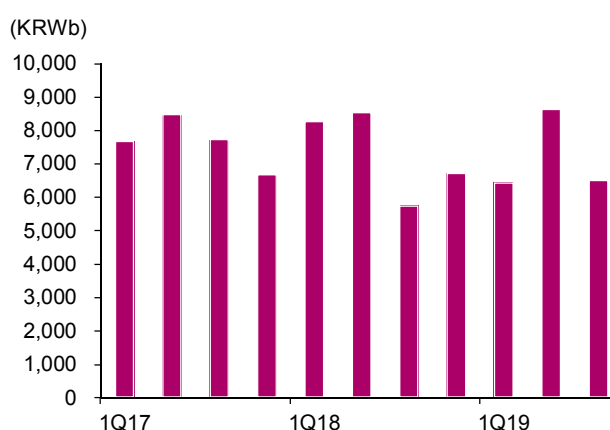
All in all, ELS/ELB and DLS/DLB issuances in 3Q19 plunged close to post-2017 lows (last seen in 3Q18, when global financial markets were in risk-off mode amid the US-China trade war and concerns over quantitative tightening in developed countries). In short, issuances were hit in 3Q18 by global financial market factors and in 3Q19 by distribution issues.

ELS issuances, by quarter



Source: KSD, Samsung Securities

DLS issuances, by quarter



Source: KSD, Samsung Securities

According to the FSS, investment returns from ELS and DLS have fluctuated every year. ELS gained around 2.4%-2.9% in 2016 and 2018 when the world's stock markets struggled, and more than 4% in 2017 and 2019 when stock markets were in risk-on mode. DLS also posted weaker gains (less than 1%) in 2016 and 2018 and stronger returns in 2017 and 2019. For reference, DLSs are usually linked to ETFs, commodities, credit risk, and currency exchange rates, while interest rate-linked products are mostly DLBs. Interest rate-linked DLS (which products are at the heart of the DLF debacle) account for an insignificant portion of overall interest rate-linked products. In short, we believe the performances of ELS and DLS are directly affected by the global financial market environment.

### ELS/DLS investment returns

(%)	ELS	DLS
2016	2.9	0.6
2017	4.1	1.6
2018	2.6	0.6
1H19	4.9	3.3

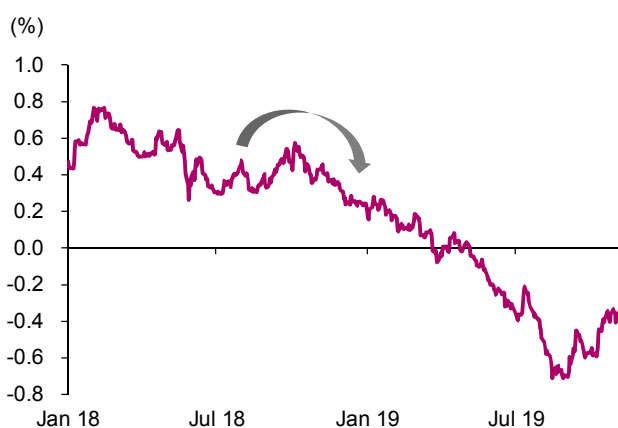
Note: Returns are annualized returns of redeemed ELS/DLS

Source: FSS, Samsung Securities

Looking at the DLF debacle this year, we find it problematic that banks have continued to issue similarly structured products. US Fed tightening in 2H18 caused major interest rates in developed countries to turn upward, but those same rates turned downward from end-2018 amid concerns over economic slowdowns and shrinking global trade (mainly due to the US-China trade war). Moreover, the US Fed's insurance cut in 2019 led 10-year German yields to turn negative, and US and UK CMS rates to plunge more than 50% from end-2018 levels. In all, the DLS debacle demonstrates the need for more-thorough analysis and forecasts for underlying assets when DLS/DLB products are designed and distributed.

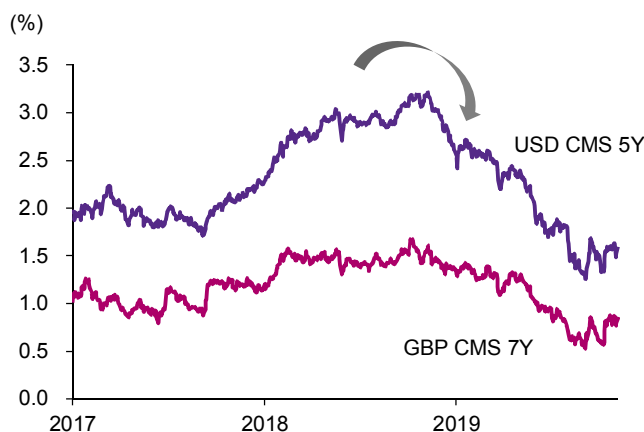
The most notable point pertaining to the DLF debacle is that unprotected-principal bond products were sold not only to institutional investors but also to retail investors. According to the Korea Financial Investment Association, the DLS portion of interest rate-linked DLB/DLS issuances was only 14% over Jan 2013-Sep 2019 and 22% over 2016-Sep 2019. Therefore, when interest rate-linked DLS were sold to retail investors, product distributors would have needed to more properly inform them of suitability, appropriateness, and risk.

10 year German treasury bond yields



Source: KSD, Samsung Securities

USD CMS 5-year & GBP CMS 7-year rates



Source: KSD, Samsung Securities

The DLF fiasco has eroded confidence in derivatives-linked products, which had been seen as the best financial products to meet demand for high yield in a low interest rate environment. It has led financial authorities to check on the overall process involving DLS/DLB (including issuance, distribution, and aftersales services) in an increasing need for risk management.

The ELS/ELB and DLS/DLB markets (with combined annual issuances totaling KRW110t) account for a relatively large portion of domestic financial assets. Facing limited growth for the time being, they need to readjust their growth path (via diversification of products and customers, and by expansion of underlying assets), strengthen distribution channels, and improve related processes.

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## 2020 outlook

### Revisiting our 2019 outlook

In our *2019 outlook: Recalibration of volatility* (Nov 2018), we observed that prior to 2018's frequent spikes in volatility (*ie*, Vol-mageddon), market volatility had remained following the 2008 global financial crisis due to the effects of central banks' put. Further, we said we expected markets to enter a high volatility regime phase in 2019 due to a global economic slowdown. Accordingly, we advised investors to brace for higher volatility—the 'recalibration of volatility' we used as our report's title.

The liquidity-driven market rally (*ie*, central banks' put effects on global liquidity) that had spanned 10 years gave way to the Icarus Trade in 2018 as QT began and market volatility repeatedly spiked. After market volatility reached an unprecedented low in 2017, two bouts of high volatility occurred so far in 2018 (Vol-mageddon), and the market will likely enter a high volatility regime phase in 2019. (...) A higher level of volatility should be assumed for 2019. Accordingly, investors are advised to brace for recalibration of volatility as VaR (value at risk; based on five-year data) may reflect relatively low level of risk in the upcoming high volatility regime. (...) In sum, the market should be exposed to volatility risk throughout 2019.

- *2019 outlook: Recalibration of volatility*, page 31 (Gyun Jun; Nov 21, 2018)

Contrary to our forecast, however, the VKospi averaged 14.9% per month in 2019 vs 15.2% per month in 2018, and the index's monthly high averaged 17.7% in 2019 vs 19.7% in 2018. That volatility was surprisingly subdued we attribute to: 1) the Fed's insurance rate cuts; and 2) a learning curve related to the US-China trade war.

Nevertheless, we note that the VKospi's lows averaged 13.3% in 2019, up from 12.6% in 2018 and a post-2015 high. The elevated lows signify that investors are well aware of financial market investment risks and consider volatility more significantly in risk asset evaluation.

All told, our 2019 forecast (*ie*, the recalibration of volatility) met with mixed success. Still, our argument about volatility recalibration was on point, as investors have become more reflective of investment risk in risk asset evaluation (as evidenced by the elevated lows of the VKospi). We attribute the lower highs in the VKospi mainly to central banks' quantitative easing and a decline in political risk—factors that led to a greater preference for risk assets despite the US yield curve inversion (which many read as a signal of imminent economic downturn).

A key factor behind the decline in VKospi highs is monetary policy coordination between emerging markets (EMs) and developed markets (DMs) to address economic slowdowns. Central banks in the US (which made insurance rate cuts) and Europe/Japan persisted with monetary easing. Central banks in EMs (eg, India, Russia, and Brazil) also engaged in aggressive rate cuts to bolster economic growth expectations. In other words, the central bank put has been key to subdued volatility highs in 2019.

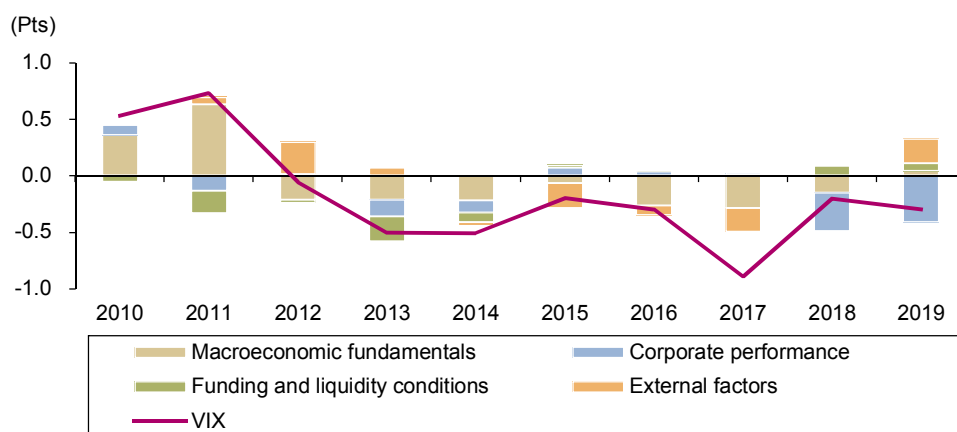
**Interest rate cuts, by region (2019)**

(Bps)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Current
US							25		25	25	1.75
Eurozone											0.00
UK											0.75
Japan											(0.10)
Australia						25	25			25	0.75
Hong Kong								25	25	25	2.00
Korea							25			25	1.25
China								6	5		4.20
Taiwan											1.38
Brazil							50		50	50	5.00
Russia						25	25		25	50	6.50
India		25		25		25		35	25	25	5.15
South Africa							25				6.50
Indonesia							25	25	25	25	5.00
Mexico								25	25		7.75
Thailand								25			1.50

Source: Bloomberg, Samsung Securities

As for the US VIX, factors tempering volatility include improvements to macroeconomic conditions and corporate performances (which confounded widespread concerns that earnings would fall as a result of reduced global trade and tariff imposed by the US and China on each other's goods). Meanwhile, factors serving to raise volatility include liquidity (eg, the US Fed's monetary policy) and external factors (eg, the US-China trade dispute)—both since 2018. Of note, liquidity, which served to reduce volatility during the early 2010s thanks to quantitative easing (QE)—has served to increase volatility since 2018.

**Drivers of US equity volatility (standard deviations from mean)**

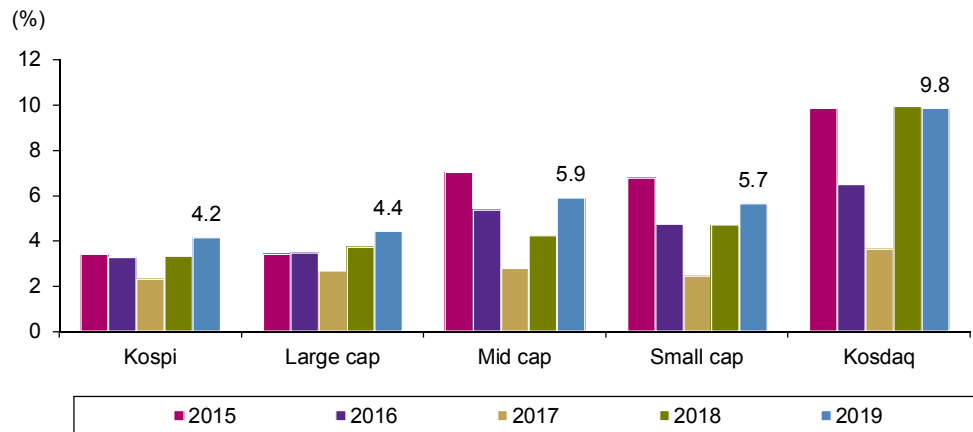


Note: IMF proprietary model; uses quarterly data from 1Q04 to 2Q19

Source: Global Financial Stability Report (IMF, Oct 2019)

Although the upper end of the VKospi's range has declined thanks to the easing of global macro issues, the domestic equity market in 2019 underwent its highest phase of volatility in the past four or five years. Kospi large caps in 2019 witnessed their highest volatility since 2015, while Kospi and Kosdaq small- and mid-caps saw their highest volatility since 2016. Going through this high-volatility regime phase (caused by an economic slowdown and macro uncertainties), Korea's equity market saw stability eroded this year, with volatility polarization between large and small-/mid-caps deepening.

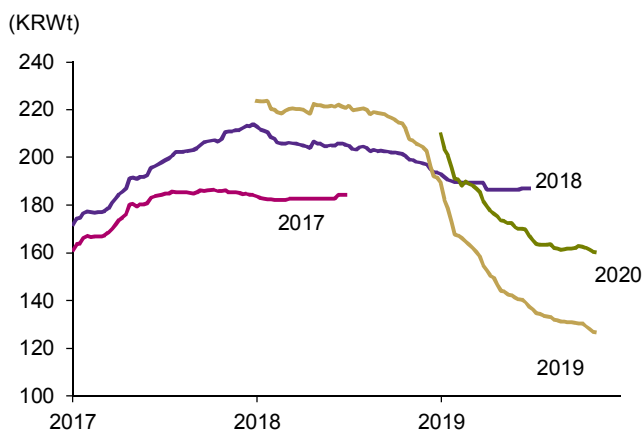
**Annual average volatility: Kospi, Kosdaq, large-caps, mid-caps, and small-caps**



Note: Garman-Klass volatility calculations based on daily open/high/low/close prices;  
 Annualized 60-day volatility  
 Average volatility from October of previous year to October of current year  
 Source: KRX, Samsung Securities

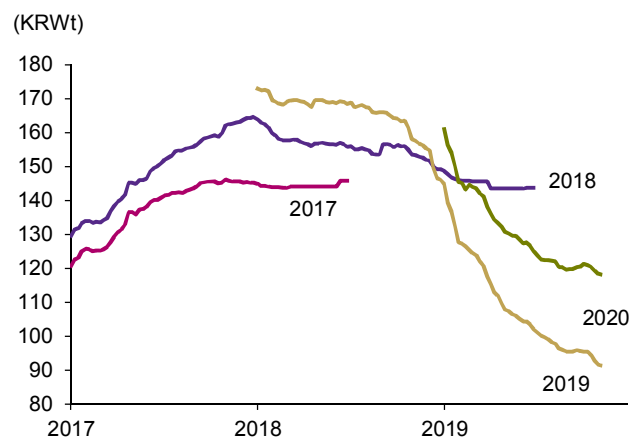
The volatility hike in the Korean market is attributable to heavy cuts to earnings forecasts for Korean firms. Kospi-listed top 200 firms' combined operating profit was expected to surpass KRW220t at early 2018, but the forecast was cut to KRW190t at end-2018, and further cut to KRW140t at end-Jun 2019. Those cuts led to cuts to operating profit forecasts for 2020. The steep cuts to 2020 forecasts and subsequent expected return decline and investment risk hike led to volatility hike in the Korean market.

**Kospi 200 constituents' operating profit outlook**



Source: QuantiWise, Samsung Securities

**Kospi 200 constituents' net profit outlook**



Source: QuantiWise, Samsung Securities

### Liquidity crunch events

In an Aug 5, 2019 Financial Times article entitled *Illiquidity will amplify magnitude of next bear market*, the author argued that, “convictionless trades abound, as markets are moved by random psychological forces far removed from the fundamentals”, and that “central banks’ quantitative easing has fostered the illusion that pump priming will guarantee liquidity by suppressing normal supply and demand”. If the market turns bearish and buyers disappear, the article goes, liquidity shortages will have a significant effect on overvalued assets. In a bearish market, sentiment should become more unstable, and this should put a chill on the market. “Liquidity is the most overlooked risk in asset allocation. It provides oxygen to markets but unlike other risks it cannot be diversified away.”

In a low interest-rate era, investors can boost returns either by increasing leverage (via exposure to derivatives) or by investing in assets offering higher risk premiums and yields. During a time of ample liquidity, illiquid assets offering high returns can be an effective investment tool, but they: 1) face limitations in terms of fair valuation and securitization; and 2) can have spillover effects on other assets or the market when there is a mismatch between the time needed for redemption and liquidity for a given asset. During the 2008 financial crisis, redemption pressure by hedge funds, which invested in CDOs, caused liquidity shortages at insurers and brokers, and amplified systemic risks in global financial markets.

Thanks to central banks’ QE, macro liquidity has been ample since the 2008 financial crisis, but growing numbers of incidents have highlighted micro liquidity shortages. Thus far, low interest rates have weighed on volatility and made liquidity risk overlooked, but when unexpected events take place, volatility can surge, with liquidity shortages deepening asset price distortion. This year, we have seen several incidents that show the paradox between macro and micro liquidity.

**H2o Asset Management:** UK firm H2o Asset Management had EUR32.5b in assets under management in 2018 but suffered a fund run in 1H19. After the Financial Times reported that the firm held large positions in illiquid, non-rated bonds, redemptions hit USD8b in 15 days. The firm’s exposure to those problematic bonds was not massive, but colossal redemptions for those assets triggered redemption demand for the firm’s other assets. The case—which came amid a UK economic downturn and Brexit uncertainty—shows how deterioration of liquidity-related sentiment can hurt both an individual asset management firm as well as the broader market.

**Woodford Equity Income Fund:** Run by a famous fund manager in the UK, Woodford Equity Income Fund stopped redemptions in Jun 2019, citing a low return. It declared liquidation in October. Its AUM once stood at GBP10b, but due to years of low returns, the fund suffered a heavy capital outflow—to the tune of billions of pounds—during Jun 2019. The fund decided to stop redemptions in June and tried portfolio adjustment, but to no avail. Although the fund was a public-placement one, it was vulnerable to a fatal liquidity event due to its massive holdings of unlisted stocks or high-yield assets (eg, senior loans). Following the incident, the UK’s Financial Conduct Authority (FCA) warned public funds that it is risky to bet on illiquid assets and doing so can create systemic risk in the financial market.

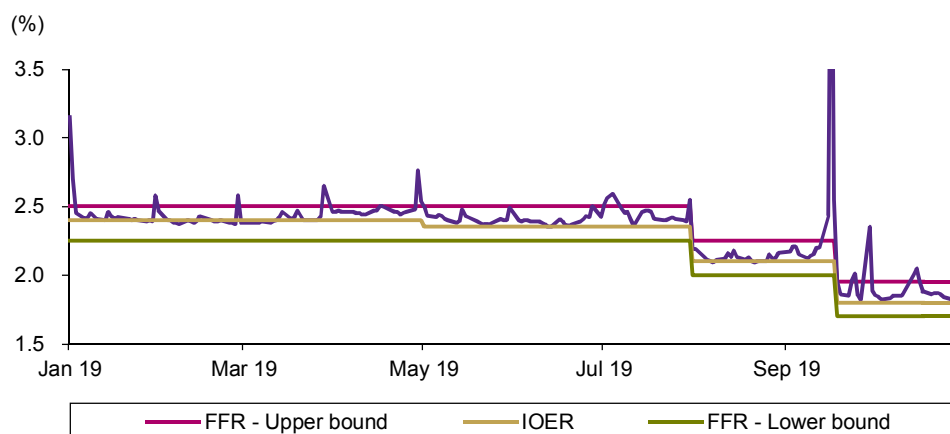
**Real estate-linked DLT:** A DLS product linked to a German real estate development fund in Jul 2019 extended its expiration date. The product’s performance was associated with a Singaporean ITC’s real estate fund investing in the German fund’s projects. Due to project delays, the Singaporean ITC stopped repaying principal and interest. The DLS’s expiration period was somewhat short (two years), but the project delays were the chief culprit for the expiration extension and redemption discontinuation.

**Hedge fund temporarily freezes redemptions:** A major Korean hedge fund with assets of KRW1.5t declared a temporary redemption stoppage in October this year. Due to stock market weakness, its fund portfolio (heavily exposed to mezzanines) suffered a liquidity crunch, and losses on some private-placement corporate bonds led to losses of principal and interest. In a nutshell, the incident was triggered by a mismatch between funding and asset duration. In a strong asset market, funding is easy, but in a period of asset price decline and liquidity shortage, fund operations face limitations.

The macro/micro liquidity paradox (*ie*, ample macro liquidity but a lack of micro liquidity) does not surface when market volatility remains stable. As described in the IMF's *Financial Stability Report*, liquidity has been a major factor in VIX movement. During a low volatility phase driven by the Fed's QE, liquidity served to keep the VIX low, but during periods of increased volatility—*eg*, in 2018, due to monetary tightening and the US-China trade dispute—liquidity was the strongest force driving the VIX higher. In 2019, liquidity—alongside external factors—has served to push the VIX up. In other words, the macro/micro liquidity paradox creates financial market instability during periods of increased volatility. The freezes on redemptions seen in 2019 underscore the reality of the liquidity paradox.

In 3Q19, the repo rate in the US market surged, creating a dramatic liquidity puzzle. The repo rate on Sep 17 jumped nearly 10%pts to break through the 2% upper limit of the interest rate band. The Fed stabilized the repo market by directly injecting liquidity, but even since, the repo rate has broken through the upper limit several times since. At the October FOMC meeting, the Fed said it would buy short-term USTs (sub-1-year ones) and keep injecting liquidity in the repo market for the time being—measures aimed at stabilizing the market.

### Repo rate: Spike in September



Source: Bloomberg, Samsung Securities

The repo rate spike in September is partially attributable to a temporary shortage of reserves (caused by tax payments and duplicate issuance of USTs and corporate bonds), but mainly due to inefficient short-term asset allocation at deposit-taking financial institutions. It is the result of: 1) large banks holding excessive reserves to meet asset quality regulations; and, as a result, 2) smaller banks and short-term capital buyers suffering funding difficulties.

Short-term asset allocation inefficiency is attributable to deposit-taking institutions using reserves (risk-free assets) to bolster asset quality and deal with a possible stresses. Some large banks have secured more reserves than they need, resulting in chronic asset allocation inefficiency in the repo market. In sum, the temporary liquidity shortage is attributable to a lack of cash (due to the US government’s deficit spending and corporations’ bond issuances for funding).

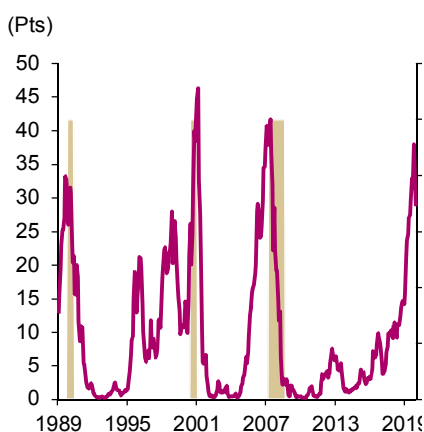
The underlying cause of the repo rate spike is growing concerns over a US recession, which concerns have intensified following US yield curve inversion. During the latter phase of a late cycle, the Fed seeks economic expansion via insurance rate cuts, but various organizations have published figures showing that the US remains at the highest risk of recession in several years.

The New York Fed’s *Probability of US Recession Predicted by Treasury Spread (Twelve Months Ahead)* shows that (as of Oct 2019) the US has a 29.04% chance of slipping into recession in Oct 2020—down slightly from the 12-month forward probability of 37.93%, which was predicted in Aug 2019. We attribute improvement to the progress made on the US-China trade dispute and the Fed’s insurance rate cuts. That said, outside of 2H19, the probability has not been as high as 29.04% since 2008.

According to Bloomberg Economics’ recession watch indicator, as of Oct 2019, there is a 26% chance of the US moving into a recession in Oct 2020, down from a 12-month forward probability of 49% at end-2018, thanks to partial easing of the yield curve inversion, still-strong labor market, and sustained stock market strength. Nevertheless, declines in corporate operating profit growth and still-high policy uncertainty, the figure has yet to fall below its previous low.

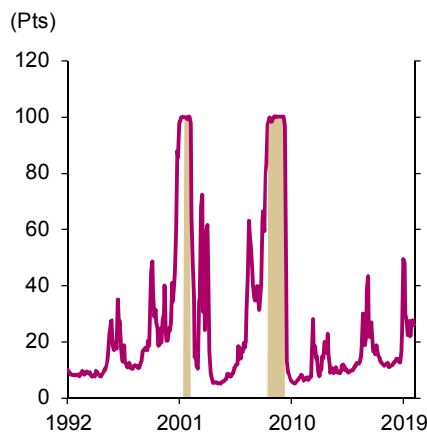
The Cleveland Fed’s *Probability of Recession Calculated from the Yield Curve* puts the likelihood at 37.9% for Sep 2020 and at 31% for Oct 2020—down from 44.1% for Aug 2020, for the same reasons the other two indicators have improved. Despite this, the figure of 37.9% is on par with figures seen during the 2008 global financial crisis.

**NY Fed: Probability of US Recession Predicted by Treasury Spread (12m ahead)**



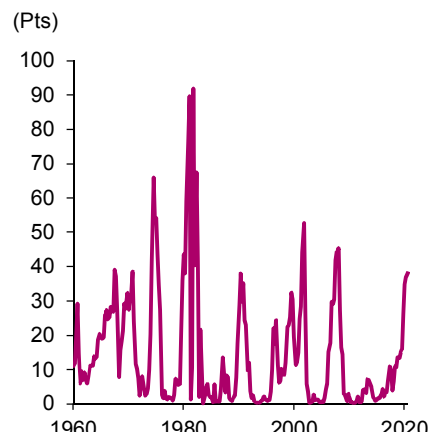
Source: NY Fed, Bloomberg, Samsung Securities

**Bloomberg Economics: Probability of US Recession Within 12 Months**



Source: Bloomberg, Samsung Securities

**Cleveland Fed: Probability of Recession Calculated from the Yield Curve**



Source: Cleveland Fed, Bloomberg, Samsung Securities



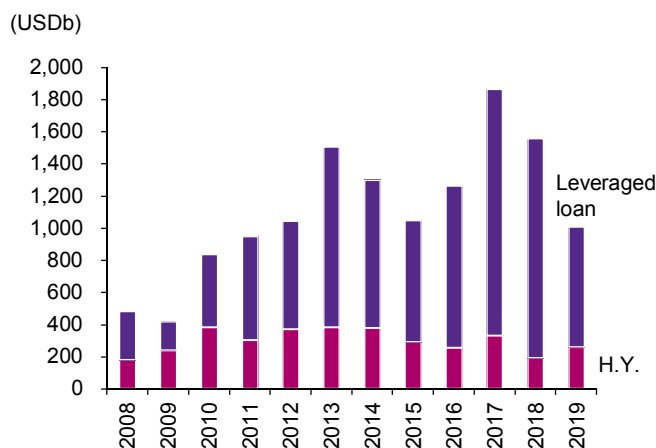
Given that a range of recession probability indicators are blinking at post-2008 highs, and the US repo market (the least risky one) has experienced a liquidity crunch, it seems inevitable that we will see growing investment risks relating to: 1) corporate bonds with low credit ratings; and 2) collateralized loan obligations (CLO), including leveraged loans.

In a low interest rate environment, companies can issue bonds at low funding costs to raise capital and return more value to shareholders. According to Bloomberg (League Table), high-yield bond issuances totaled USD2.9t between the 2008 financial crisis and 2018, while investment-grade bond issuances hit USD10.5t during the same period. According to the BIS, among US dollar-denominated investment-grade bonds, the BBB-rated portion (*ie*, those bonds that have the potential to be reclassified as high-yield debt) jumped from 48% in 2008 to 58% in 2018.

Alongside high-yield bonds, issuances of leveraged loans and CLOs have surged since the 2008 financial crisis. Leveraged loans are collateralized senior bank loans extended to firms that have a poor credit history, and they are classified as high-yield loans. Over 2008-2018, some USD8.6t worth of leveraged loans were issued, far outsizing high yield bond issuances.

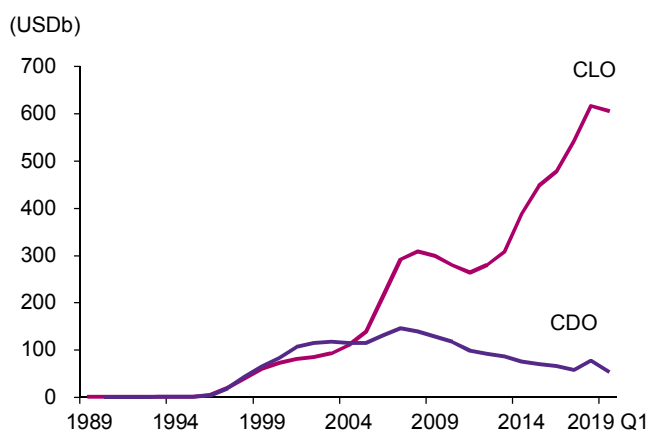
CLOs are portfolios of leveraged loans. As structured products, they win investment grade via risk distribution and credit enhancement. After the 2008 financial crisis, issuances of collateralized debt obligations (CDOs; portfolios of high-yield bonds) plunged due to various regulations, but CLO issuances surged thanks to their offering higher returns. From the 2008 financial crisis until 1Q19, the CLO balance exceeded USD600b. CLOs, being composed of only cash and corporate loans, carry less risk than do CDOs.

**US: High-yield bonds & leveraged-loan issuances**



Note: Bloomberg League Table  
Source: Bloomberg, Samsung Securities

**US: CDO & CLO cumulative balances**

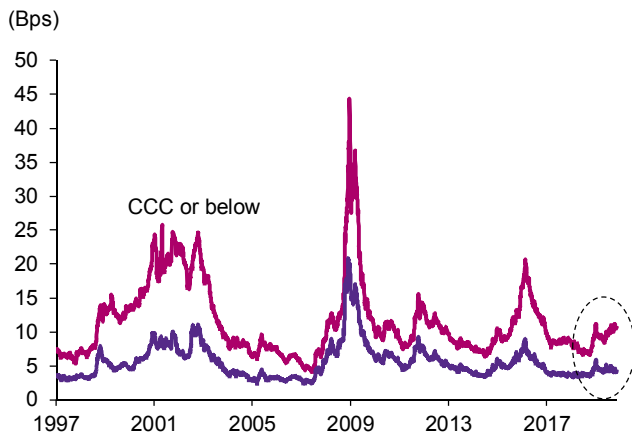


Source: SIFMA, Samsung Securities

The leverage ratio (debt/capital) has risen to 2008 levels due to a surge in corporate debt (especially high-yield debt) amid a low interest rate environment. When economic growth is slowing, declines in corporate earnings could put pressure on debt repayments by firms with poor credit ratings. If leveraged loans turn sour, the investment risk for CLOs could be amplified. In sum, default risk for such debt (the market's weakest segment) could advance financial market instability and recession, reminiscent of 2008.

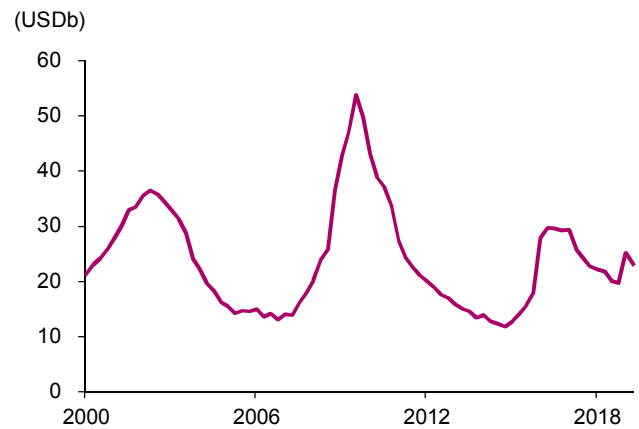
Spreads between US junk bonds (rated CCC or below) and Treasuries began widening in late-2018. Junk bond yields rose amid concerns that corporate earnings would fall due to Fed’s monetary tightening and the US-China trade war. In contrast, spreads US bonds rated B and Treasuries have remained stable even after 2018. Moreover, delinquencies on all loans and leases (commercial & industrial) have risen over the past several years. Risk aversion towards those junk bonds is rising—we read this as a sign that the market is growing increasingly concerned over excessive leverage when it believes the world is in for a period of economic contraction.

**Option-adjusted UST spreads:  
Corporate bonds rated B and CCC-or-below**



Source: Bloomberg League Table, Samsung Securities

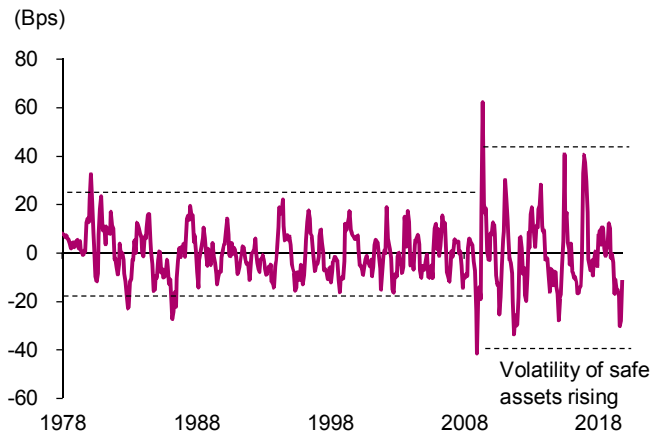
**US commercial banks’ credit loans: Delinquencies**



Source: SIFMA, Samsung Securities

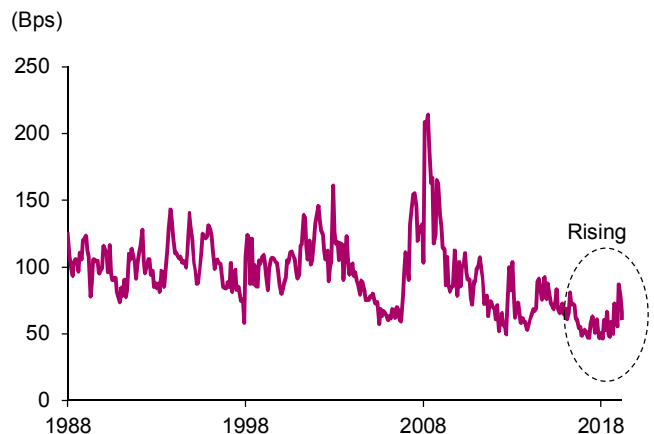
Volatility in the ordinary fixed income market (vs the junk bond market) has also gradually risen. With UST yield volatility increasingly rapidly (to levels comparable with pre-2008 levels), the utilization of bonds (which should be treated as safe assets in asset allocation) has been limited. Recently, the Merrill Lynch Option Volatility Estimate Index (MOVE) has been trending up due to the Fed’s: 1) monetary tightening; and 2) insurance cuts in 2019, which resulted in bond market visibility falling. Overall, investors’ wariness of the overall fixed income market has grown this year.

**30-year UST yields**



Note: 6-month rolling  
Source: Bloomberg, Samsung Securities

**MOVE Index**

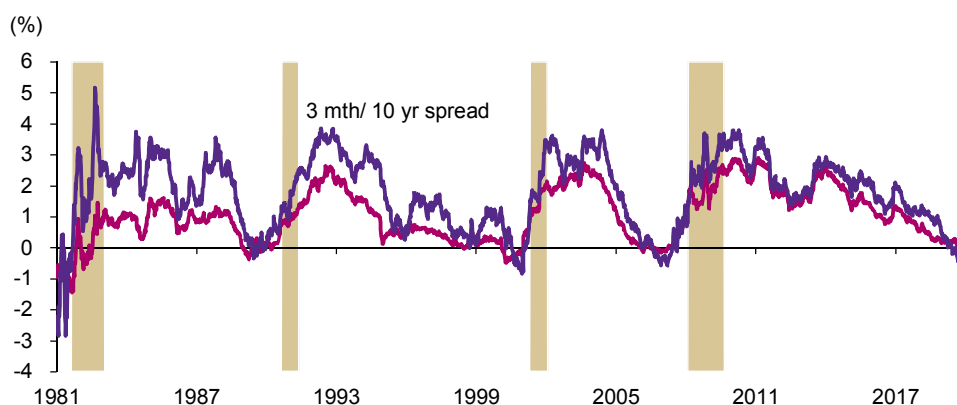


Source: Bloomberg, Samsung Securities

### Yield curve inversion and volatility

Two key topics in the world's financial markets this year have been: 1) US yield curve inversion; and 2) recession. Yields on 3-month and 10-year USTs inverted briefly in Mar 2019 and then remained inverted from May through October. Yields on 2- and 10-year USTs also inverted temporarily in Aug 2019, and their spread averaged 0%pts in 3Q.

#### UST yield spreads & recessions



Note: 2-/10-year spread and 3-month/10-year spread;

Shading indicates US recession

Source: FRED, Samsung Securities

Historically, the US economy has slipped into recession 0.7-1.5 years yield curve inversions. During the 1980s, the second oil shock (inflation) and the Savings & Loans Association crisis (credit crisis) triggered US recessions; since the 2000s, the causes included asset bubbles (eg, the IT bubble and subprime mortgage crisis). Given that yield curve inversions all preceded these recessions, the inversions seen this year have been widely interpreted as a sign that a US economic contraction is imminent.

Notably, in the past, even after yield curve inversions, the world's stock markets continued to rise until the global economy slipped into recession (except for during the 2000s). Such rallies are attributable to sustained investments and positive expectations for risk assets amid a phase of economic expansion. This year, the S&P 500 has jumped about 10% since the 3-month/10-year yield curve inversion in May.

#### Lag between US yield curve inversion and start of recession

3-month/10-year yield curve inversion	Recession starts	Lag	Cause of recession
Nov 1980	Jul 1981	9 months	Oil crisis
Jul 1989	Jul 1990	12 months	Savings & Loan crisis
Aug 2000	Mar 2001	8 months	Dot-com bubble burst
Aug 2006	Dec 2007	15 months	Subprime mortgage crisis

Source: NBER, Samsung Securities

#### US yield curve inversion & S&P 500 returns upon entry into recession

3-month/10-year yield curve inversion	Recession starts	Lag	S&P 500 return during lag (%)
Nov 1980	Jul 1981	9 months	3.9
Jul 1989	Jul 1990	12 months	15.5
Aug 2000	Mar 2001	8 months	(4.9)
Aug 2006	Dec 2007	15 months	21.3

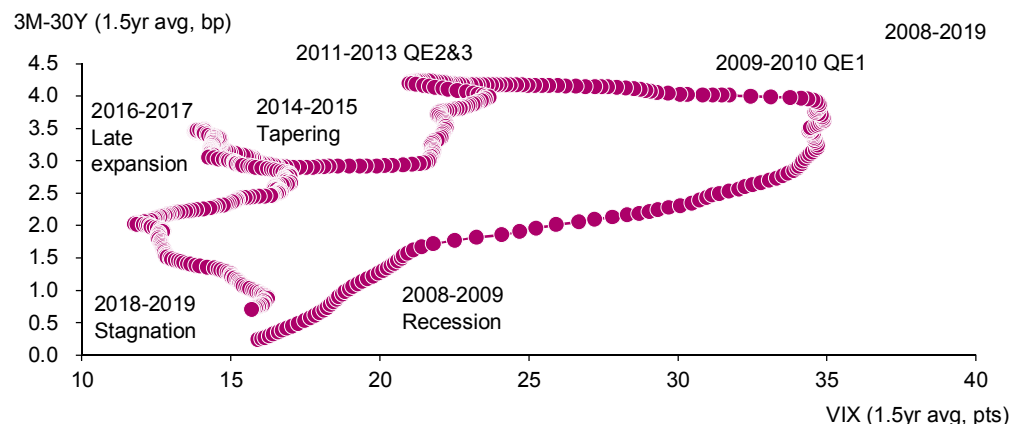
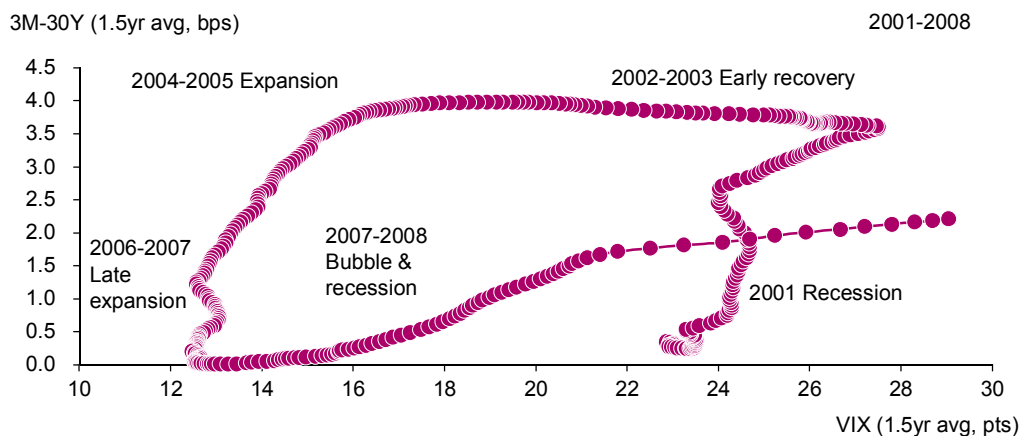
Source: Bloomberg, NBER, Samsung Securities

A look at US long-short spreads and stock market volatility movements gives insight into the financial market's current phase. The chart below shows: 1) the relationship between US 3-month/30-year spreads and the VIX 2-year average); and 2) their rotational movement (anticlockwise), by phase.

The yield curve inverted in mid-2006, but the VIX remained low before surging in the wake of the 2008 financial crisis. Even after yield curve inversion, the stock market kept advancing amid low volatility—until the crisis. In 2019, the yield curve inverted again, but market volatility remains particularly low. Using the 2008 case as a guide, increased volatility and a stock market pullback should follow the yield curve inversion after a lag.

A couple of major differences from the 2008 case are that: 1) bond market volatility is now higher than pre-2008 levels; and 2) central banks have limited room to maneuver in terms of monetary policy. The central banks' put provided ample liquidity following the 2008 financial crisis. Going forward, however, central banks will have limited room to provide such liquidity, and bond investments (aimed at risk distribution) will run the risk of bolstering portfolio volatility.

**UST yield spread & volatility**

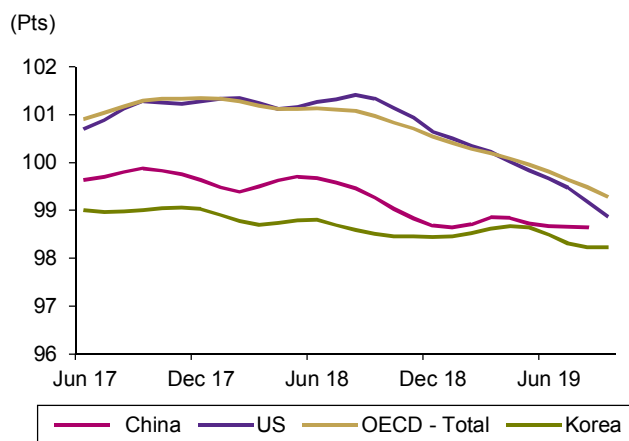


Note: 3-month/10-year spread  
Source: Bloomberg, Samsung Securities

The OECD's Business Confidence Index has remained below 100 since 2Q19, weighed on by a global trade contraction and economic slowdown. The reading has been below 100 in Korea and China since 2017, raising concerns about an economic slowdown. In the US and Germany, it fell below 100 this year. Amid lingering concerns over the yield curve inversions, soft economic indicators (eg, the business confidence index) are also trending down.

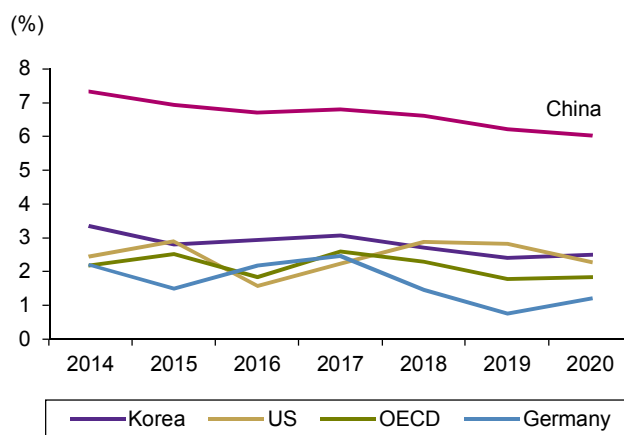
The OECD says that OECD nations' real GDP growth, which fell below 2% in 2016 before recovering to around 2.5% in 2017 and 2018, will again fall below 2% in 2019 and should then edge up to 1.8% in 2020. China's GDP growth has been under threat to the point that there are serious question marks over whether it will achieve its 2019 target of 6.2% and its 2020 target of 6%. US GDP growth is expected to hit 2.8% in 2019 but should fall to 2.2% in 2020.

OCED members: Business Confidence Index



Source: OECD, Samsung Securities

OECD members: Real GDP



Source: OECD, Samsung Securities

The OECD says that despite the yield curve inversions, the chances of the US economy slipping into recession in 2020 are low, with signs of a full-blown recession lacking given stable employment and still-solid corporate earnings (thanks to years of QE). That said, there is still a risk that global economic growth will remain low due to falling consumption (caused by a global trade contraction and cost increases stemming from multinational trade disputes) and increased policy uncertainties.

Mervyn King, who served as the Governor of the Bank of England from 2003-2013, said in a lecture given at the IMF in Oct 2019 that the current financial market can be characterized by falling real investments and inefficient asset allocation amid extreme uncertainty. He added that the global economy went through 'great inflation' in the 1970s and 1980s, 'great stability' in 1990s-2000s, and a 'great recession' in 2008, and that it is now entering a period of 'great stagnation' due to prolonged deleveraging (since the 2008 crisis) and a low economic growth trap.

Given the falling economic growth and political/economic uncertainty, financial market volatility is likely to increase. The upper end of the range of volatility has been depressed by the Fed's unexpected turn to easing in 2019, but the lower end of the range has risen to its highest level in several years due to an economic slowdown and policy uncertainties.

### Volatility outlook for 2020

‘Liquidity risk’ has emerged as a key factor in asset pricing since 2018 as central banks have lost room to maneuver. Macro liquidity remains ample, but events amplifying volatility have caused frequent micro liquidity shortages. This is the liquidity paradox. With yield curves inverting (a precursor of a recession), financial markets have already begun to reflect volatility in pricing (*eg*, seen in higher volatility lows).

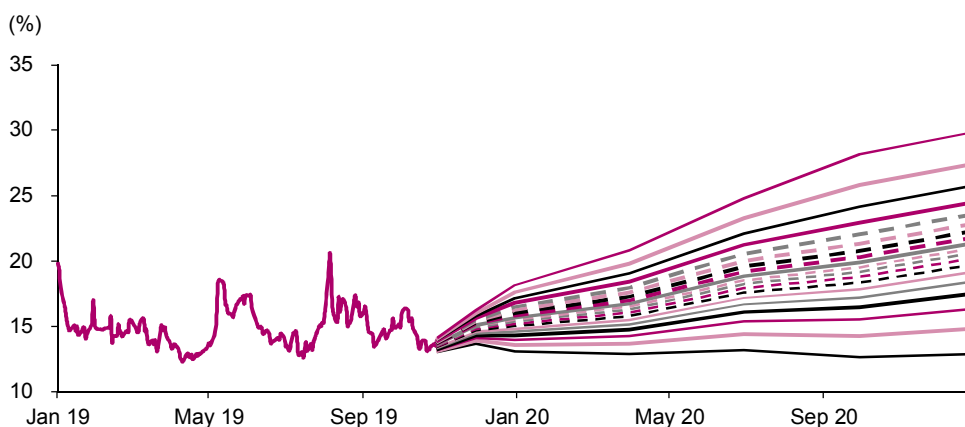
While the upper end of the range of volatility has been weighed on by monetary easing in 2019, the lower end of the range has become elevated due to policy uncertainties and an economic slowdown. As we forecast in our 2019 outlook report (Nov 21, 2018), volatility has recalibrated. Amid increased volatility, liquidity risk—sidelined thus far—should play a bigger role in 2020.

Even in a period of low volatility phase, liquidity risk lurks. But when volatility is rising, the risk depresses investment sentiment and facilitates the transmission of systemic risk in financial markets. In 2020, the market should: 1) be dominated by the asymmetry of volatility and liquidity; and 2) suffer tail risk as a result, with volatility and liquidity risk rising as uncertainties mount.

We expect the VKospi to average 18% in 2020, topping out at 29% (which would put it in the 80th percentile of annual figures) and finding a low of 12% (which would put it in the 20th percentile of annual figures)—vs a projected 2019 average of 14.9% with a high of 23.8% and a low of 12.1%. Given that the VKospi’s elevated lower end in 2019 is attributable to an economic slowdown and policy uncertainty, recession concerns and political/economic uncertainties should continue to put upward pressure on volatility in 2020.

Of note, policy uncertainty should continue to push volatility upwards in 2020, as multiple, high-profile political events (*eg*, elections) are scheduled for next year both in Korea and overseas, meaning that policy measures could either be strengthened or diluted.

### VKospi outlook



Source: KRX, Samsung Securities

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## 2020 equity derivatives market strategy

### Strategy to escape uncertainty

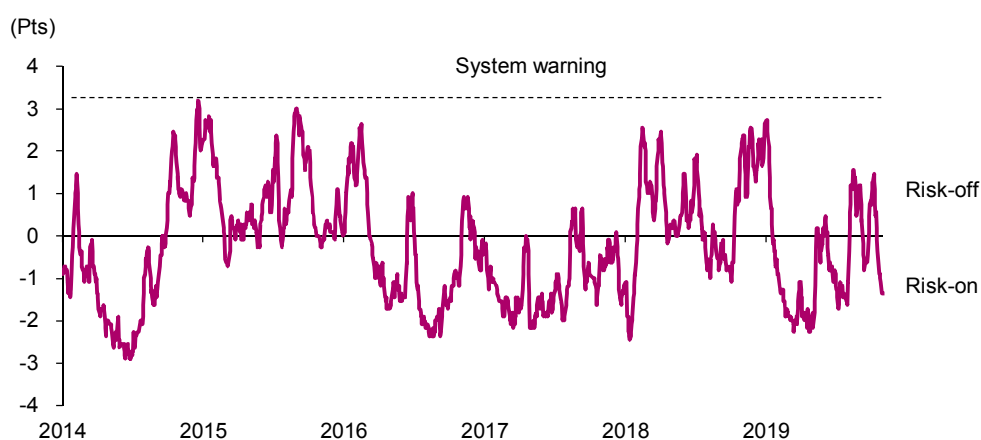
Our Samsung Investment Risk Index (IRI) compiles indicators that include equity, bond, and currency volatility, credit risk, and supply-demand dynamics—see our report *Samsung Investment Risk Index* (Feb 6, 2015). An IRI reading of less than zero implies that the market is in risk-on mode, while a reading of greater than zero suggests risk-off conditions.

A rise in the IRI points to heightened investment uncertainties. We interpret a reading of 3pts or higher as a warning for financial systems. The IRI topped this level in 2008 (the financial crisis), 2011 (Europe's fiscal crisis), 2012 (the US credit rating cut), 2014 (taper tantrum), and 2015 (G2 risk). The IRI approached 3pts in Feb 2018 and Oct 2018, indicating increased tensions in financial systems.

The IRI remained below zero for most of 1H19 but frequently rose above zero in 2H19. A reversal of the US monetary policy stance made US bonds and major currencies more volatile and raised credit risk in weaker EMs (eg, Argentina). The IRI re-entered risk-on mode in 4Q as the US and China made progress in their trade negotiations and worries about corporate profit declines dissipated.

The IRI can be used as an auxiliary indicator on which to base tactical asset management decisions—ie, whether to be conservative or aggressive with asset allocation, increase or decrease hedging. IRI readings suggested risk-off conditions in 2H15, encouraging conservative (or stronger hedging) strategies. They suggested risk-on conditions throughout 2016 and 2017, proving that aggressive (or weaker hedging) strategies were the correct choice. IRI readings for 2019 suggested different approaches for 1H19 and 2H19.

### Samsung IRI



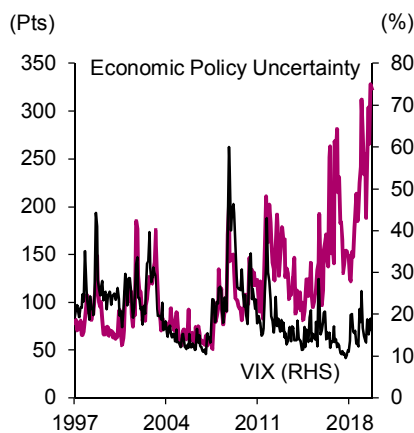
Source: Bloomberg, Samsung Securities

IRI readings suggest the investment environment has become too confusing to determine whether the 2019 market is in risk-on or risk-off mode. Confusion in global financial markets, captured in the volatility index, is attributable to policy uncertainties (notably, the repeated escalation and easing of US-China trade tensions).

The Global Economic Policy Uncertainty Index hit a record high this year, and so did the WUI World Trade Uncertainty Index, because the US-China trade war is not simply an issue between the two countries but represents a battle for hegemony between DMs and EMs or between Asia and the US. Also, each DM is putting its own country first, which runs against the existing paradigm of new liberalization and globalization. They are, in effect, establishing barriers against other countries to limit free movement of capital and labor. A highest-ever level of trade policy uncertainty has weighed heavily on global financial markets this year.

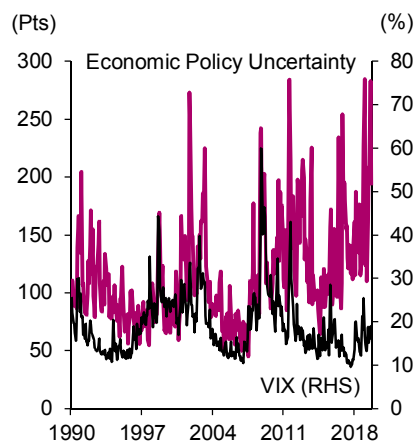
Financial market volatility remained relatively stable in 2019, but, given extremely high policy uncertainties, we believe 2020 will be a crossroads between two extremes: resolution or escalation in policy uncertainties. Governments may temporarily coordinate on monetary and fiscal policies to revive the global economy, but, once past the tipping point, they are likely to be vigilant about forex rates and cross-border capital flows. We expect the IRI to fluctuate above and below the baseline in 2020, just as it has in 2019—though we anticipate more risk-off mode than risk-on. For 2020, we recommend diversified investments and hedging, which may mitigate volatility increases.

**Global EPU Index & VKospi**



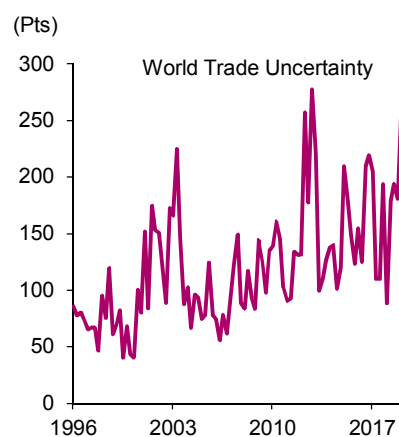
Source: EPU, Bloomberg, Samsung Securities

**US EPU Index & VKospi**



Source: EPU, Bloomberg, Samsung Securities

**WTU Index**



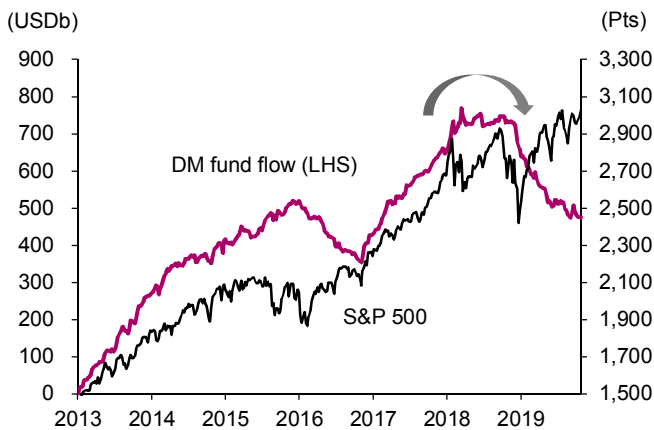
Source: EPU, Bloomberg, Samsung Securities



**Fund flows favor safety**

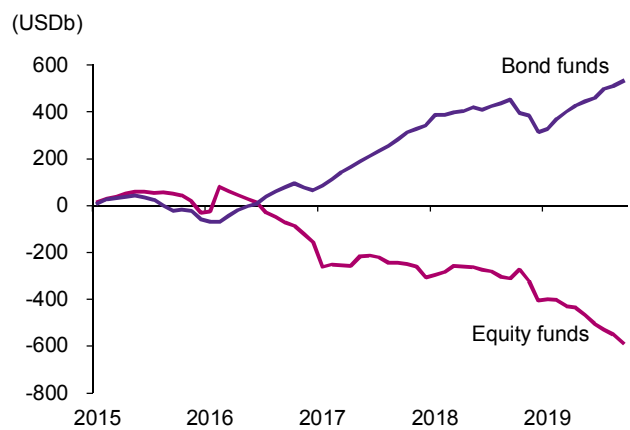
Fund flow data show years of equity fund outflows and fixed income fund inflows. Fixed income funds briefly saw outflows in 2018 due to the US Fed’s quantitative easing, but the outflow from equity funds did not slow. According to Bloomberg data, USD180b flowed out of equity mutual funds as USD220b flowed into fixed income mutual funds over January-September 2019, even as the S&P 500 printed new highs. DM equity funds (including ETFs) have seen net outflows since 2018—regardless of stock market bull runs—as can be seen in the chart below.

**S&P 500 & DM equity fund flow**



Note: Funds including ETFs  
Source: EPFR, Samsung Securities

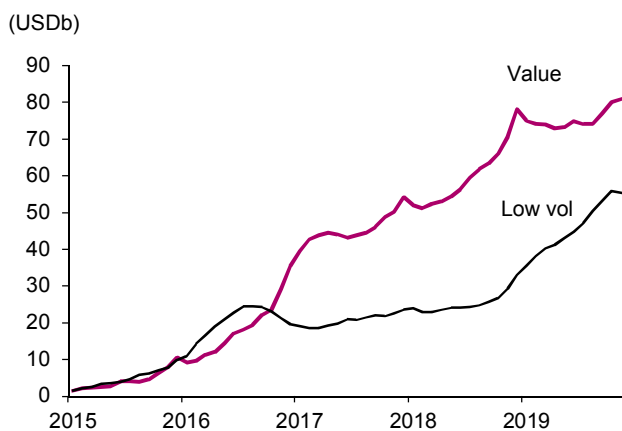
**US equity & bond mutual fund flows**



Note: Mutual funds ex-ETFs  
Source: Bloomberg, Samsung Securities

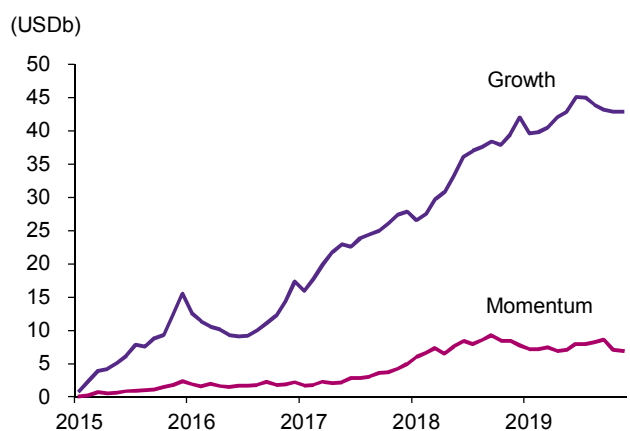
Fund flows show a steady rotation from risk assets to safe assets. The appetite for safety is echoed by smart beta ETF fund flows. ‘Value’ and ‘low vol’ ETFs saw a steady rise in inflows this year, whereas ‘growth’ and ‘momentum’ ETFs saw inflows stall or suffered turns to net outflows.

**AUM: Value and low-vol ETFs**



Source: Bloomberg, Samsung Securities

**AUM: Growth and momentum ETFs**

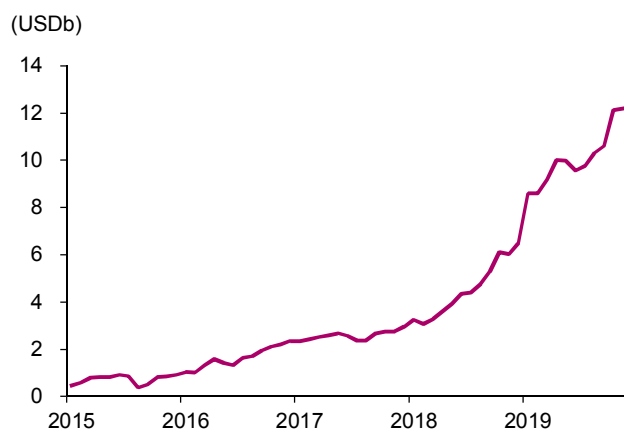


Source: Bloomberg, Samsung Securities

The stock market run-up may continue even after long-/short-term spreads invert. But aware that central banks have limited room to maneuver, investors are shifting funds to make portfolios safer against a possible economic slump. Demand for safe income generation is behind the steady growth in funds flowing into ‘quality’ factor ETFs. According to Bloomberg data, net flow into quality factor ETFs reached USD3.5b in 2018 and accelerated to USD5.7b over Jan-Oct 2019.

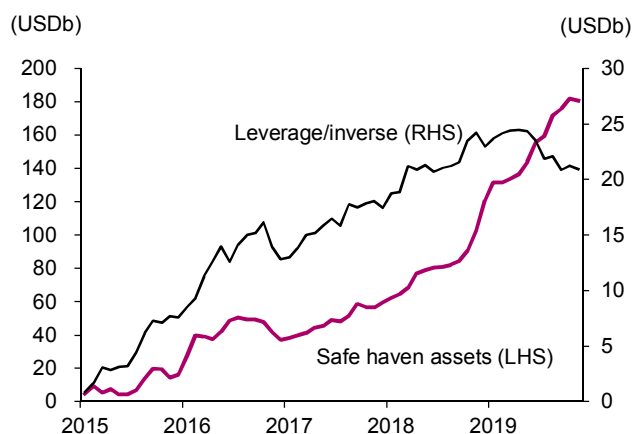
The so-called ‘safe heavens’ (including low-vol and gold ETFs) are enjoying a fast-growing inflows, while leverage/inverse ETFs have turned to outflows in 2019. Mounting policy uncertainties and continuing financial market turmoil have made investors cautious about leveraged market exposure. Domestically, fixed income and total return ETFs attracted inflows while Kosdaq 150 and leverage/inverse products-which exhibited high volatility-saw net assets dwindle.

**Quality ETF fund flow**



Source: Bloomberg, Samsung Securities

**AUM: Safe haven assets ETFs vs leveraged/inverse ETFs**



Source: Bloomberg, Samsung Securities

**ETF AUM: Top-10 increases and decreases (Jan-Oct 2019)**

(KRWm)	Increase	Decrease	
Kodex Active Bond	744,692	Kodex 200	(1,222,367)
Tiger Top-10	709,675	Tiger 200	(690,360)
Hanaro 200	559,961	Kodex MSCI Korea TR	(559,259)
Kodex Short-term Bonds	543,037	KB Star Short-term CSB	(192,888)
Smart 200TR	348,786	Kodex Kosdaq 150 Leverage	(174,762)
Tiger Short-term CSB	329,592	Tiger Kosdaq 150	(169,842)
Kodex 200TR	300,108	Kodex Kosdaq 150	(115,526)
Kodex 200 Futures Inverse 2x	297,425	KB Star KTB 3-year Inverse	(95,951)
KB Star Kospi	160,722	Tiger Large-cap Value	(90,394)

Note: January-October

Source: KRX, Samsung Securities

We expect ETF fund flows to continue to favor stability and profitability in 2020, given structurally rising volatility and frequent liquidity lapses. The liquidity of underlying assets will become a key consideration when choosing ETFs. Implied liquidity is a metric ETF investors should not overlook if they are to guard against volatility risk stemming from liquidity dry-ups.

### Tail-risk hedging

While the global economy is at risk of slowing in 2020, the ‘central bank put’ is unlikely to be as effective as it was in containing financial market volatility. Following rate cuts (meant to serve as insurance against blows to the economy), the Fed will probably use a variety of tools (fiscal and monetary) to escape the low-growth trap. Still, we do not rule out the possibility of frequent liquidity lapses in the weak links of the ample liquidity environment.

With the bottom end of the volatility range likely to be higher in 2020, unexpected events (*eg*, political developments, economic data surprises) could result in tail risk (*eg*, liquidity lapses). For example, stronger-than-anticipated consumer spending indicators could spark worries of rate hikes and lead to liquidity lapses. Investment strategy for 2020 ought to protect against this kind of tail risk.

Tail risk can be hedged against with: 1) equity-based strategies; 2) asset allocation; and 3) use of derivatives. An equity portfolio can be rebalanced around low-volatility stocks. This low-volatility portfolio strategy is already widely in use as a smart-beta strategy. A market timing strategy is about reducing exposure to high beta (high risk) assets and increasing exposure to low-beta (low-risk) assets when the stock market is weak. While long/short trading helps generate alpha returns, the strategy is at risk of incorrectly identifying the current phase of the market.

Under a strategy that uses a volatility target, investors reduce their equity holdings or sell futures to align their portfolio volatility with their target. This is relatively easy for investors, but is susceptible to unnecessary opportunity costs if portfolio volatility temporarily shoots above the target and causes portfolio rebalancing. A risk parity strategy aims to create a portfolio in which each asset class accounts for the same amount of volatility. Given that tail risk arises mostly from risk assets, a risk parity portfolio contains fewer such assets and more safe assets.

Tail risk can also be hedged against with purchases of derivatives such as volatility futures and OTM put options. A great advantage of volatility futures is that they allow for hedging of volatility only. OTM put options generate profits on a plunging stock, thereby helping make up for portfolio losses. But both strategies could incur losses in times of low volatility, given the cost of the derivatives. Also, both strategies might fail to have any hedging effect if assets and derivatives show a positive correlation.

#### Tail risk hedging strategies

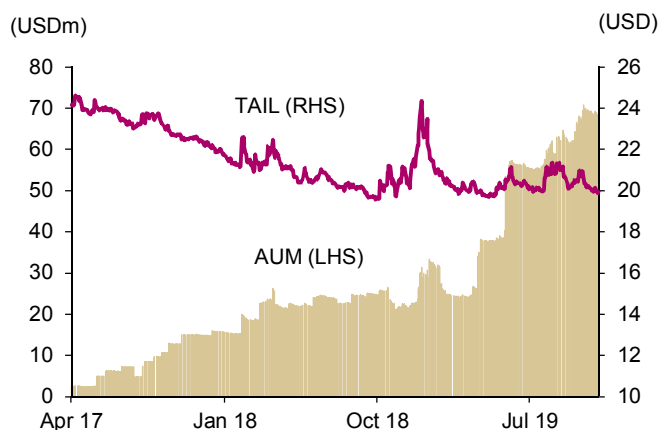
Strategy	Method	Pros	Cons
Equity-based	Manage portfolio consisting mainly of low-volatility equities	Low volatility	Low returns in high-beta environment
Market timing	Balance high- and low-risk assets based on market phase	Generates alpha through long/short opportunities	Risk of misidentifying market phase
Target volatility	Set target volatility and manage through derivatives products	Easy to maintain volatility level	Lack of defense from fluctuations
Risk parity	Manage portfolio beta by balancing constituent assets (bonds/equities)	Diversification of assets	Duration risk from excessive bond weight in portfolio
Long volatility futures	Long volatility futures during market stress	Ability to hedge against volatility exclusively	Losses from positive correlation between assets and derivatives

Source: Samsung Securities

Cambria Tail Risk ETF (code: TAIL) is a product that pursues a tail risk hedging strategy. The majority of the ETF's assets are invested in USTs, and interest income earned is spent on buying OTM put options. It is designed to hedge against market declines (with returns on put options) but produces negative returns in years when markets rise (due to put option costs).

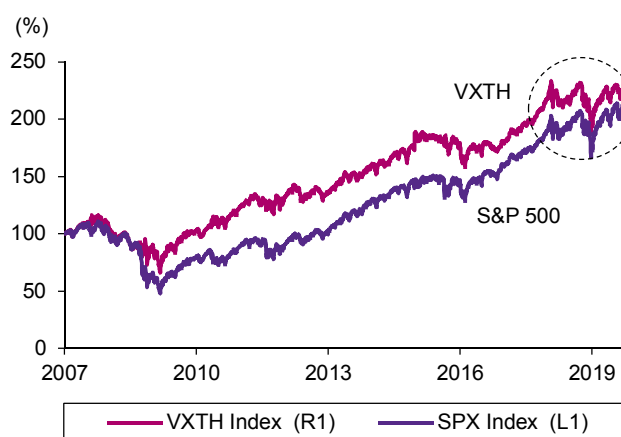
CBOE publishes the CBOE Tail Hedge Index (VXTH), which buys and holds the performance of the S&P 500 index and one-month 30-delta call options on the VIX. VIX call options are designed to generate returns when volatility rises, while 30-delta refers to OTM. High returns garnered by VIX calls when the stock market is falling and volatility is rising enable VXTH to defend against market declines. But in times of a strong stock market and low volatility, VXTH incurs costs that offset stock price appreciation.

**Cambria Tail Risk ETF: Price vs AUM**



Source: Bloomberg, Samsung Securities

**S&P 500 vs CBOE Tail Hedge Index (VXTH)**



Note: 2007.1.1 = 100

Source: Bloomberg, Samsung Securities

A look into the Tail Risk ETF and VXTH index reveals interesting dynamics. The Tail Risk ETF now trades under USD20 (vs USD22 at end-2018), as put option costs have resulted in losses amid a stock market ascent. But the AUM of the ETF has increased 2.3-fold from USD29m at end-2018 to USD68m recently. The sharp growth in AUM despite price declines reflects growing demand to hedge against tail risk.

The VXTH index has climbed 13% ytd, underperforming the S&P 500 by 8%pts because the costs of one-month 30-delta call options on the VIX erased some stock market gains. In 2017 when the S&P 500 gained 19%, the VXTH leapt 21%. The VXTH fared much weaker in 2019 because call options on the VIX have become more expensive to buy, which is another reflection of growing demand to hedge against tail risk.

This year's trends in the Tail Risk ETF and VXTH reveal the steady formation of demand to guard against tail risk. Uncertainties surrounding the US-China trade war and worries that an inverted yield curve heralds a recession have given rise to tail-risk hedging demand. Such demand should grow even stronger in 2020.

### Volatility convexity trading

There is no single definition of tail risk. Generally, financial asset prices show a normal distribution (a bell curve) and tail risk refers to an unpredictable event that is beyond what is normally expected of a situation and has potentially severe consequences. Statistically, tail risk is the chance an investment's return will be three standard deviations from its mean. A tail risk event creates immediate and severe risk aversion, dramatically driving up volatility and correlation among assets. As a result, a diversified portfolio alone is not enough to adequately mitigate tail risk.

Tail risk is a low probability event with a high impact. Unforeseen tail events can push the market off balance and have long-lasting influence, like black swan events do. Tail risk engenders herd mentality, aggravating the flight from risk assets. By guarding against tail risk, a portfolio can cut down on risk factors and prevent the spread of risk, which is crucial to making systematic decisions even in the most stressful circumstances.

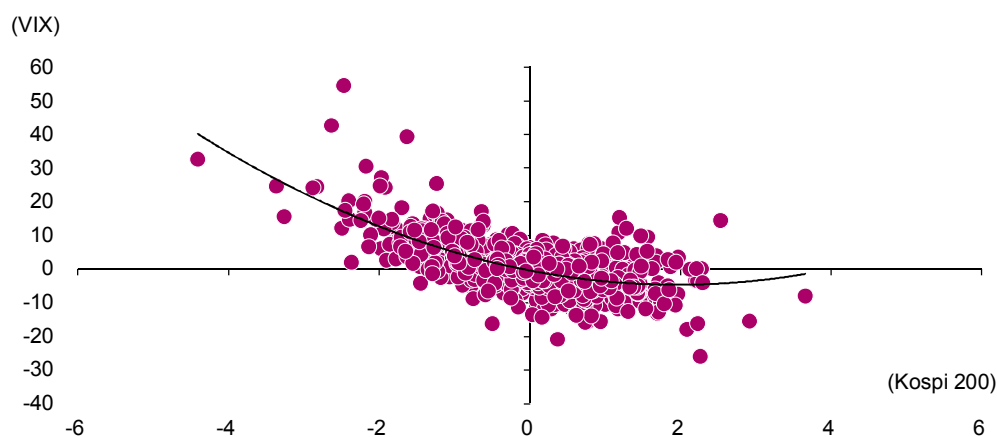
The tail risk hedging strategies we wrote about above include volatility management (*ie*, buying volatility index futures) and volatility aversion (*ie*, creating a low-volatility portfolio).

Purchases of volatility index futures or put options are examples of volatility management, which are in effect 'volatility (positive) convexity trading.' The convexity offers an asymmetric payoff entailing limited downside but exponential upside—which those who are buying options (=volatility) expect.

The chart below shows a steepening left upward slope. As the Kospi 200 falls, the VKospi (volatility index) rises much more quickly. As a result, returns on derivatives are larger than the losses on spot position. Put it differently, those seeking to delta hedge volatility by adjusting spot position would be forced to sell off large quantities of stocks (=triggering convexity selling).

For portfolios without protection against tail risk, stock selloffs are inevitable in times of volatility spikes. Proactively establishing a tail risk hedging strategy (*eg*, buying volatility index futures) can minimize portfolio losses.

#### Kospi 200 & VKospi returns: Volatility (positive) convexity



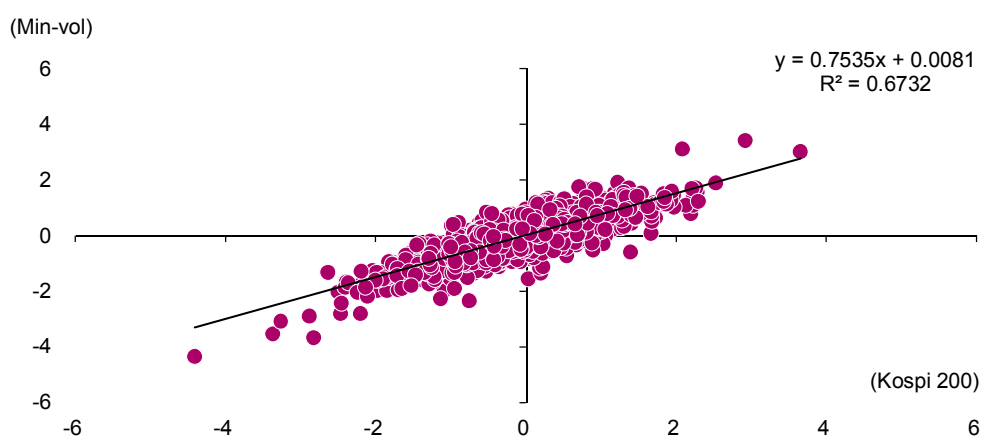
Note: Jan 2014-Oct 2019, daily returns

Source: KRX, Samsung Securities

Creating a low-volatility portfolio is an example of volatility aversion, which is in effect ‘volatility (negative) convexity trading’. The negative convexity (=concave) offers relatively stable returns during a certain interval—which those who are selling options (=volatility) expect.

The chart below shows the distribution of daily returns of the Kospi 200 and the KRX Minimum Volatility (MV) Index. As of Oct 2019, the latter has 121 constituents, including Samsung Electronics (11%). When the Kospi 200 falls, the KRX MV loses less. When the Kospi 200 rises, the KRX MV gains less. Post-2014 data show that the linear relation between the Kospi 200 and the KRX MV is 1.00:0.75, meaning the latter is a less sensitive portfolio ( $R^2 = 0.673$ ).

### Kospi 200 & KRX MV Index: Volatility (negative) convexity



Note: Jan 2014-Oct 2019, daily returns  
Source: KRX, Samsung Securities

In times of low volatility in the financial markets, derivatives products show mild convexity. Herd behavior in the stock market in response to volatility swings is also moderate. But in times of high volatility, derivatives show greater convexity and the flight from risk assets is exacerbated. Liquidity risk is overlooked in times of low volatility but severely distorts assets prices in times of high volatility.

Convexity is often associated with the bond market. When the US Fed cuts its key rate, yields on longer-dated Treasuries take a dive, which can be explained by convexity buying. When interest rates fall, mortgage borrowers tend to refinance at lower rates. As mortgages are paid off early, bond portfolios holding mortgage-backed securities (MBS) experience declines in cash flow, duration, and returns. To make up for the lost interest income, bond investors flock to longer-dated Treasuries, driving Treasury yields even lower.

**Making portfolios resilient is key in 2020**

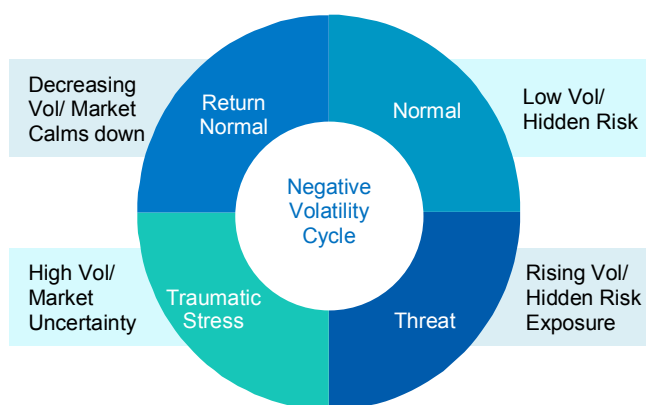
Despite central banks’ steady monetary easing, the global economy remains stuck in a structural slowdown due to weak overall demand. Against this backdrop, uncertainty and volatility should remain risks in the financial market. Rising uncertainty should lead to higher market volatility, which should in turn deepen stress or disrupt market trends. In a paper for CME Group entitled *Managed Futures and Volatility: Decoupling a ‘Convex’ Relationship with Volatility Cycles* (2011), K.M. Kaminski summed up market conditions under both negative and positive volatility cycles this way:

In a negative volatility cycle—*ie*, when financial markets are stressed—hidden risks resurface, and volatility and market alertness rise (threat phase). When uncertainty deepens, volatility explodes, led by recollections of negative events (trauma phase), which skews them towards or away from certain assets and augments risk aversion, further confusing the market. When policy measures are later put in place, volatility stabilizes (return to a normal phase). During a negative volatility cycle, liquidity risk—once overlooked—emerges as a critical risk factor for asset valuation.

A positive volatility cycle is when the market focuses on an ongoing rally based on overconfidence (rather than focusing on the hidden risks). Despite the emergence of yield curve inversion, risk asset prices keep rising amid ample liquidity, while volatility falls. But as the excessive rally gives way to a market reversal, volatility surges. Yet, as the surge is short-lived, the market rapidly returns to normal.

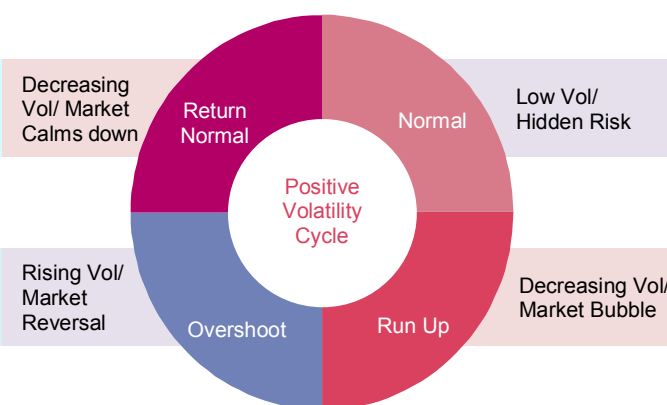
It seems increasingly likely that the financial market will experience a wobble due to a negative volatility cycle. With volatility set to rise structurally in 2020, tail risk-driven liquidity shocks look increasingly likely. All told, making portfolios resilient should be key to investing in 2020. To sustain portfolio resilience amid a stressful environment, investors should keep liquidity at adequate levels based on a balanced or distributed portfolio.

**Negative volatility cycle**



Note: *Managed Futures and Volatility: Decoupling a ‘Convex’ Relationship with Volatility Cycle* (2011)  
Source: CME

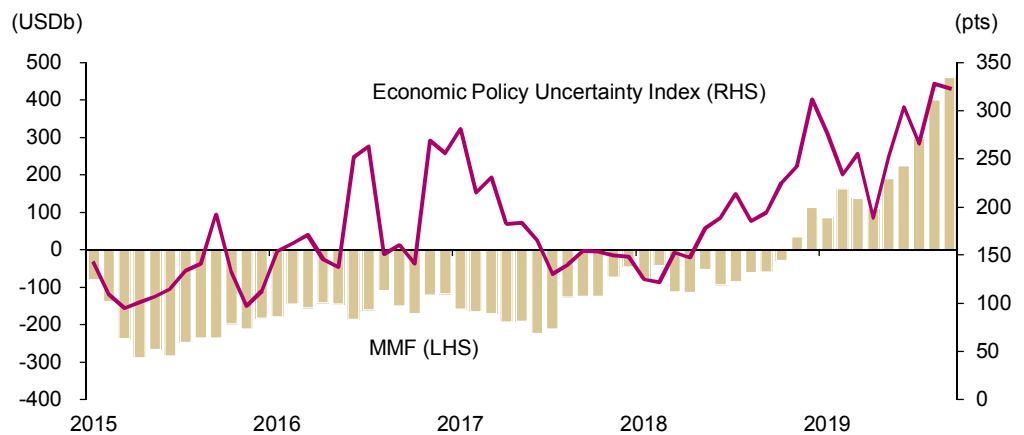
**Positive volatility cycle**



Note: *Managed Futures and Volatility: Decoupling a ‘Convex’ Relationship with Volatility Cycle* (2011)  
Source: CME

Capital flows out of mutual funds and into MMFs have increased sharply in the US since 2018. As seen in the chart below, such inflows tend to surge at times of increased economic policy uncertainty. Over Jan-Oct 2019, the cumulative inflow to MMFs surpassed USD340b—double their full-year 2018 level. The jump in capital outflows from equity type funds and the surge in inflows to MMFs—despite the stock market’s strength in 2019—can be attributed to portfolio asset weighting adjustments aimed at reducing exposure to risk assets and bolstering portfolio resilience.

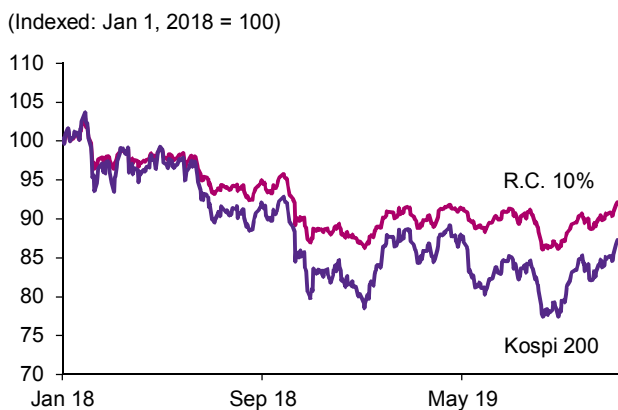
**MMF cumulative fund flows vs Economic Policy Uncertainty Index**



Source: Bloomberg, Samsung Securities

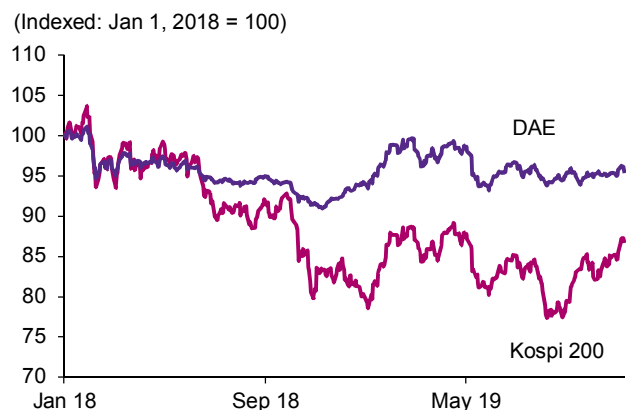
Ways of securing portfolio resilience should include: 1) limiting portfolio volatility to a certain level; and 2) dynamically adjusting individual asset weightings in line with market phase. For instance, the Kospi 200 Risk Control 10% index (which limits volatility to 10%) has outperformed the Kospi 200 by 5%pts since 2018, while the S&P/KRX Dynamic Asset Exchange Index has outperformed the Kospi 200 by 9%pts since 2018.

**Kospi 200 Risk Control 10% Index vs Kospi 200**



Source: KRX, Samsung Securities

**Dynamic Asset Exchange Index: US equity-bond**



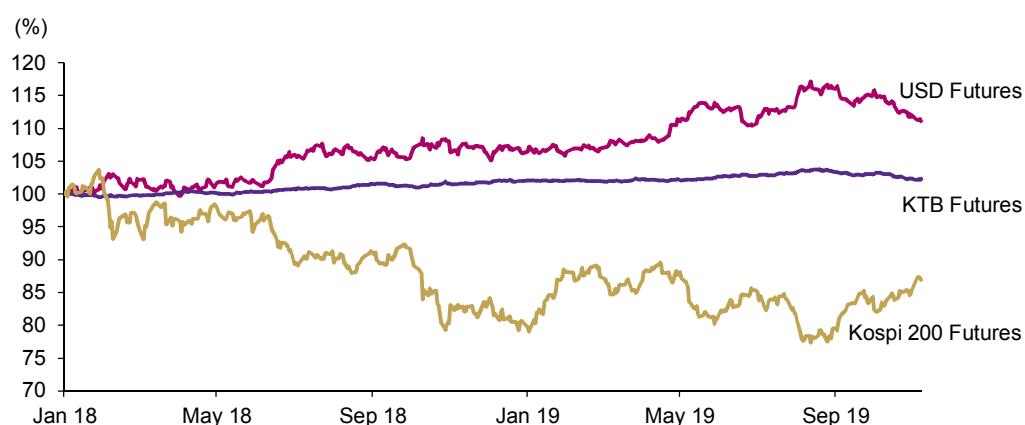
Source: KRX, Samsung Securities



Investment diversification may be another way of securing portfolio resilience. An overlay strategy is one example. This strategy employs partial investment in derivatives and the investment of remaining funds in core assets. In so doing, it can boost cost efficiency and utilization of other assets.

The chart below shows that the Kospi 200 futures index has trended down since 2018 while the KTB futures index has trended up. Moreover, the US dollar futures index has trended up. The US dollar futures index and the Kospi 200 futures index have had a correlation coefficient of -0.84 since 2018. Meanwhile, the KTB futures index and the Kospi 200 futures index have shown a correlation coefficient of -0.89 since 2018. All told, if an investor holds pairs of either the KTB futures index and the Kospi 200 futures index, or the US dollar futures index and the Kospi 200 futures index, and invests the remainder in core assets (eg, fixed income assets), she can enjoy the benefits of diversified investment even under a stressed environment and still seek growth of core assets.

### Kospi 200 Futures, KTB Futures, USD Futures



Note: 2018.1.1 = 100; KTB3Y Futures figures applied  
 Source: KRX, Samsung Securities

In a low interest rate environment, capital movements are closed linked to forex rates and a given market's investment return. In 2020, a global economic slowdown should deepen, and each country should pursue major fiscal and monetary policies to bolster their economies, which should affect not only asset prices in their own country but also asset prices in other nations (after a delay). Of note, when the economy does contract, liquidity shock and volatility risk can be amplified via the negative volatility cycle. In this risk-off phase, to sustain portfolio resilience, one should: 1) limit portfolio volatility and secure a certain level of liquidity; or 2) seek diversified investments or an overlay strategy to deal with the fallout from increased volatility.

### Contract for difference market to grow

A contract for difference (CFD) is an over-the-counter (OTC) product. Its trading structure is similar to that of FX margin, and the difference between the current value of an asset and its value at contract time is settled on a daily basis. It is a form of swap trading, with no principal involved and no expiration set. As in the case of FX margin, it is a high-risk/high-profit product thanks to the leverage effect.

CFD trading takes place privately between CFD suppliers (financial institutions) and CFD investors (sellers and buyers). CFD suppliers facilitate trading by providing bid and ask prices. As those prices are reflective of transaction costs, there is inevitably a gap between the underlying asset's price and the CFD price. As CFD trading is a private activity, transaction costs can be higher than for exchange-traded products.

CFD investors can use leverage to buy and sell CFDs. Compared to exchange-traded products, CFD offerings are more diverse. For instance, CFD trading involving not only domestic stocks but also overseas single stocks or equity indices is possible depending on the CFD suppliers' capabilities.

The promotion of CFD trading requires that CFD suppliers: 1) be allowed to have a bigger prop book; and 2) acquire the ability to broker overseas assets. For instance, CFD suppliers should have the ability to broker securities lending/borrowing (to secure stocks subject to CFD trading) and hedge risks related to balance in real time (to offer competitive bid and ask prices). Delta one services, which have been confined to hedge funds, need to expand to cover CFDs.

The growth of the CFD market should lead to the growth of the securities lending/borrowing brokerage market (for domestic assets) and the equity swap market. It should also allow market makers in the stock market (when linked to CFD prop books) to transfer risk via CFD trading (*eg*, market makers could employ CFD trading to hedge for those of their stock holdings for which derivatives do not exist).

As CFD trading involves high leverage and high risk of loss, it is subject to regulatory risk. For reference, the European Securities and Markets Authority (ESMA) introduced measures to restrict retail investors' access to CFD trading—see mass media reports such as *ESMA agrees to prohibit binary options and restrict CFDs to protect retail investors* (Mar 2018). It is also worth noting that FX margin trading volume has declined significantly since 2011 following the adoption of leverage restrictions.

### ELS/DLS: Restrictions tightening

Korean financial authorities in Jan 2019 announced measures to strengthen asset quality control at non-banking financial institutions (eg, insurers, brokers, capital and asset management firms). As those institutions account for an increasingly portion of the financial system, authorities are taking measures to control risks inherent to them. For instance, to expand repo trading from products with one-day maturity to those with much longer maturities, authorities are: 1) demanding securities brokers and ITCs hold a certain level of cash in relation to RP borrowed; and 2) tightening regulations on notification for non-registered securities and expanding the scope of such targets.

The Jan 2019 measures also included provisions for ELS/DLS products. First, authorities are set to adopt a 'volatility-based asset ratio' to prevent concentration on certain underlying assets. If an individual broker's (or the market's) volatility-based asset ratio surpasses a certain threshold, authorities should take risk control-tightening measures—eg, requesting them to offer a plan to cut the ratio or taking more stringent liquidity-control measures.

$$\text{Volatility weighted asset weight (\%)} = \{\text{asset issuance} * \text{volatility}\} / \{\text{total balance} * \text{total asset volatility}\}$$

Financial authorities also suggested that when 'DLS/ELS-related risk indicators' surpass a normal level, brokers should be asked to offer risk control-strengthening measures and notify the fact. The 'risk indicators' are likely to include a self-hedging-to-shareholder equity ratio and a liquidity-gap ratio.

The measures announced last January should take effect in 2020. If the volatility-based asset ratio regulation does take effect, assets such as the EuroStoxx 50 and HSCEI (the most heavily used ones in ELS), are likely to be subject to it. Exposure to those assets should be cut via: 1) diversification of underlying assets; or 2) cuts to issuances. Although the regulation is aimed at reducing excessive focus on certain assets, it may lead to a reduction in the offerings available to buyers, and cuts to issuances will be inevitable in cases when underlying asset diversification is impossible.

Asset quality control measures (eg, the Jan 2019 measures)—alongside sales restriction measures that seem likely to ensue following this year’s DLF debacle—will probably remain major regulatory hurdles for 2020. If ELS/DLS distribution channels contract due to the DLF controversy, demand from banks—the biggest distribution channels of such products—is likely to fall.

According to the Financial Supervisory Service (FSS), banks took/sold KRW27.7t worth of ELS in 1H19 (or 58.2% of total issuances), brokers sold KRW10.4t (21.9%), and ITCs’ equity-linked funds KRW5.2t (10.9%). Such data for DLS/DLB products is unavailable, but DLS issuances have largely been absorbed by banks, brokers, and ITC funds. The problematic DLFs were developed by ITCs and sold at banks and non-banking institutions.

**ELS buyers**

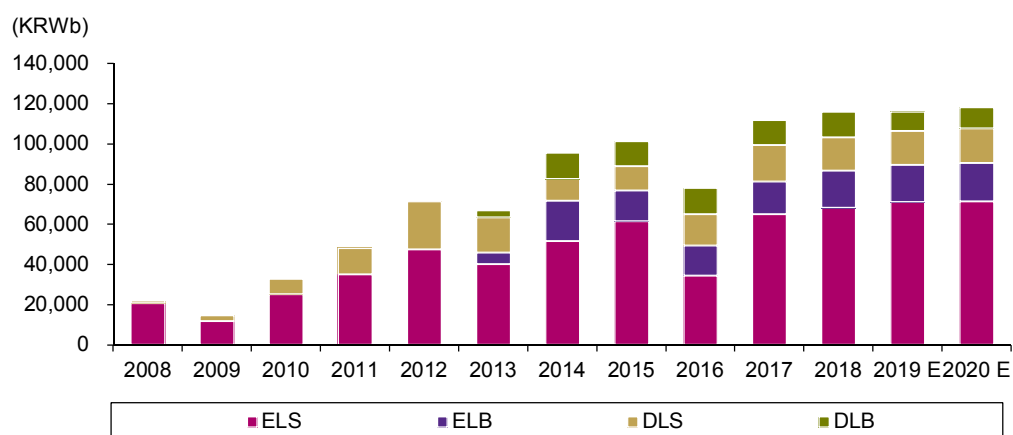
(KRWt)	Total	Investment trusts	Open funds	ITCs	Retirement pensions	Other
1Q18	23.4	13.6	4.7	2.3	0.9	1.9
2Q18	24.7	15.3	5.2	2.4	0.9	0.9
3Q18	14.3	9.0	2.5	1.5	0.6	0.7
4Q18	24.3	8.4	9.5	1.3	4.7	0.4
1Q19	19.8	11.7	4.2	1.9	1.1	0.9
2Q19	27.8	16.0	6.2	3.3	1.2	1.1

Source: FSS, Samsung Securities

Two risks for the ELS/DLS market in 2020 are a contraction of distribution channels and regulatory strengthening. Issuances should depend on the market environment, but regulation tightening should put pressure on the ELS/DLS markets. Thus, DLS/ELS issuances should be largely flat y-y in 2020.

We expect ELS/ELB issuances to hit KRW89t in 2019 and KRW91t in 2020, and DLS/DLB issuances to hit KRW26t in 2019 and KRW27t in 2020. As they are the most promising Korean financial products, issuances should edge up y-y in 2020.

**ELS/DLS issuances**



Source: KSD, Samsung Securities

One point to note in 2020 should be the diversification of underlying assets. The government in May this year announced measures to activate the derivatives market, including a provision seeking the expansion of the usage of underlying assets in public derivatives. Under the provision (aimed at improving ELS issuance practices, which were heavily geared toward a few underlying assets, such as the EuroStoxx 50 or the HSECI), a 'strategic index' can be used as an underlying asset for public-placement ELS/DLS.

Since public-placement derivatives target the public, financial authorities encourage them to use key equity indices, healthy individual stocks, and international gold and crude oil prices as underlying assets, as these are both easy to understand intuitively and easy to follow in terms of price. Thus far, a strategic index has rarely been allowed as an underlying asset in public-placement derivatives in Korea.

If the government's May 2019 measures take effect, a diverse range of strategic indices (*eg*, a risk control index, a low-volatility index, *etc*) may be used as derivatives' underlying assets. Strategic indices should include a 'smart beta index' (a kind of rule-based index), a 'protected index', and an 'options strategic index' (the latter two assuming limited loss risks).

The adoption of strategic indices should provide a new growth engine to the derivatives market, giving rise to the birth of new derivatives with a mid-risk structure—for example: 1) those seeking a stable return over a long period of time, suitable for pension funds; and 2) those with a simplified profit structure, rather than a step-down one). True, hedging should be key to the utilization of strategic indices, and it should take a long time for investors' understanding of them to reach a certain level.

The utilization of strategic indices should allow derivatives to circumvent many existing regulations. If they are also adopted in structured products, active funds will see their advantage further eroded. With passive funds already considering smart beta and ESG metrics, the adoption of strategic indices in structured products, which offer pre-determined profit structure, should further erode active funds' presence.

### 2020 check point 1: Alternative reference rate

The UK's Financial Conduct Authority (FCA) in 2017 announced that it would scrap the universally adopted Libor from 2020 (a panel of banks that submit quotes for Libor would support the benchmark until end-2021). This led countries around the world to rush to develop new benchmark rates. For reference, Oliver Wyman in 2017 in *Changing the World's Most Important Number* reported that Libor-based financial transactions amounted to USD240t, including USD180t in US dollar-denominated transactions, with most focusing on one- to three-month products. That said, although Libor is a key international financial benchmark, quotes are often based on internal calculations—not actual transactions—due to low liquidity.

The US announced its secured overnight financing rate (SOFR) as the alternative rate in 2017 and published it from 2018. SOFR comprises a broad universe of overnight Treasury repo rates and is designed to reflect actual transactions. The UK in 2017 approved its sterling overnight index average (SONIA) as its preferred short-term interest rate to replace Libor, which it also began publishing in 2018. The eurozone approved its Euro Short-Term Rate (ESTR) as a reference rate to replace the Euro Overnight Index Average (EONIA) and published it from Oct 2019.

Benchmark designation criteria include: 1) liquidity—*ie*, transaction volume; 2) stability—reflective of volatility but least exposed to abnormal factors; 3) funding costs—from the perspective of financial institutions; 4) utilization; and 5) reliability of calculation/publication institutions.

The International Swaps and Derivatives Associations (ISDA) recently released a draft for Interbank Offered Rate Fallbacks with regard to each nation's efforts to develop a risk-free benchmark rate, and it should confirm its final version at end-2019.

#### Alternative reference rates, by country/region

Country/region	Rate	Committee	Published from
US	SOFR	FRB NY	Apr 2018
UK	SONIA	BOE	Apr 2018
Eurozone	ESTR	ECB	Oct 2019

Source: Bank of Korea, Samsung Securities

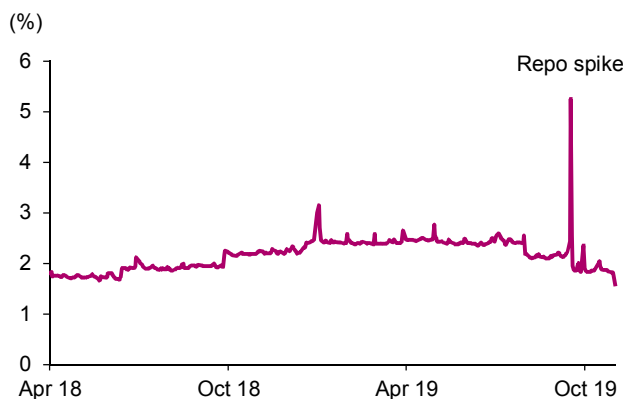
Meanwhile, Korean financial authorities in Aug 2018 unveiled a law that designates benchmarks with significant impact on financial markets as “key indicators.” The law passed the National Assembly in October. Key indicators act as the reference rate in valuing a financial product. A key example is the CD rate in interest rate swap trading, which involves a CD rate + xbps. CD rates and Cofix have been used as benchmarks for financial transactions, but there has been a lack of regulations governing calculating institutions' independence and fairness.

The new law stipulates criteria for being designated as key indicators, calculating institutions' roles, and restrictions. From 2022, the EU plans to greenlight only those financial transactions that are based on EU-approved benchmarks. Thanks to the Oct 2019 enactment of the law, Korean financial firms that meet Korean laws will also be complying with EU laws and thus can continue to transact with financial firms in the eurozone.

As the law only passed the National Assembly in October, issues, such as improving existing benchmarks (*eg*, CD rate), developing new benchmarks, and designating calculating institutions, need to be dealt with quickly prior to the emergence of new financial benchmarks that will take effect in 2021.

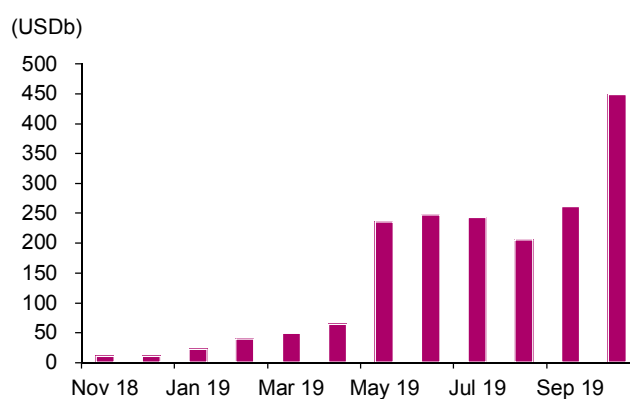
The US's SOFR was designated a risk-free reference rate in Jun 2017 and was published by the New York Fed from Apr 2018. When the repo rate surged in Sep 2019 amid a liquidity shortage, the SOFR also jumped more than 5%. The rate has been universally used as a reference in interest rate swap trading. The SOFR-based swap balance climbed from USD10b at end-2018 to USD449b as of Oct 2019.

**SOFR**



Source: Bloomberg, Samsung Securities

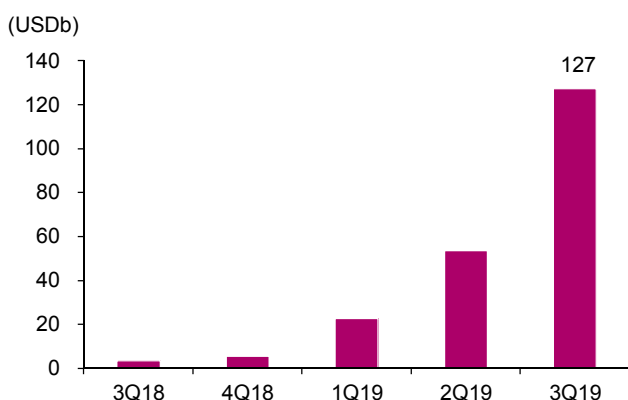
**SOFR-based swap balance**



Source: LCH SwapClear, Samsung Securities

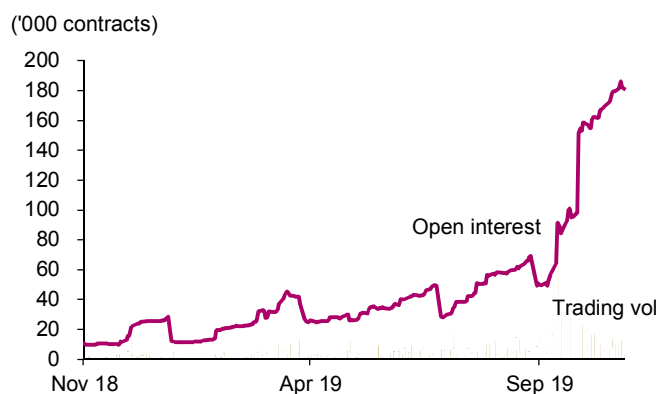
Issuances of SOFR-based floating rate notes (FRNs) hit USD127b in 3Q19 (up from USD9b in 2H18), while CME-listed SOFR futures saw credit enhancement. During the repo rate surge in Sep 2019, SOFR futures transaction volume hit record highs—namely, 75,000 contracts for one-month products on Sep 17 and 14,000 contracts for three-month products on Sep 20—thanks to growing demand for SOFR futures-based hedging. SOFR futures open interest stood at a record high at end-Oct 2019.

**SOFR-based FRN issuances**



Source: Bloomberg, Samsung Securities

**SOFR Futures (1M + 3M): Trading volume and open interest**



Source: CME, Bloomberg, Samsung Securities

We expect Libor's usage to decline significantly given that: 1) SOFR-linked financial product trading is on the rise; and 2) each nation is eager to improve the credibility of benchmark rates. In preparation for the scrapping of Libor at end-2021, Korean financial institutions will need to check each nation's new benchmark rates (eg, SOFR), engage in trading linked to them, and prepare for the development of new domestic benchmarks.

**2020 check point 2: Market makers in charge of information transference, risk mitigation**

KRX-designated market makers in the derivatives market include 12 domestic players and 1 foreign one (a Korean branch of a Chinese bank). Their target products are Mini Kospi 200 futures & options, Kosdaq 150 futures & options, KRX 300 futures, VKospi futures, SSFs & SSOs, and currency futures. Securities brokers, who serve as market makers, are exempt from transaction taxes when they sell stocks as part of hedging for equity-linked derivatives products. To qualify for this tax benefit, they can engage in low-cost arbitrage trading between derivatives and spots.

Brokers' role as derivatives market makers has a positive impact on the supply-demand dynamics not only of the derivatives market but also of the related spot market. Brokers' portion of Mini Kospi 200 trading jumped from 25.9% over Jan-Oct 2018 to 28.7% over Jan-Oct 2019. As most of their trading in the Mini Kospi 200 market was for market making, it is also linked to the fact that their portions of Kospi 200 and Kospi large-cap trading surged in 2019. Their portion of SSF trading also jumped in 2019, which is also linked to the fact that their portion of Kospi large-cap trading rose.

Brokers' portion of Kosdaq 150 futures trading has fallen slightly in 2019—though mainly due to rises in hedging/direction trading by foreign and retail investors amid Kosdaq weakness. In line with growth in Kosdaq futures trading value, brokers' trading value in the Kosdaq 150 futures market rose in absolute terms this year. Brokers' portion of Kosdaq 150 equity spot market trading has surpassed 3% in 2019.

As brokers' role expands from market making for derivatives products to liquidity provision for related spot markets, they seem to be in charge of: 1) information transference in the derivatives market; and 2) risk mitigation for single products. For instance, when the futures market is overvalued, brokers sell futures and buy equities in the spot market (for hedging) to reach price equilibrium. They transfer expectations for future prices (established in the derivatives market) to the spot market.

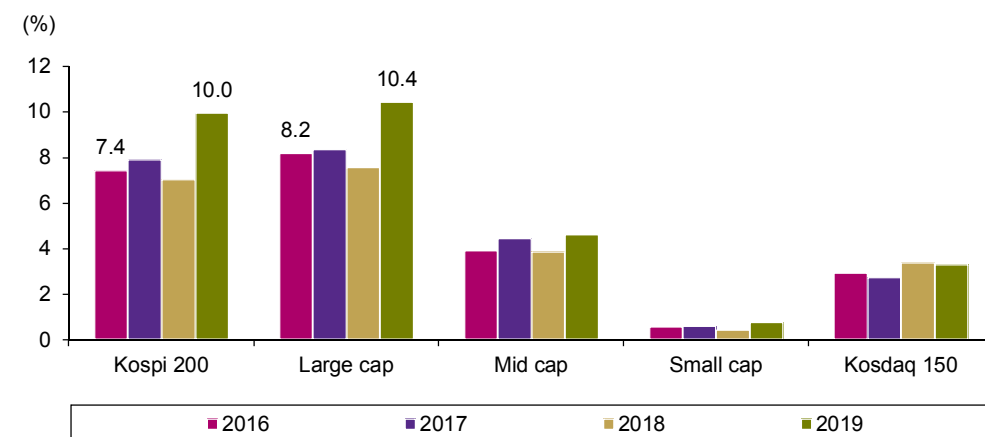
**Brokers' portion of market making in derivatives market**

(%)	Mini futures	Kosdaq 150 futures	Equity futures	Single stock options
2017	26.9	43.2	19.2	73.2
2018	25.9	27.4	14.9	68.9
2019	28.7	25.9	15.4	62.5

Note: January – October figures applied

Source: KRX, Samsung Securities

**Brokers' portion stock market trading value**



Note: January–October

Source: KRX, Samsung Securities



Since the KRX's adoption of the market-maker system in the equity spot market in 2017, there have been nine domestic players and three overseas ones (as of Jun 2019). KRX-designated market makers have the duty to aggressively submit quotes on KRX-designated stocks via a contract between the KRX and brokers. In return, they are exempt from transaction taxes. As in the case of arbitrage trading between derivatives and spots, market makers can engage in long/short trading targeting KRX-designated stocks.

Of note, among the three designated overseas market makers in the equity market—*ie*, GS, SG, and CLSA; designated since early 2019—GS and SG selected a respective 187 and 142 stocks as market making targets, whereas the highest figure of any Korean player was 152. Foreign brokers have yet to be selected as a market maker in the derivatives market.

Gains from market making stem largely from bid-offer spreads, but also come partially from hedging for balance and carry investments. Foreign brokers, armed with knowhow and advanced systems, have penetrated the market-making business in Korea, and this can be interpreted as a sign of their intention to launch full-blown market-making businesses in the Korean equity spot market, too.

#### Market makers in stock market

(Number)	2017	2018	Jan 2019	Jun 2019
Equities subject to market making	30	82	500	554
Domestic market makers	5	7	7	9
Foreign market makers	0	0	3	3

Source: KRX

#### Contract parties: Market makers and liquidity providers

	KRX & brokers (market makers)	Listed companies & brokers (LPs)
Equities	Stocks that meet trading volume and spread requirements	Low-volatility stocks
Quotation duties	Active submission of bid/ask quotations	Manual quotations
Benefits	Exemption from securities transaction tax	Fees

Source: KRX, Samsung Securities

Market makers in the derivatives market began affecting the spot market in the process of hedging in 2017, while market makers in the equity spot market have begun gradually providing liquidity in 2019. In sum, while the former are in charge of: 1) information transference; and 2) risk transfer between the spot and derivatives markets, the latter are in charge of: 1) liquidity creation; and 2) information diffusion.

Of note, as market makers are exempt from transaction taxes, they should become more proactive in market making—prior to the full-blown implementation of transaction tax cuts—for the creation of gains and acquisition of knowhow. In 2020, to deal with intensifying competition in derivatives/equity spot market making, brokers are likely to turn more aggressive in system competition and trading-strategy development.

### 2020 check point 3: 30% cap rule

The KRX in Jun 2019 introduced a rule stipulating that if the weight of a given stock were to exceed 30% of the Kospi 200 index, its weight would be capped at 30%. The rule is designed to mitigate problems involving excessive exposure to a single stock (eg, less efficiency in risk diversification, concentration of demand, and difficulty in managing assets) and to strengthen the 'investability' of equity indices.

Most major equity indices overseas are capped in a similar manner. The MSCI Capped Indices are designed to provide an alternative to purely free float-adjusted market cap weighted indices by constraining the maximum sector, geographical, or constituent weights. MSCI constructs and calculates the MSCI 10/40 Indexes, MSCI 25/50 Indexes, MSCI 35/65 Indexes and MSCI 10/50 Indexes.

#### Foreign stock market indices that have applied caps

Country/region	Index	Cap	Cap	Adjustment interval
US	S&P 500	✗	-	-
US	Nasdaq 100	✓	20%	Quarterly
UK	FTSE 100	✗	-	-
Germany	DAX	✓	10%	Quarterly
Europe	Stoxx 50	✓	10%	Quarterly
France	CAC 40	✓	15%	Annually
Hong Kong	Hang Seng	✓	15%	Quarterly

Source: KRX

The KRX's 30% cap rule is based on a daily average of three months before June or December. If there is no stock whose three-month daily average does not exceed 30%, there is no rebalancing. The rule is applied to the Kospi 200, Kospi 100, Kospi 150, and KRX 300 indices.

#### Market cap upper limit rules

Regulation	Details
Cap	30% (based on free float market cap)
Adjustment interval	Twice a year (day following June/December futures expiration date)
Evaluation date	Last business day of May and November
Evaluation criteria	Whether 3-month average weight surpasses 30%
Cap application method	Multiply by cap ratio (between 0 & 1)
Indices subject to cap	Kospi 200, Kospi 100, Kospi 150, KRX 300
Application date	Jun 2019

Source: KRX

For example, if the market cap weight of a certain stock hits a daily average of 31% over the three months up to June, a cap ratio (0.967), calculated via  $[(1,000 * 30\%) / 31\%]$ , is applied to the price change of the stock.

**Cap application examples**

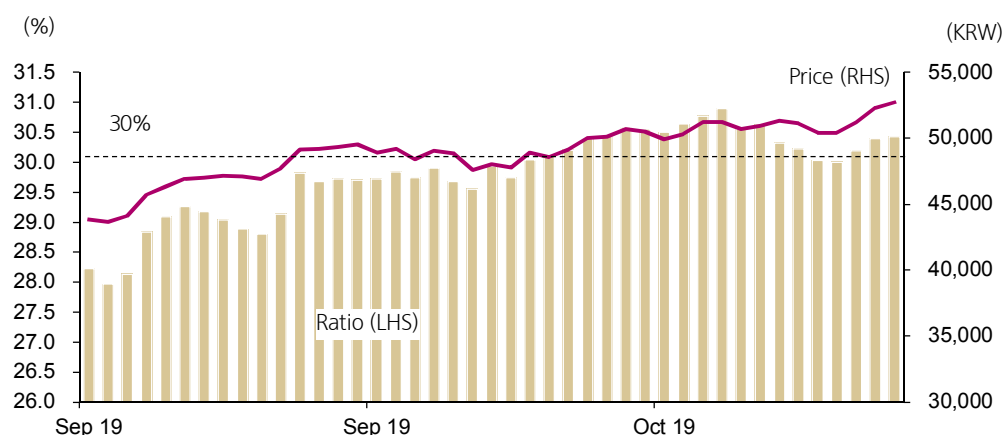
Stock weight	Cap ratio
29%	1.000
30%	1.000
31%	0.967
32%	0.937
35%	0.857

Source: Samsung Securities calculations

The cap rule will be imposed on the first trading day in June after Kospi 200 futures contracts expire. The weight of the securities outside of the capped stock will increase in proportion to their weight prior to such capping.

Samsung Electronics' (SEC) market cap (daily average) accounted for about 29.5% of the Kospi 200 index over Sep-Nov 2019. If SEC shares continue to strengthen through end-November and other stocks show relative weakness, the cap rule may be applied to SEC from December. Even if the cap rule is not applied in December, it could be applied in Jun 2020 if SEC's market cap weight exceeds 30% over Mar-May 2020.

**Samsung Electronics: Free float market cap weight**



Source: KRX, Samsung Securities

The cap rule directly affects passive funds (index funds and ETFs), which need to cut exposure to SEC when the cap rule is applied. The higher SEC shares climb, the more the share overhang. This will also weigh on the performances of pension funds that use the Kospi 200 as a benchmark.

In addition, equity-type ETFs will also have to rebalance their exposure to SEC to meet the cap rule. ETFs need to rebalance their portfolio within three months of the 30% cap being breached, and therefore implement SEC weight rebalancing frequently (using single stock futures). In 2020, the cap rule for SEC should act as an important restriction on the performances of index funds/ETFs and the management of pension funds.

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