

TIME TO (EX)CHANGE

THE EVOLUTION OF STOCK EXCHANGES FROM TRADING
VENUES TO DATA PROVIDERS

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SPECIAL THANKS

We would like to thank our intern, Melanie Gock (BBA, International Finance at Queensland University of Technology), for her help in the preparation of this report.

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EXECUTIVE SUMMARY

Over the past few decades, stock exchanges have undergone a fundamental evolution in their business models – from hand signals and verbal communications under the open outcry system, to the current stage of electronic trading. These changes have brought about a range of unique opportunities and challenges, and exchanges worldwide have been actively exploring ways in which to enhance their competitiveness, especially in light of the ongoing digital transformation efforts across the financial services industry.

In more recent years, many exchanges, particularly those in North America and Europe, have made an aggressive push into the data industry, with several global incumbents pursuing inorganic growth strategies – including NASDAQ’s purchase of Quandl in 2017 and London Stock Exchange’s (“LSE”) pending bid for Refinitiv. Leveraging their core operations, these exchanges are monetising new data sets and proprietary transaction information, such as raw market data, value added data, and index services, to exchange members and end users, supporting market participants in their research, trading, investment activities, and in meeting their compliance and reporting obligations.

With institutional investors and traders seeking to stay relevant and generate alpha in a world where traditional data and analysis tools have been largely democratised, growth in demand for information services has exploded. Indeed, revenue from information services now accounts for a significant proportion of total revenue for many western exchanges, including LSE (44%), TMX (37%), and ICE (27%).

The story for Asian exchanges has been markedly different, with revenues from market and listing services growing steadily – albeit gradually – over the past decade, providing little incentive to adapt. Instead, most regional exchanges have prioritised enhancing customer experience and improving operational

efficiency over commercialising their own data. In fact, information services only made up 10% and 6% of total revenue for exchanges in Developed Asia and Emerging Asia respectively in 2019, compared to 28% and 21% for exchanges operating in North America and EMEA. By not establishing an effective monetisation model for exchange data, we estimate up to USD 4.23 billion p.a. in incremental revenue from the provision of information services will be left on the table by Asian exchanges by 2025.

For Asian exchanges, diversification into the data space remains hindered by a mix of internal and external factors, including conservative management mindsets, legacy infrastructure, the absence of competition, and lower customer sophistication, resulting in less urgency for change. However, with Asian markets now on the verge of several key megatrends, including rising ETF flows, growth in large-scale domestic listings, and increased data sophistication, the business case for expanding into information services can no longer be ignored.

We see several avenues through which Asian exchanges can monetise the large volumes of data they have access to, including the sale of proprietary data / exhaust data, development of market indices, the sale of alternative data, securing third-party partnerships, and/or establishing a data marketplace. However, a clear strategy is needed to capitalise on the opportunities presented, including the development of tailored solutions that are well suited to local client demand.

We believe it is imperative for Asian exchanges to look beyond their core trading and listing businesses into the data space if they are to remain competitive on the global stage. While a challenging journey, now is time to (ex)change.

SECTION 1

EXCHANGE INDUSTRY TRENDS

OVERVIEW


As centralised marketplaces that facilitate the transaction of securities, stock exchanges are a cornerstone of global financial markets. However, with ongoing advancements in trading technology driving a wave of digital disruption, many players have been actively exploring ways to enhance their competitive positioning.

Over the past decade, major exchanges across the globe have been on an aggressive acquisition spree. Some have adopted this strategy as a means to horizontally diversify their offering across asset classes (e.g. Deutsche Börse's acquisition of European

Energy Exchange ("EEX") in 2011 and HKEX's acquisition of LME in 2012), while others have merged in an effort to capitalise on economies of scale (e.g. the 2007 merger between NYSE Group and Euronext).

In more recent years, a number of western exchanges have also pursued inorganic growth strategies to tap into the data space, with notable transactions including ICE's acquisition of Interactive Data Corporation in 2015, NASDAQ's purchase of Quandl in 2017, and LSE's pending acquisition of global market data provider Refinitiv (which received US approval in March 2020, and is expecting a ruling by European competition authorities in late-2020) (see Figure 1).

FIGURE 1: EXCHANGE M&A ACTIVITY

Acquirer*	Target	Year	Rationale
 NYSE	 EURONEXT	2007	• Economies of scale
 DEUTSCHE BÖRSE GROUP	 eex	2011	• Horizontal diversification
 HKEX 香港交易所	 LONDON METAL EXCHANGE	2012	• Horizontal diversification
 ice	 Interactive Data	2015	• Product diversification
 Nasdaq	 Quandl	2017	• Product diversification
 London Stock Exchange	 REFINITIV	Pending	• Product diversification

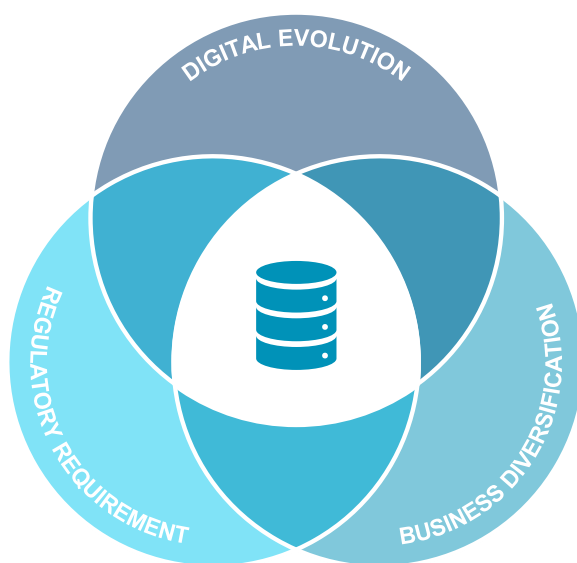
Entry into Data Market




*Except for the transaction between NYSE and Euronext, which is a merger
Source: various press

There are a number of key drivers behind the ongoing shift in focus by exchanges, particularly those in the west, towards the data industry,

including: (1) digital evolution, (2) business diversification, and (3) regulatory requirements (see Figure 2).

FIGURE 2: DATA DRIVERS



CATEGORY	DESCRIPTION
Digital Evolution 	<ul style="list-style-type: none"> The ongoing digitalisation of the exchange industry has led to the generation of exhaust data (creating supply), while more advanced investment / trading techniques had led to increased data analysis (creating demand)
Business Diversification 	<ul style="list-style-type: none"> With a shift from active to passive investing (e.g. indexing, mutual funds, ETFs), revenue from trading is likely to experience a decline, driving exchanges to seek alternative revenue streams in order to remain competitive
Regulatory Requirements 	<ul style="list-style-type: none"> As regulatory requirements on reporting and transparency become more stringent, market participants, especially fiduciaries, require more data to meet compliance requirements on serving clients' best interests

Source: Quinlan & Associates analysis

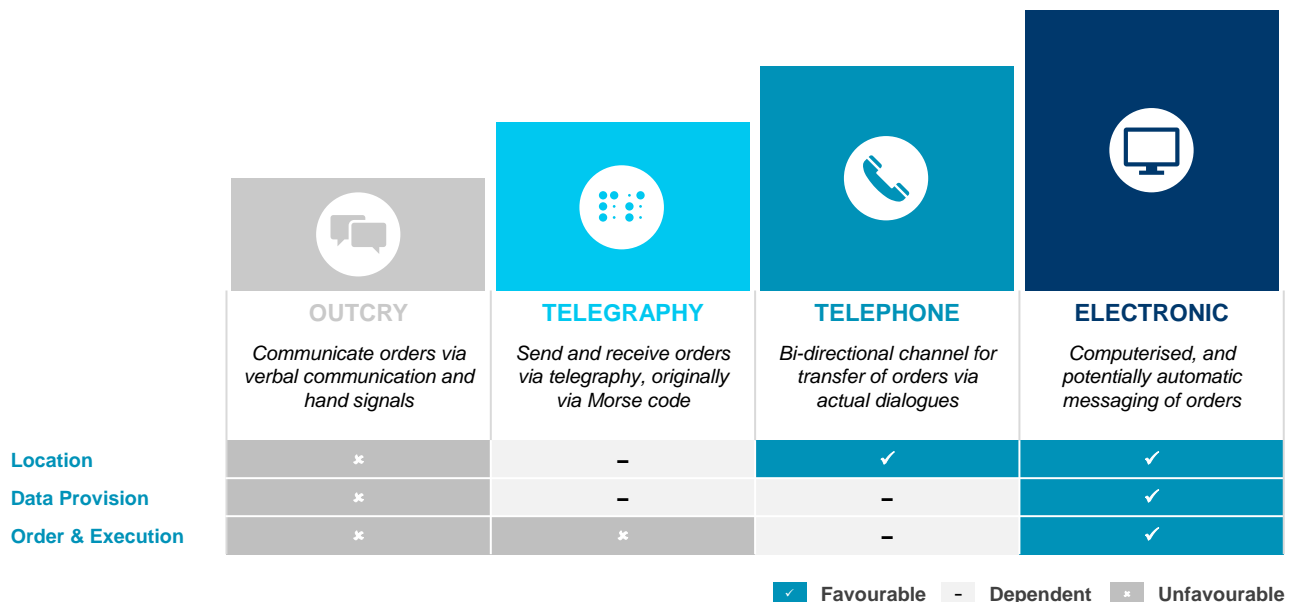
WITH ONGOING ADVANCEMENTS IN TRADING TECHNOLOGY DRIVING A WAVE OF DIGITAL DISRUPTION, MANY PLAYERS HAVE BEEN ACTIVELY EXPLORING WAYS TO ENHANCE THEIR COMPETITIVE POSITIONING

1. DIGITAL EVOLUTION

With the digital age bringing about rapid advancements in new technologies, the exchange industry and its operating model have

continued to evolve; from verbal communication and hand signals during the open outcry period, to verbal communication via telegraph and telephone communication, to the current stage of electronic trading (see Figure 3).

FIGURE 3: EVOLUTION OF TRADING



Source: Quinlan & Associates analysis

Most of today’s trading activity is conducted via electronic channels, typically through computer programmes. Improved connectivity to the internet allows market participants to access trading venues remotely, source real-time information, rapidly execute orders, and significantly reduce trading errors. Development in computer programming has also enabled algorithmic, automatic trading based on pre-defined instructions and rules.

The ongoing development and adoption of electronic trading has spurred the demand for –

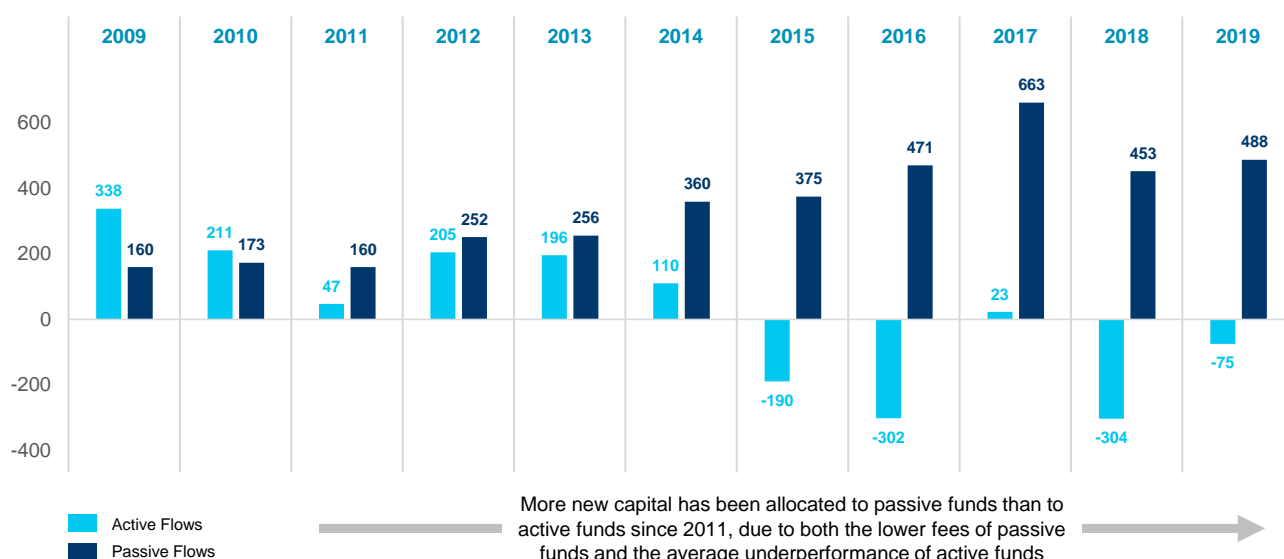
and supply of – data. On the demand side, many electronic trading strategies require a constant stream of data, monitoring and analysing relevant datasets in real time to identify profitable trades. On the supply side, rapid digitisation enables the automatic documentation of orders and trades, producing huge volumes of new data. This has provided a growing opportunity for exchanges to leverage their “exhaust data” (i.e. the trail of data left by their business activities) to enhance and diversify their revenues.

2. BUSINESS DIVERSIFICATION

Historically, stock exchanges' revenues relied heavily on listing and trading services. However, as financial markets become more developed, accessible, and efficient, many investors have shifted from active to passive

investment strategies (see Figure 4). As outlined in our 2017 report, *Alternative Alpha*,¹ this has been driven by the considerably lower fees charged by passive managers, as well as the widespread underperformance of active funds across most asset classes.

FIGURE 4: US FUND FLOWS (USD billion)



Source: Morningstar, Quinlan & Associates analysis

In the US alone, passive funds have experienced higher fund inflows than active funds since 2011. This has further intensified since 2015, with active funds witnessing sizeable fund outflows. In fact, by August 2019, AuM for US passive equity funds stood at USD 4.27 trillion, exceeding that of active equity funds at USD 4.26 trillion.²

Passive strategies inherently undergo a lower level of trading, which has had a negative knock-on effect on stock exchange revenues. In addition, listings are, by their nature, very

cyclical, with companies typically opting to adjust their listing plans based on market conditions, resulting in a volatile revenue stream. Moreover, there is growing evidence that an increasing number of companies are choosing to remain private, given ample private funding channels and the high costs of listing.

Recognising these structural and cyclical challenges, many stock exchanges are actively exploring data as a more stable, annuity-style source of income, with data being a key focus area.

¹ Quinlan & Associates, "Alternative Alpha: Unlocking Hidden Value in the Everyday", September 2017, available at: <https://www.quinlanandassociates.com/insights-alternative-alpha/>

² Bloomberg, "Passive US Equity Funds Eclipse Active in Epic Industry Shift", 11 September 2019, available at: <https://www.bloomberg.com/news/articles/2019-09-11/passive-u-s-equity-funds-eclipse-active-in-epic-industry-shift>

3. REGULATORY REQUIREMENTS

Since the 2008/9 global financial crisis (“GFC”), the regulatory climate has rapidly evolved, with considerably greater emphasis being placed on transparency and disclosure in an effort to enhance investor protection. Some of the more relevant regulations include the Dodd-Frank Act (US, 2010) and MiFID II (EU, 2018).

One key focus of the Dodd-Frank Act was to improve accountability and transparency in the American financial system, in order to promote greater financial stability. To comply with heightened disclosure requirements, financial institutions have been forced to collect larger volumes of data to document their internal policies and decision-making processes for regulatory reporting purposes.

In Europe, MiFID II requires brokers to provide clients with best execution; in short, the most advantageous order execution based on current market conditions. Brokers have been forced to take “sufficient steps” to ensure favourable execution, and need to consider various factors, including execution price,

trading costs, execution speed, and likelihood of execution. To demonstrate that sufficient steps have been taken, brokers are required to detail their execution decisions, necessitating the collection of market data and information.

These transparency and reporting requirements also apply to OTC derivatives. For example, the Dodd-Frank Act Title VII covers the transparency in OTC swaps, where relevant trade information has to be reported to a registered Swap Data Repository. Similarly, under the European Market Infrastructure Regulation (“EMIR”), OTC derivatives trade data are to be documented with trade repositories.

With global regulators establishing more policies around investor / market protection and transparency, financial institutions have had no choice but to collect as much information as possible to make necessary operational decisions to comply with their relevant regulatory requirements. As a result, demand for market data from exchanges has fast been on the rise.

THE ONGOING DEVELOPMENT AND ADOPTION OF ELECTRONIC TRADING HAS SPURRED THE DEMAND FOR – AND SUPPLY OF – DATA, PROVIDING A GROWING OPPORTUNITY FOR EXCHANGES TO LEVERAGE THEIR “EXHAUST DATA” TO ENHANCE AND DIVERSIFY THEIR REVENUES

SECTION 2

GROWING IMPORTANCE OF MARKET DATA

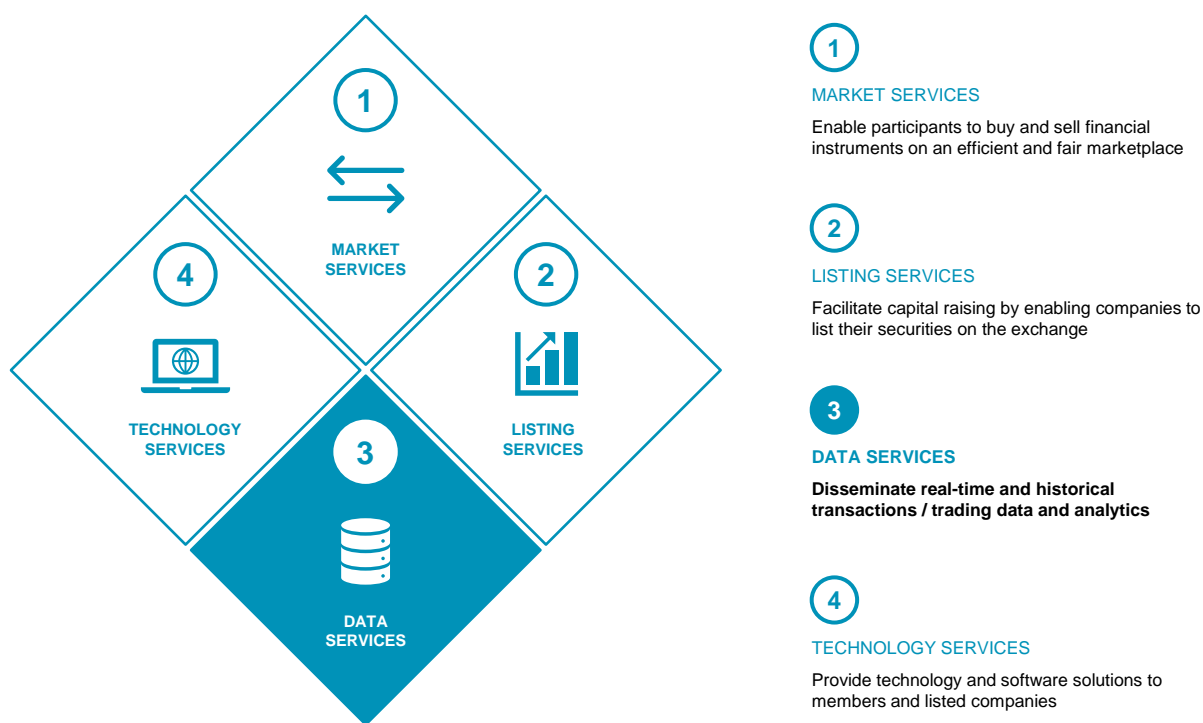
EXCHANGE BUSINESS COMPOSITION

Put simply, an exchange is a marketplace where securities, derivatives, commodities, foreign exchange, futures, and options are bought and sold. Exchanges also provide a platform for companies to raise money by listing different kinds of securities. The data on these companies and transactions are then utilised by

exchange participants for research and analysis, reporting, and auditing purposes.

In return for providing the marketplace and various services to exchange participants, the exchange receives fees split amongst various types of business streams, all of which contribute to exchange revenues by offering different products and services (see Figure 5).

FIGURE 5: EXCHANGE BUSINESS SEGMENTS



Source: Quinlan & Associates

1. MARKET SERVICES

Exchanges charge a fee for enabling participants to buy and sell various financial instruments on the exchange platform, and for providing an efficient marketplace with fair price liquidity. For each trade that occurs through the

exchange, a transaction fee is charged to each of the trading parties. Exchanges with a clearinghouse also charge clearing fees for guaranteeing the settlement and clearing of transactions, minimising concerns around counterparty risks and default through its role as an intermediary.

2. LISTING SERVICES

Exchanges facilitate capital raising by enabling companies to list their securities on the exchange for the public to buy and sell. They charge an initial listing fee in addition to a recurring fee for ongoing listing and trading services. Many exchanges also charge an annual membership fee to institutions who are trading and / or broking members of the exchange.

3. INFORMATION SERVICES

One of the core functions of an exchange is to disseminate proprietary transaction data and information to exchange members and their end users, supporting research, trading, and investment activities. Market data enables traders and investors to access a range of information, such as prices, bid / ask quotes, and market volumes on the financial instruments traded on the exchange. Different exchanges offer a range of information services and data products, including (A) raw market data, (B) value-added data, and (C) index services.

A. RAW MARKET DATA

The data and feeds that come directly from the exchange include a mixture of real-time, delayed, and historical market data. Other information includes trading volumes, bid / offer quotes, depth of book, top of book, etc.

Real-time market data is necessary for making decisions about buying or selling financial instruments, while historical data can be leveraged to analyse pricing trends and for the calculation of portfolio risk. While exchanges typically provide market data directly to the end user, the data that comes directly from the exchange is usually not in a format that is easy to access and analyse. In addition, the mode

and speed of delivery of this market data is critical to many traders and investors.

A common way for traders and investors to access market data is through various financial data vendors that specialise in collecting, cleaning, standardising, aggregating, and distributing market data to the end user.

B. VALUE-ADDED DATA

Value-added data from exchanges refers to any data, excluding raw market data, that is offered to users for the purpose of supporting research, trading, or risk management activities. One example is reference data, which is data that is used to structure and categorise other data; in the finance industry, it typically refers to counterparty and security identifiers used during a transaction. While market data is used during a transaction, reference data is required in order to complete and settle the transaction.

Some types of reference data, such as currency codes, are always standardised, while others vary, such as specifics around each transaction. Efforts to standardise reference data is an ongoing endeavour and complicated by various issues, including the large number of data points that go into each transaction and constantly changing markets.

Other types of data products are offered by exchanges to support traders and investors in developing market insights and addressing trading, compliance, and risk management requirements. These value-added products include investment and risk analytics, evaluated pricing, and valuations. This type of value-added data is typically offered by exchanges who have a relatively diversified service proposition and have focused heavily on developing a data business, such as ICE and the NYSE. For these exchanges, the monetisation of value-added data has been rapidly increasing in recent years.

C. INDEX SERVICES

One of the areas that is increasing in popularity and interest with users are exchange index products and services. Many exchanges list a variety of index products spanning major asset classes (e.g. equity / bond / currency / commodity indices) and customised index solutions, which are widely used by investors as an investment product, performance benchmark, and as a research tool. Many exchange indices are seen as attractive benchmarks for the financial market and are often licensed to institutions and used as underlying assets for index-based products, such as ETFs, fund solutions, structured products, and for portfolio management.

Exchanges spend a significant amount of time and resources in the development and maintenance of these indices, given the fact that they must be based on a transparent methodology and follow the highest data quality standards – from collection to analysis to distribution. Exchanges typically charge a subscription or licensing fee to institutions for the use of their indices

4. TECHNOLOGY SOLUTIONS

Many exchanges offer various trading software and technology solutions to corporate clients such as exchange members and listed companies. These solutions are typically categorised into two types: technology solutions and business / corporate solutions.

Business / corporate solutions provide support on various aspects of enterprise operations, including investor and public relations software (e.g. analytics and tools that support the IR / communications process, investor outreach), and compliance / governance tools (e.g. board management software, risk management). For most exchanges, the majority of the technology solutions and services they offer to corporate clients are exchange-related software with the intention to support the facilitation and analysis of trading, clearing and settlement, and surveillance capabilities.

Exchanges also make money from offering connectivity and co-location services, which is highly beneficial to those traders who use algorithms and high-frequency strategies, requiring access to market data with minimal latency.

ONE OF THE CORE FUNCTIONS OF AN EXCHANGE IS TO DISSEMINATE PROPRIETARY TRANSACTION DATA AND INFORMATION TO EXCHANGE MEMBERS AND THEIR END USERS, SUPPORTING RESEARCH, TRADING, AND INVESTMENT ACTIVITIES

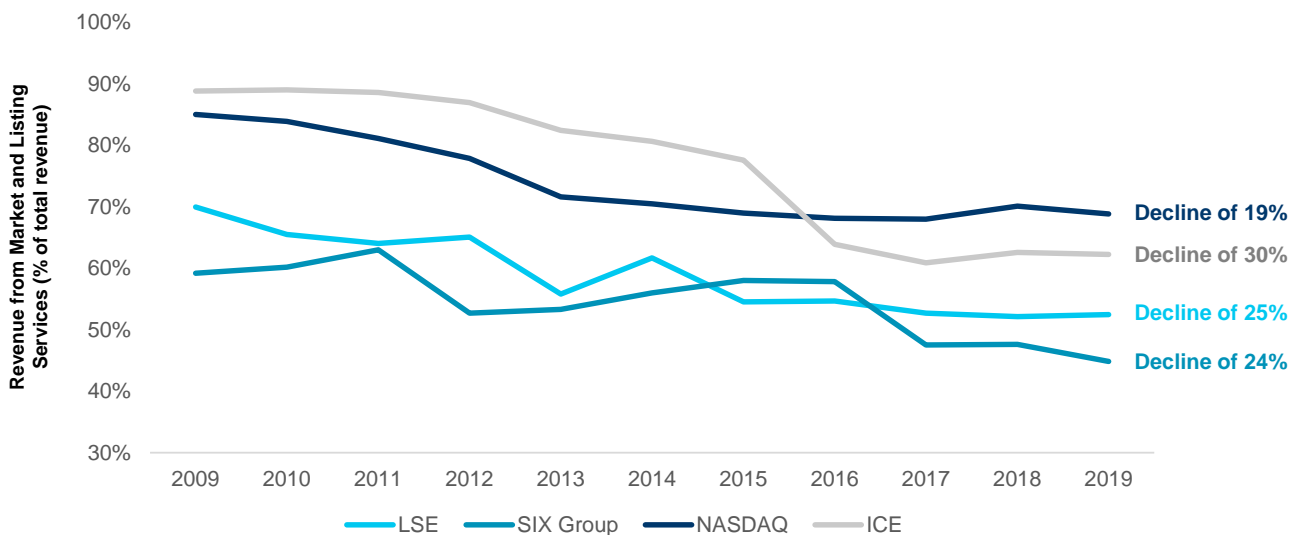
EVOLVING BUSINESS MODEL

The business composition for many exchanges has changed dramatically over the past decade. Revenues from listing and trading services, which have traditionally represented the core businesses of an exchange, have gradually declined as a percentage of total revenue,

reflecting the various factors outlined in *Section 1 – Exchange Industry Trends*.

Some of the largest global exchanges have seen their revenues from market and listing services decrease by 20-30% over the past decade: from 60-90% of total revenues during the GFC to approximately 40-60% of total revenues in 2019 (see Figure 6).

FIGURE 6: REVENUE CONTRIBUTION FROM MARKET AND LISTING SERVICES

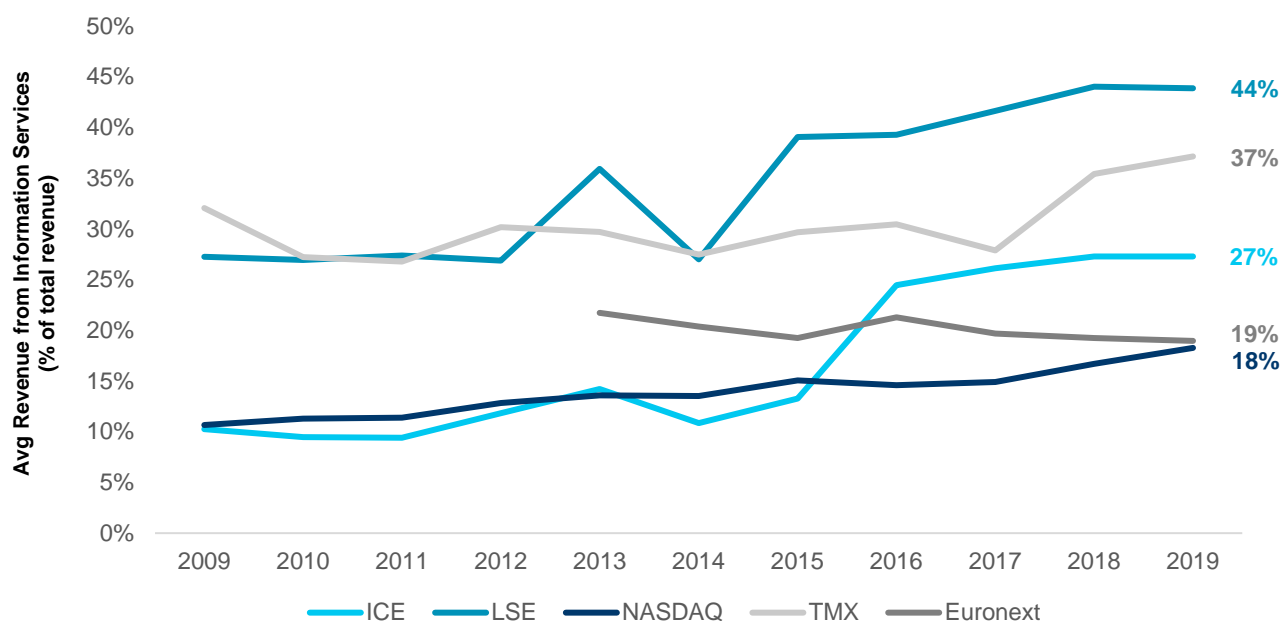


Note: the number for SIX Group excludes revenues from payment services / cards, since that was carved out to Worldline in 2018
 Note: the decline refers to relative decline in revenue contribution
 Source: exchange annual reports, Quinlan & Associates analysis

Revenues from information services (including the offering of real-time and historical market data, reference data, analytics, and index services) have risen considerably over the

same period, and now represent a major cash generator for a number of exchanges worldwide, including ICE, LSE, NASDAQ, TMX, and Euronext (see Figure 7).

FIGURE 7: REVENUE CONTRIBUTION FROM INFORMATION SERVICES



Note: information for Euronext begins in 2013 upon its setup as an independent exchange
 Source: exchange annual reports, Quinlan & Associates analysis

ICE was one of the first exchanges to recognise the burgeoning demand for market data stemming from the increased electrification of exchanges. In response, they invested heavily in the required technology and infrastructure, and acquired a number of data companies to build on their global market data strategy, starting with the acquisition of SuperDerivatives in 2014 and Interactive Data Corporation in 2015. This led to a sharp increase in revenues from information services in 2015 and 2016.

Within the information services business, much of the new revenue growth has been driven by the commercialisation of indices and the sale of value-adding data and analytics, rather than the sale of raw market data that has traditionally been distributed to institutional and retail users. For example, the LSE has one of the largest proportions of revenue from information services (44%) amongst major global

exchanges, with a large part of this revenue derived from their index product offerings. In 2019, 72% of its information services were attributed to its FTSE Russell business alone, a predominantly index focused arm.

This rapidly growing demand for market data highlights a clear shift in what investors and traders are looking for, as they themselves fight to stay relevant and create alpha in a world where traditional financial information and investment analysis tools have been heavily democratised. Advanced tools and value-added information and data are in high demand by those users who are able to leverage it appropriately, providing them with a competitive advantage over their peers. Moreover, with the dramatic shift in investor preferences from active to passive investment products, investors are looking for new venues that provide alternative investment products, with ETFs and indices attracting substantial interest.

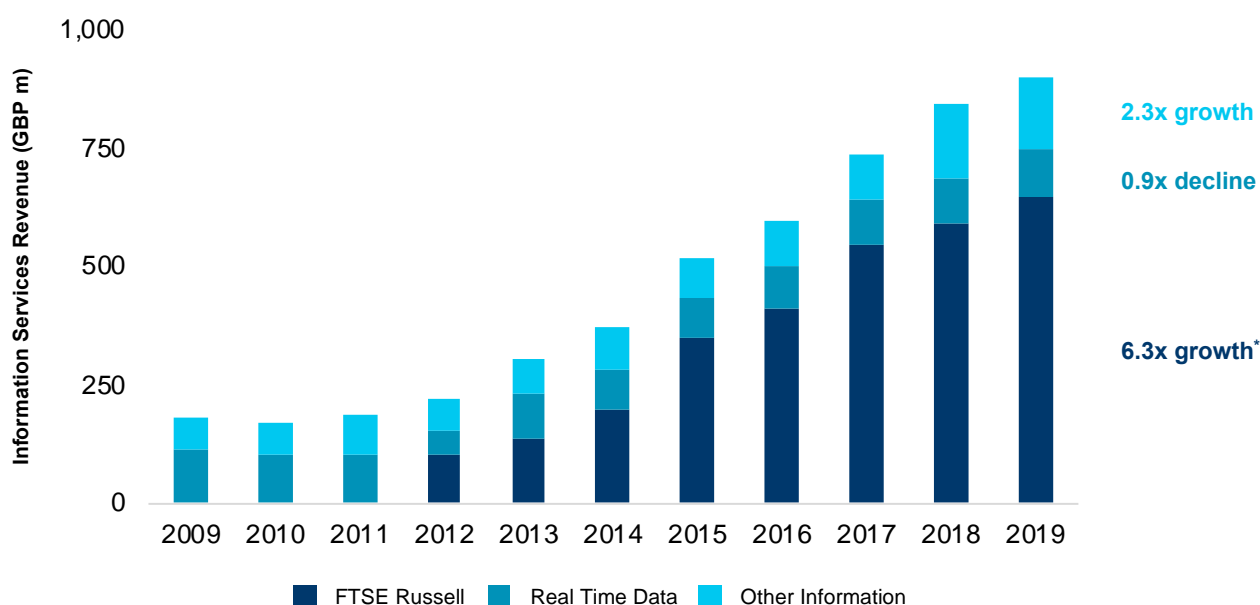
EXCHANGE DRILLDOWN

LONDON STOCK EXCHANGE

LSE's revenues from information services increased from 27% of their total revenues in 2009 to 44% in 2019, composed of real-time

data, FTSE Russell, and other information provided to its clients. In 2019, the sale of information services generated £902 million in revenue, nearly as high as the £1.08 billion generated from LSE's market and listing services, including capital markets and post-trade services (see Figure 8).

FIGURE 8: LSE INFORMATION SERVICES REVENUE



*Calculated from 2012 to 2019

Source: LSE annual reports, Quinlan & Associates analysis

The biggest driver behind the growth of LSE's information services business has been the FTSE Russell; revenues derived from the FTSE Russell grew from zero in 2011 to 72% of LSE's information services business in 2019. The exponential growth of the FTSE Russell has been largely driven by clients looking to allocate more funds to passive products, as well as institutional investors who use the index for benchmarking and other strategies.

Assets managed by global index funds have surpassed the USD10 trillion level to reach USD 11.4 trillion in November 2019, a ~400% increase from USD 2.3 trillion a decade ago.³ Demand is continuing to grow as investors and asset managers increasingly rely on indices to develop innovative, low-cost investment products in order to address client demands.

³ Financial Times, "Index funds break through \$10tn-in-assets mark amid active exodus", 8 January 2020, available at:

<https://www.ft.com/content/a7e20d96-318c-11ea-9703-eea0cae3f0de>

INTERCONTINENTAL EXCHANGE

ICE was one of the first exchanges to recognise the value of their market data and examine different monetisation strategies, building a data strategy both organically and inorganically.

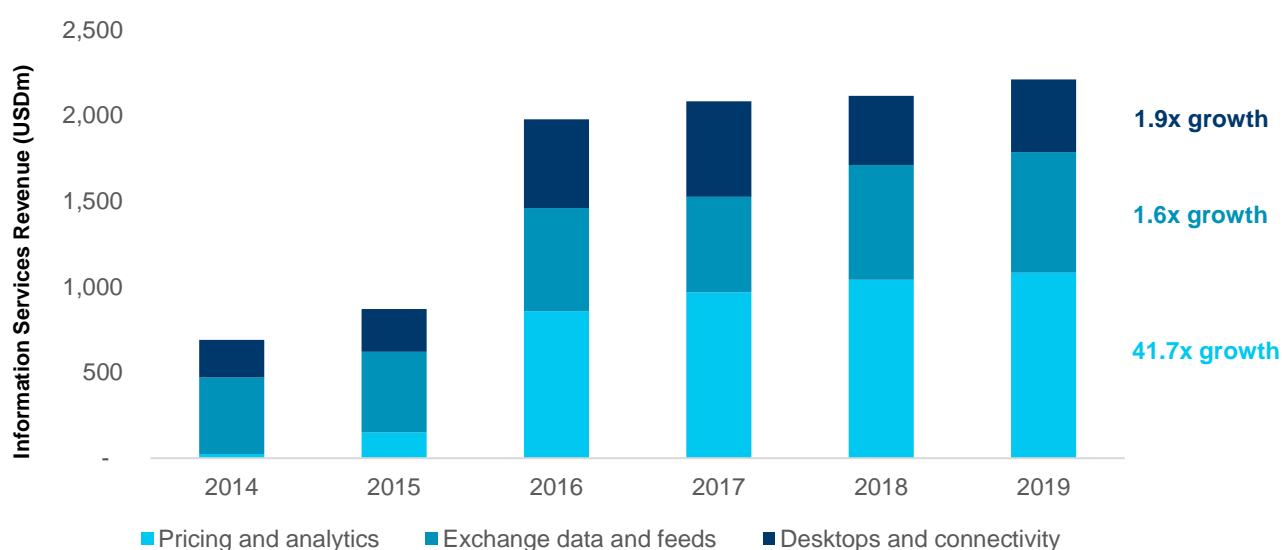
ICE's data strategy focuses on selling data products developed from its proprietary data, (including transactions details and order flow), in addition to creating new data products that are built on top of its extensive data sets (which has rapidly expanded with ICE's acquisition of companies with complementary datasets). This has served as an effective hedge for their market and listing services businesses, which declined from 89% of total revenues in 2009 to 62% of total revenues in 2019. Today, ICE is increasingly viewed as a data business rather than a pure exchange.

ICE's information services business (including pricing and analytics and exchange data and

feeds) grew from 11% of total revenues in 2014 to 27% of total revenues in 2019. Much of this growth has been underpinned by its pricing and analytics business – an independent pricing and valuation business for fixed income and international securities that customers provide to clients, in addition to using it to support real-time internal decision making.

ICE's pricing and analytics business grew by 41.7x over the same period, compared to 1.6x for its exchange data and feeds business, and 1.9x for its desktops and connectivity services (see Figure 9). Much of this has been underpinned by burgeoning customer demand for information to address evolving regulations, such as requirements for best execution and the calculation of capital positions, as well as growing demand for pricing data and index products reflecting the rapid rise of passive investment products.

FIGURE 9: ICE INFORMATION SERVICES REVENUE



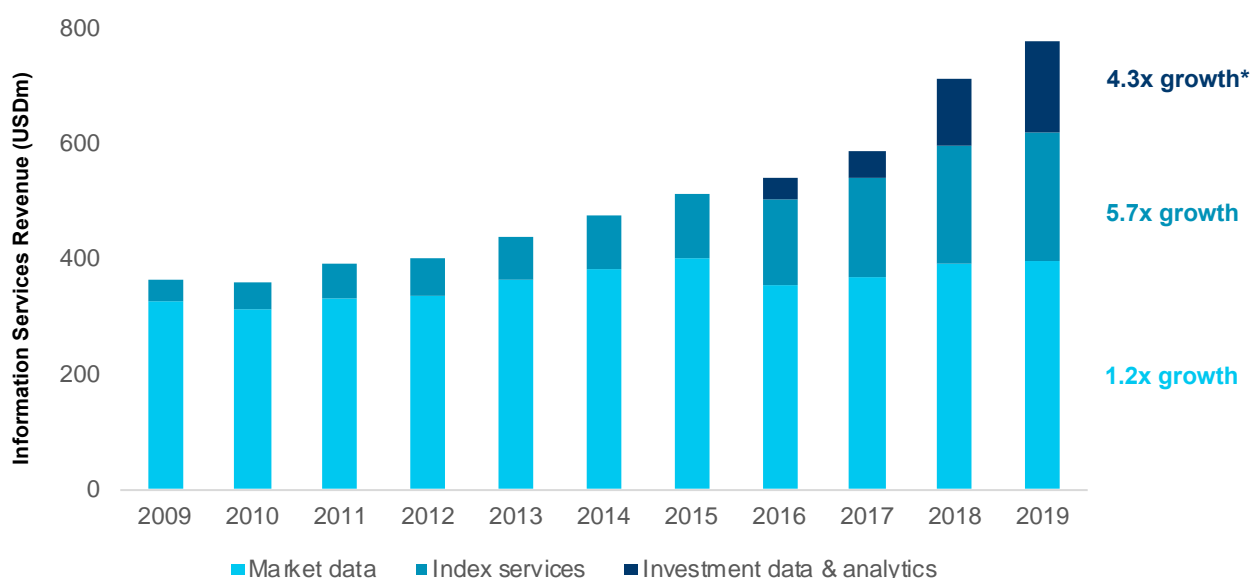
Source: ICE annual reports, Quinlan & Associates analysis

NASDAQ

Similar to LSE and ICE, NASDAQ saw a boom in revenues from its information services business over the past decade. And in its 2019 annual report, NASDAQ said they will be focusing their resources and capital on its largest growth opportunities – namely, Market Technology and Information Services.

The growth in NASDAQ's information services business has been driven primarily by index services and investment data and analytics; from 2009-19, index services revenues grew by 5.7x, while revenues from investment data and analytics grew by 4.3x since it was categorised as its own business segment in 2016 (see Figure 10).

FIGURE 10: NASDAQ INFORMATION SERVICES REVENUE



*Calculated from 2016 to 2019
Source: NASDAQ annual reports, Quinlan & Associates analysis

NASDAQ's index licensing and services revenues also saw rapid growth on the back of the shift from active to passive investing and an increase in the value of ETPs (exchange-traded products) licensed to NASDAQ indices. To address growing demand, NASDAQ has pursued both organic and inorganic strategies, including the development of NASDAQ indices and associated products, as well as the acquisition of Dorsey, Wright & Associates (DWA) in 2015, a provider of data analytics, passive indexing, and smart beta strategies.

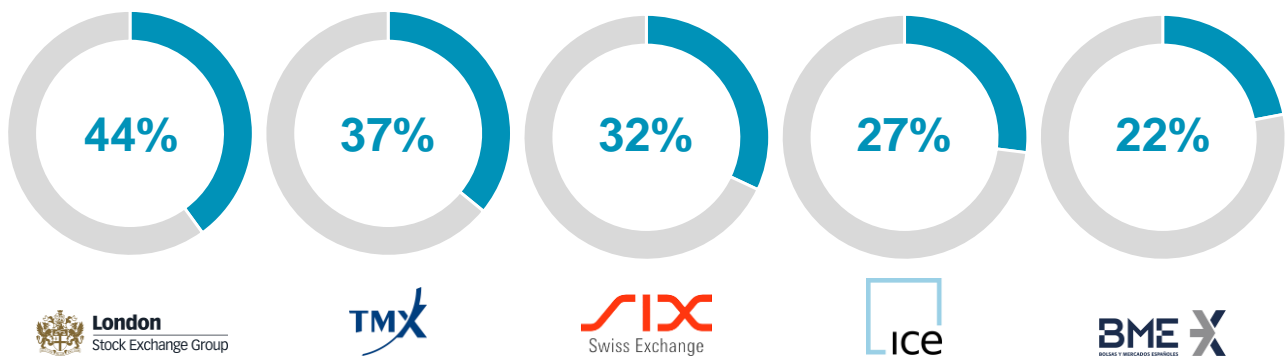
NASDAQ's focus on its investment data and analytics business reflects its strategy to better serve the needs of asset managers and institutional investors who are looking for new data sources, technical analysis, and trading insights, to support them in making more informed investment decisions. Of particular note, as part of its push into the alternative data space, NASDAQ acquired Quandl in 2017, a leading provider of alternative and core financial data, to provide customers with new insights, investment ideas, and strategies to deliver alpha.

GLOBAL DIFFERENCES

From a global perspective, the top five exchanges with the largest percentage of revenue from information services in 2019 were all based in North America and Europe (see

Figure 11), with the electronification of exchanges, a shift from active to passive investing, and increasingly onerous regulatory requirements, primarily impacting exchanges in the west.

FIGURE 11: TOP 5 EXCHANGES BY INFORMATION SERVICES REVENUES (2019)

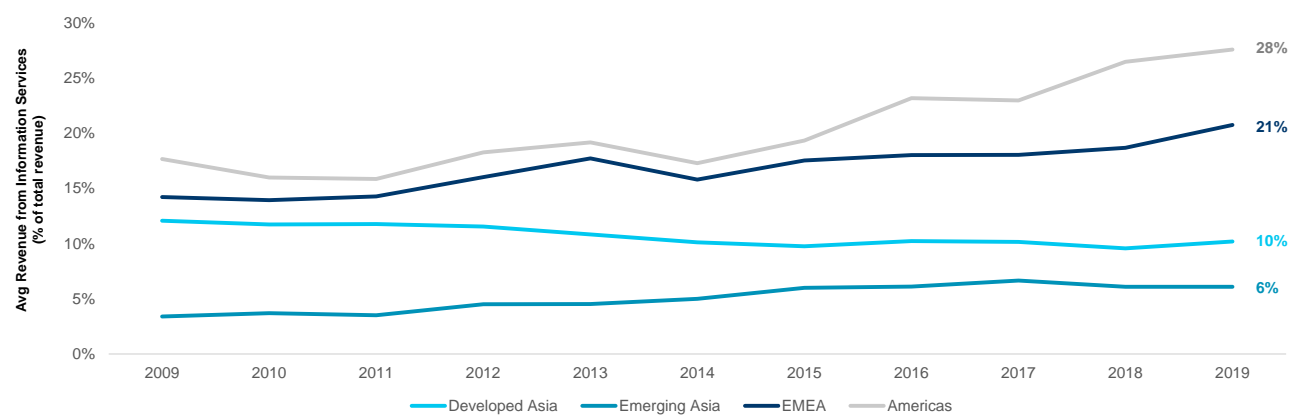


Source: exchange annual reports, Quinlan & Associates analysis

Relative to the exchanges in the rest of the world, those operating in North America and EMEA have seen their composition of revenue from information services increase the most –

with an average of 28% of total revenues for the Americas and 21% for EMEA in 2019, up from 17% and 14% respectively in 2009 (see Figure 12).

FIGURE 12: INCREASE IN REVENUE FROM INFORMATION SERVICES



Note: Developed Asia includes ASX, HKEX, JPX, SGX, TWSE; Emerging Asia includes BSE, IDX, PSE, SET; EMEA includes BME Spanish Exchanges, Deutsche Borse, Euronext, Johannesburg Stock Exchange, LSE, Moscow Exchange, SIX Group; Americas includes ICE, NASDAQ, NYSE Euronext, TMX Group

Source: exchange annual reports, Quinlan & Associates analysis

By comparison, Asia-Pacific exchanges lag significantly behind in terms of monetising their exchange data. In 2019, the average percentage of revenues from information

services for exchanges in the Americas (28%) was ~3x that of exchanges in developed Asia (10%) and ~5x that of exchanges in emerging Asia (6%) (see Figure 13).

FIGURE 13: REGIONAL COMPARISON OF INFORMATION SERVICES REVENUE (2019)

	Min	Average	Max
Americas*	18%	28%	37%
Europe / Middle East / Africa	3%	21%	44%
Developed Asia**	5%	10%	16%
Emerging Asia**	5%	6%	7%

*Excludes NYSE Euronext (because info is from 2003 to 2012 – prior to its acquisition by ICE)

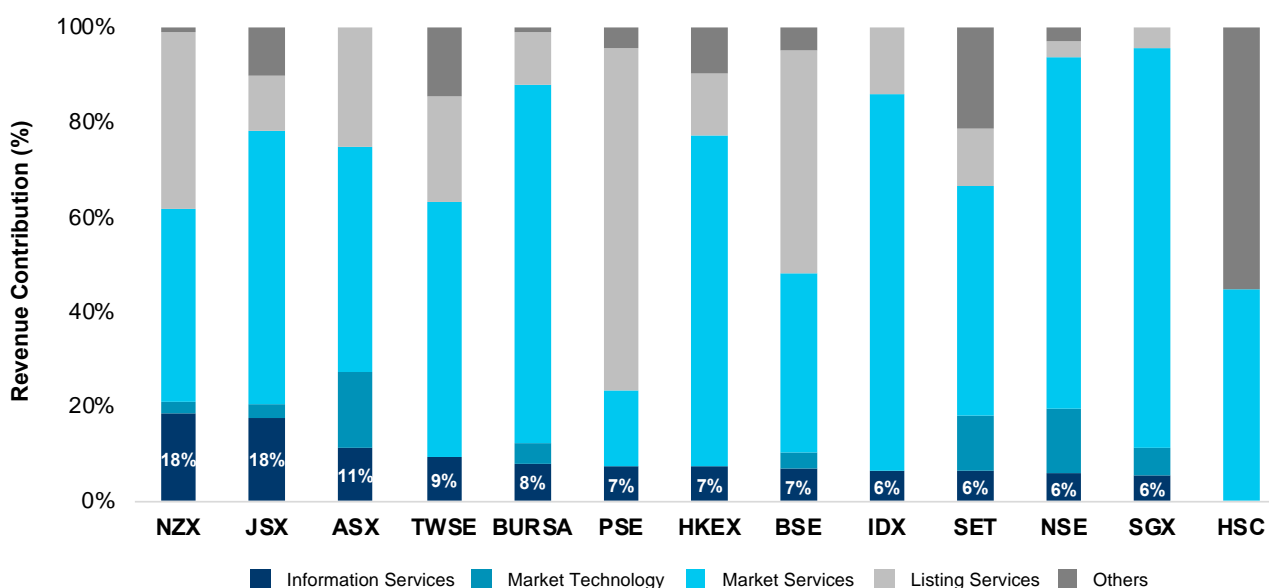
**Developed Asia includes ASX, HKEX, JPX, SGX, TWSE, NZX; Emerging Asia includes BSE, IDX, PSE, SET

Source: exchange annual reports, Quinlan & Associates analysis

Exchanges in Asia Pacific with the highest percentage of revenues from information services in 2019 were the New Zealand Exchange at 18.4%, and the Japan Exchange

Group at 17.7%, with all the other major exchanges in the region averaging 6.8% (see Figure 14).

FIGURE 14: REVENUE COMPOSITION OF ASIAN EXCHANGES (2019)



Note: exchanges are ranked in order, by decreasing magnitude of revenue from information services

Source: exchange annual reports, Quinlan & Associates analysis

ASIA PACIFIC EXCHANGE STRATEGIES

A number of exchanges in the region have revisited their growth strategies with a view to diversifying away from their core revenue streams – namely, market and listing services. However, this has traditionally involved venturing into new asset classes rather than diversifying into new business segments, such as information services and data. For example, the SGX has pursued a multi-asset class strategy over the past few years, while the HKEX acquired LME in 2012 to kick-start its strategy of expanding into commodity products and to help it expand into the mainland Chinese market.

While these exchanges have not explicitly focused on developing a data strategy, several regional players have made investments into FinTech startups and are actively leading the way in researching new technologies to support their broader digital transformation efforts, with the aim to provide an improved platform with greater liquidity, enhanced customer experience, and access to a broader universe of traders and investors.

SINGAPORE EXCHANGE

SGX has been exploring new technologies such as distributed ledger technology (“DLT”), artificial intelligence, and machine learning, to identify ways in which they can improve the marketplace and experience. In 2016, SGX launched an initiative with the Monetary Authority of Singapore (“MAS”) to conduct research into the use of DLT for the clearing and settlement of payments and securities, called Project Ubin. Specifically, SGX is exploring how assets can be tokenised and settled across different distributed ledger platforms, with the goal of simplifying post-trade processes and shortening settlement cycles, thereby improving operational efficiency and reducing settlement risk.

HKEX

HKEX has explicitly stated that part of its strategic plan for the next few years is to explore new opportunities in FinTech and data markets through leveraging new technology to modernise their core systems and to deliver better business solutions across their value chain. In addition, they are actively exploring data as a new asset class for their clients and the broader financial market. One of the more interesting aspects of their strategic plan includes the potential creation of a Data Marketplace Platform for the sharing of data and analytics to better distribute and monetise the large amounts of raw data feeds, core data products, and data exhaust that the HKEX has stored.

AUSTRALIAN SECURITIES EXCHANGE

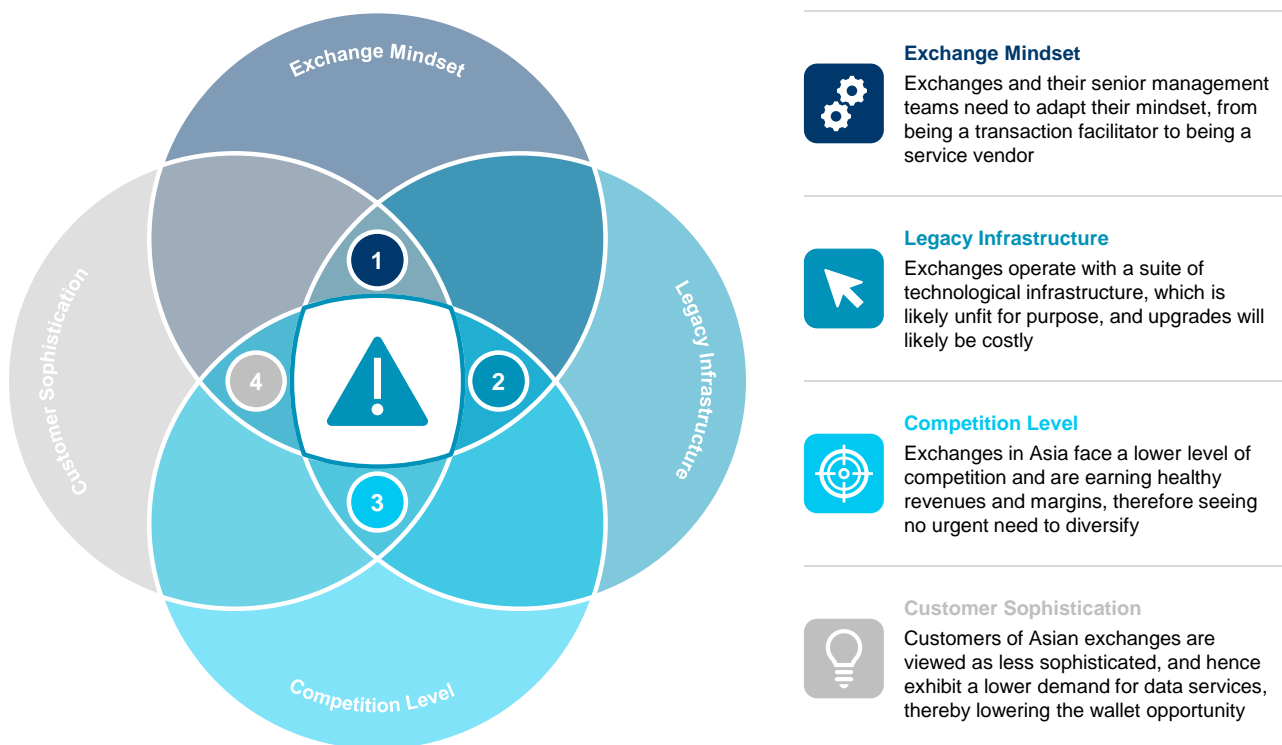
The Australian Stock Exchange (“ASX”) was one of the first exchanges to explore the use case for distributed ledger technology to replace and/or improve old legacy systems. ASX has been working with a technology firm for a number of years to develop a blockchain-based replacement for its clearing and settlement system (CHES), which is expected to improve the efficiency of the entire post-trade cycle and generate better quality data. They are also actively transforming their entire technology stack with a digital and innovative approach.

SECTION 3 DIFFICULTIES IN DRIVING CHANGE

While diversifying into the data space has proven to be a profitable strategic initiative for exchanges in the west, Asian exchanges have

been slow to embrace change, reflecting a mix of internal and external factors (see Figure 15).

FIGURE 15: BARRIERS TO CHANGE



Source: Quinlan & Associates analysis

1. EXCHANGE MINDSET

The establishment of a new business line requires exchanges to adapt their mindsets; from being a mere transaction facilitator to a data service provider. Moreover, the data service offering needs to provide insights beyond what is obtainable from publicly

available exchange data. This can be achieved via standardisation of raw data and / or advanced data analytics, both of which require a certain level of expertise. Ultimately, a dedicated team needs to be hired to both manage the data business and to design and maintain data services, which represents a relatively costly endeavour.

2. LEGACY INFRASTRUCTURE

Similar to many incumbent financial institutions, most exchanges in the region operate with an existing suite of technological infrastructure and solutions. Much of this existing infrastructure is likely unfit for purpose – and new systems will be required – in providing data-related services. Given the high costs associated with upgrading legacy infrastructure and a muted need to drive short term change, such fundamental technological change has been considered as somewhat of a non-priority for many exchanges in Asia.

3. COMPETITION LEVEL

Unlike US, which has multiple exchanges, most Asian markets only have a single dominant stock exchange (e.g. HKEX in Hong Kong, SGX in Singapore, and IDX in Indonesia). As a result, Asian exchanges face a significantly lower level of competition and have been able to generate monopolistic returns by focusing on their primary business – transaction facilitation.

While the lack of competition is not unique to Asia, no Asian exchange, apart from HKEX, is regarded as a true international listing centre. Most maintain a pure focus on – and complete monopoly over – the listing of domestic corporates. This lack of competition for international listings has stifled innovation and business transformation efforts.

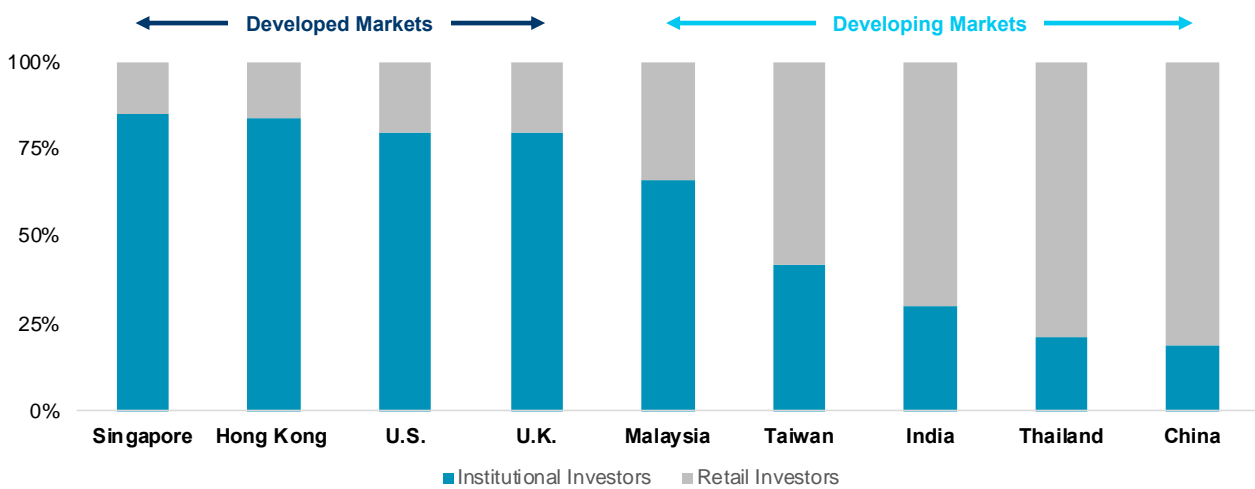
WHILE DIVERSIFYING INTO THE DATA SPACE HAS PROVEN TO BE A PROFITABLE STRATEGIC INITIATIVE FOR EXCHANGES IN THE WEST, ASIAN EXCHANGES HAVE BEEN SLOW TO EMBRACE CHANGE, REFLECTING A MIX OF INTERNAL AND EXTERNAL FACTORS

4. CUSTOMER SOPHISTICATION

relatively less sophisticated data needs (see Figure 16).

Trading activity throughout much of Asia remains dominated by retail investors, with

FIGURE 16: TRADING VOLUME CONTRIBUTION



Source: The Strait Times, HKEX, Bloomberg Intelligence, ShareSoc UK Individual Shareholders Society, CGS-CIMB, Taiwan Stock Exchange, ET Now News, Stock Exchange of Thailand, World Economic Forum, Quinlan & Associates analysis

Moreover, within the institutional space, many Asian funds, especially those in emerging markets, are traditional, long only managers or equity-focused long-short funds that rely on more straightforward valuation processes (especially in comparison to the west), with more basic data needs that are available and

easily accessible from exchanges. This sits in contrast to managers in the west and developed markets, which are typically more sophisticated (e.g. quant funds, multi-strategy, etc.), with many asset managers developing new valuation methodologies and actively exploring the use of novel datasets.

THE LACK OF COMPETITION FOR INTERNATIONAL LISTINGS HAS STIFLED INNOVATION AND BUSINESS TRANSFORMATION EFFORTS

SECTION 4

WHY ASIA NOW?

We believe now is the time for exchanges in Asia to move beyond their initial forays into new technologies and asset diversification, into developing a robust growth strategy designed to tap into new business segments such as data and information services.

With a rapidly growing middle-class and substantial high-net-worth individual population, Asia is now considered a core target market for global asset managers and investors. This has led to strong growth in assets invested in Asian ETFs, in addition to an expansion of asset classes. Moreover, growing investor sophistication in Asia will see exchange customers demand greater amounts of data, as well as newer, more complex datasets, to support increasingly sophisticated investment and trading decisions.

1. ETF INFLOWS

The growth in passive investment strategies and a focus on low-cost investment products has driven the growth in demand for ETFs across the world.

While ETFs in Asia Pacific have seen rapid growth in recent years, AuM in Asia-domiciled ETFs still account for a small percentage of global AuM. While doubling in size from December 2015 to June 2019, reaching USD 589 billion, APAC ETFs still account for less than 10% of the USD 6 trillion global ETF market.

Notwithstanding this, we believe ETFs in the region are poised for rapid growth. Asian markets and regulators are increasingly looking to make the region more open and accessible,

in order to attract further ETF investments. For example, potential cross-border schemes, such as the ETF Connect, will allow mainland Chinese investors to invest in overseas assets through ETFs listed in Hong Kong. This is one example of initiatives being taken by Asian regulators to connect fragmented markets and drive ETF inflows.

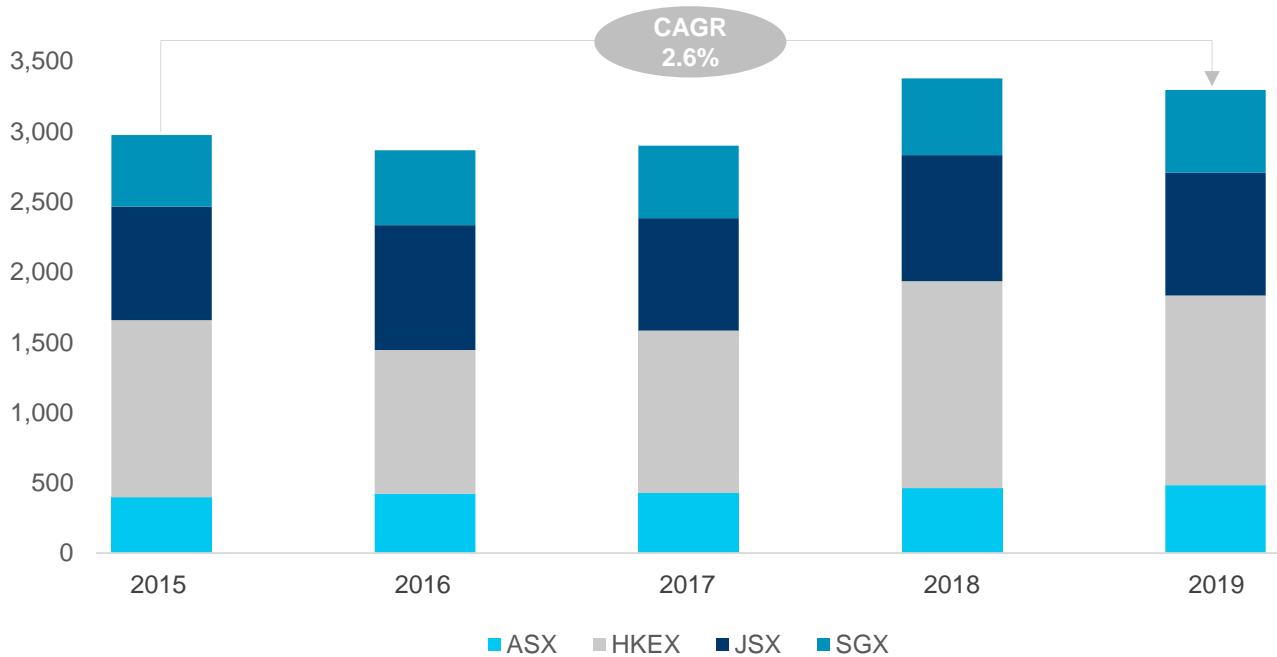
Attitudes and interest towards ETFs in Asia are also changing, with increasing demand for new types of ETF products and more complex asset classes. A prime example is the launch of the Hang Seng Tech Index on 27th July 2020, which provided a great opportunity for asset managers to introduce tech-focused ETFs as a channel for passive investors to access the booming technology sector. Such initiatives are providing significant potential for Asian exchanges to expand their index services business.

2. SLOWDOWN IN CORE REV. GROWTH

While market and listing revenues for regional exchanges have continued to grow over the past decade, the pace of this growth has slowed considerably in more recent years.

Looking at the performance of four of largest exchanges in Asia Pacific – namely, ASX, HKEX, JGX, and SGX – over the past 5 years, combined revenues from market and listing services have grown by a CAGR of merely 2.7% from 2015-19 (see Figure 17). Taking into account robust economic growth rates across these markets over the same period, revenues from core business lines appear to have somewhat flatlined.

FIGURE 17: MARKET AND LISTING SERVICES REVENUE GROWTH (2015-19)



Source: exchange annual reports, Quinlan & Associates analysis

With a precarious economic outlook on the back of the structural economic damage caused by COVID-19, as well challenges presented by the ongoing Sino-US trade war, it has become an

opportune time for exchanges in the region to explore alternative sources of revenue in years ahead – particularly in the information services space.

WE BELIEVE NOW IS THE TIME FOR EXCHANGES IN ASIA TO MOVE BEYOND THEIR INITIAL FORAYS, INTO DEVELOPING A ROBUST GROWTH STRATEGY DESIGNED TO TAP INTO NEW BUSINESS SEGMENTS SUCH AS DATA AND INFORMATION SERVICES

3. MEGA DEALS “COMING HOME”

The rapidly changing geopolitical environment, including the rising tide of economic nationalism sweeping across the world, has led many US-listed mainland Chinese technology companies, such as Alibaba, JD.com, and NetEase, to apply for a secondary listing in Hong Kong. A number of other Chinese technology companies who have been seeking a public listing are expected to do so in Hong Kong and/or Shanghai, rather than the US, given the challenges being presented by the ongoing Sino-US trade war.

With a number of mega listings on the cards, especially those of regional technology players, investors are likely to demand better data that allows them to conduct the appropriate research and analyses required to support their investment decisions. Beyond traditional pricing data and corporate information, value-added data that provides transparency and accuracy – such as sentiment analysis, social media trends, and other forms of alternative data – would prove extremely valuable for end investors.

4. GROWING INVESTOR SOPHISTICATION

As investors deal with heightened volatility of capital flows into and out of Asia in response to the rapidly changing geopolitical landscape, they increasingly require more advanced and sophisticated data and analytics to support their investment and trading decisions. Along with the rise in Asia-domiciled ETFs and deals “coming home”, we expect to see an increase in the launch of new funds, increasingly diversified asset classes, and more complex investment products, to service the growing demand for new investment options in the region.

Although Asian FinTech firms are seeking to address growing market and investor appetite for more advanced technology solutions, data still has a long way to go. Moreover, while many global data vendors have developed sophisticated data products and analytics for the global market, much of it is not relevant for Asia-focused investments.

With Asian investors continuing to become more sophisticated and mature beyond their historical equities-focused mindsets, the market is likely to evolve into a more diversified mix of assets and strategies. We believe the glaring gap in the data and information space needed to support increasingly sophisticated investment decisions presents a significant opportunity for Asian exchanges or technology firms to develop a more holistic data and information services proposition.

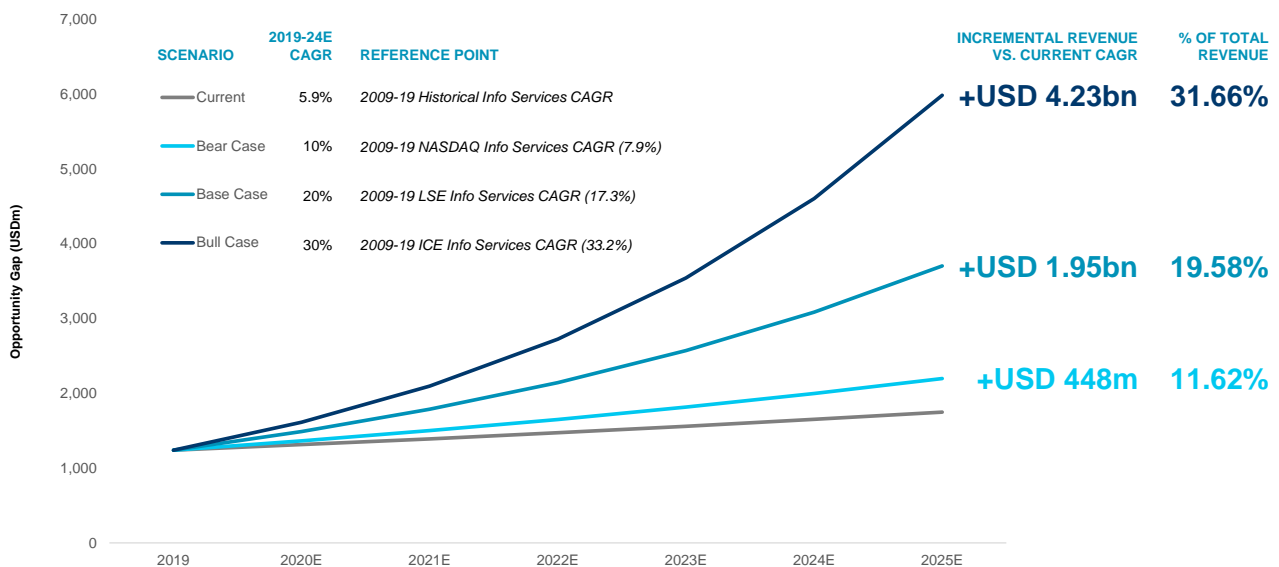
QUANTIFYING THE OPPORTUNITY FOR ASIAN EXCHANGES

While exchanges in the region are actively conducting research into new technologies to drive future growth, enhance the customer experience, and improve operational efficiency, few are looking into the development of a formalised data strategy, including how to commercialise the data they have on their platforms. We believe the lack of focus in developing a commercial / monetisation model for their data means that Asian exchanges are

leaving a sizeable wallet opportunity on the table.

If Asian exchanges can scale their information services revenues at growth rates on par with leading global exchanges over the past decade and augment their revenue profiles to be more in line current market leaders in the data space (i.e. with comparable revenue contributions from the monetisation of data and information services), we estimate up to USD 4.23 billion p.a. in incremental revenues could be up for grabs by 2025 (see Figure 18).

FIGURE 18: OPPORTUNITY GAP FOR EXCHANGES IN ASIA (2019-25E)



Note: Asian exchanges comprise of ASX, BSE, BURSA, HKEX, HSC, IDX, JSX, NSE, NZX, PSE, SET, SGX, SSE, SZSE, and TWSE
 Source: exchange annual reports, World Federation of Exchanges, Quinlan & Associates analysis

Given the sizeable revenue pools on offer from the sale of exchange data, we believe Asian exchanges should carefully revisit their data

strategies to determine how to best capitalise on the rapidly growing opportunities in the information services space.

SECTION 5 DATA AS THE FUTURE

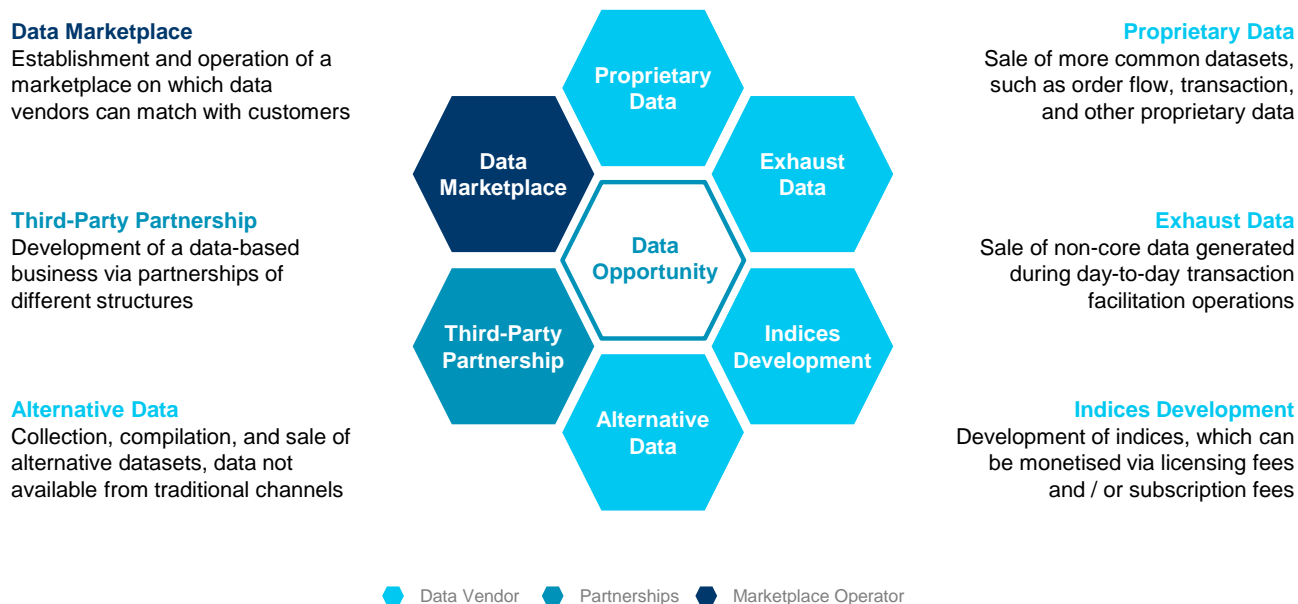
As outlined at the start of this report, exchanges across the world have been actively exploring inorganic growth strategies to drive greater scale and operational efficiency. In coming years, it is becoming increasingly clear that a growing number of players will be looking beyond their core trading and listing businesses, shifting their efforts towards digital innovation and the creation of new product and service offerings in a bid to drive continued growth.

Fundamental to this growth, however, will be the ability of exchanges in the region to derive the full potential of their underlying datasets to add value to their overall product offering. As the exchange industry addresses regulatory

restrictions, capital requirements, and changing investor behaviour, continued diversification into new revenue streams will be essential in hedging revenues against ongoing volatility in listing and trading volumes – particularly through the provision of alternative data sets, value-added data and analytics products, and index services.

We see a number of areas where Asian exchanges can monetise the large volumes of exchange data they have access to; initially focusing on narrowing the gap to global exchanges, and then leveraging their knowledge of local markets to develop products better tailored to clients in the region (see Figure 19).

FIGURE 19: DATA OPPORTUNITIES



Source: Quinlan & Associates analysis

NARROWING THE GAP WITH GLOBAL EXCHANGES

1. SALE OF PROPRIETARY DATA

A logical first step for exchanges in Asia is to focus on the monetisation of their order flow, transaction, and other proprietary data sets. This represents the easiest way for them to unlock the value of their market data and the information they have amassed from their expansion into new asset classes.

As the number of data sets continues to rise, traders and investors are increasingly leveraging algorithms to sift through and analyse the large amounts of data inputs they have access to. To address this, exchanges can look to offer complementary products and technologies that support their clients' ability to analyse exchange data.

We believe exchanges in Asia who act early to unlock the value of their market data will create a strong barrier to entry for other exchanges who are late to the game. There is a large demand by investors, funds, and corporates for accurate and new types of data offerings that can add value and new insights into their investment and decision-making processes. And once these customers have access to a data suite that is approved and integrated into their operational processes, it will be very difficult to replace.

2. SALE OF EXHAUST DATA

For many exchanges, their core data focus lies in their transaction and order flow data. For each transaction that occurs, there is a vast amount of data that is generated and stored. However, much of this exhaust data remains unutilised – for example, the seller and buyer of the contract, where they are located, the size of the transaction, other transactions related to these counterparties, and the industry and geographic location of the stock being traded.

For many exchanges in the region, this data exhaust is not immediately useful and accumulates over time, becoming time-consuming and difficult to sift through and analyse. Consequently, a large amount of valuable information is left idle.

With the right tools and capabilities, exchanges have the potential to anonymise and monetise this data exhaust in many ways, in addition to developing a better understanding of the disparate datasets they themselves own, including identifying connections and hidden patterns.

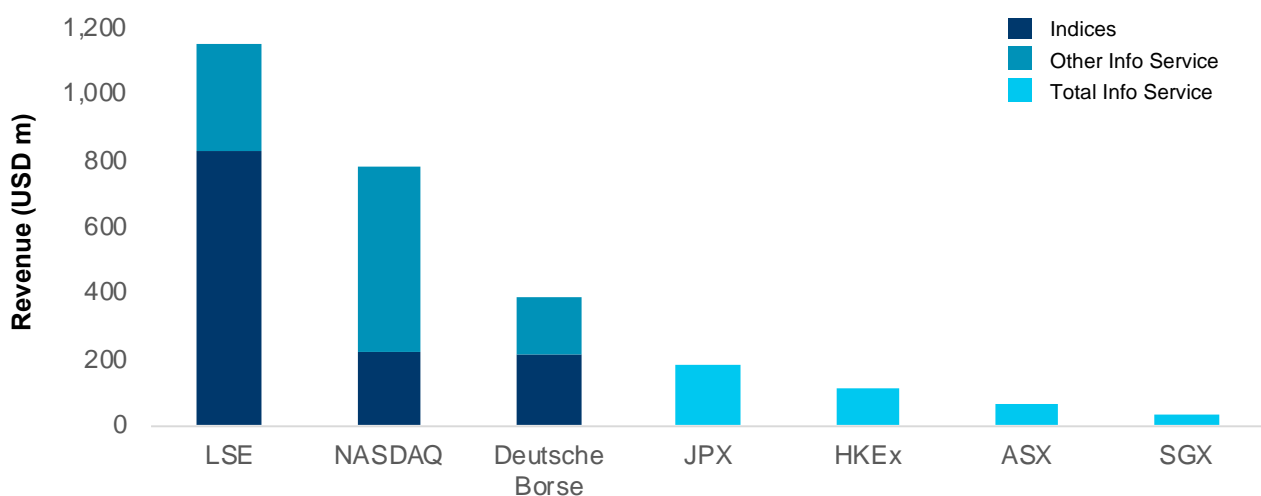
Much of this data could be leveraged for risk management and market surveillance purposes, including identifying and linking end users behind transactions. New products and analytical tools could also be developed to monetise this data exhaust – for example, trade flow indicators to highlight historical and recent trends. Some exchanges are already looking at ways to distribute this data to a broader customer base, potentially through SaaS platforms and partner channels.

3. INDICES DEVELOPMENT

As outlined earlier in this report, ETFs and ETPs have become increasingly popular in recent years. 7,927 ETFs/ETPs were listed worldwide at the end of 2019, representing USD 6.35 trillion in AUM, growing by a CAGR of ~20% over the past decade.⁴ Much of this has been driven by the growth of passive investment strategies, as well as the increasing trend of investors looking to manage their own portfolios with minimal fees.

We see a clear opportunity for exchanges to capitalise on this large and growing market for indices and index tracking products, including ETFs/ETPs, futures, derivatives, and other structured products. In addition to tracking traditional financial products, exchanges can also develop thematic- or trend-based indices to support the growth of ETFs / ETPs. Many of the large global exchanges already have significant index services business, generating sizeable annual revenues (see Figure 20).

FIGURE 20: INDEX SERVICES REVENUE (2019)



Source: exchange annual reports Quinlan & Associates analysis

Exchanges generally derive revenue from the indices business in two ways:

1. **License Fees:** the index business segment of an exchange develops and licenses exchange-branded indices and associated products, in return for license fees based on the volume invested in the ETFs that track the index, or fees based on the volume or value of products traded where the underlying is the exchange license, and

2. **Subscription to Data Products:** data products based on these indices can also be provided to clients for a subscription fee, including the delivery of real-time index values, end-of-day files with details on weightings and components, corporate actions, and other associated reference data.

⁴ ETFGI, "ETFGI reports assets in the global ETFs and ETPs industry which will turn 30 years old in March started the new decade with a record of USD 6.35 trillion US dollars", 16 January

2020, available at: <https://etfgi.com/news/press-releases/2020/01/etfgi-reports-assets-global-etfs-and-etps-industry-which-will-turn-30>

Various options exist for exchanges in the development of an indices business, including: (1) building in-house index development and operations capabilities; (2) partnering with a third-party to outsource part of the indices calculation and maintenance; or (3) monetising exchange data via the sale of this data to external parties for index development.

The development of indices, whether in-house or together with a third-party, would require access to specialised market data (usually provided by external data providers), analytics, and tools that are necessary for index creation. Many exchanges globally have faced intense competitive pressures in their index business from competing index providers. Most critically, while ETF assets continue to grow in Asia-Pacific, they still account for a very small percentage of the global ETF market, highlighting considerable room for growth.

4. ALTERNATIVE DATA

Alternative data – simply defined as any non-market, non-government, or non-company provided information that is derived from satellite images, sensors, the internet / social media, consumer transactions, etc., – has been a rapidly growing industry in recent years, with spending on alternative datasets increasing from USD 232 million in 2016 to a projected USD 1.7bn in 2020.⁵ Strong growth is expected to continue for the foreseeable future as asset managers and institutional investors look for new ways to generate alpha and stay relevant in an increasingly competitive market.

Many startups and large data vendors have sought to capitalise on this demand, in addition to global financial institutions, such as exchanges and investment banks. Global exchanges such as NASDAQ and ICE have made a number of acquisitions in recent years to expand their alternative data offerings.

Admittedly, accessing transparent and accurate data in Asia has always been comparatively difficult, with challenges around localised data regulations in fragmented Asian countries, privacy issues, and government restrictions. However, we believe Asian exchanges are in a prime position to take advantage of their knowledge of local markets, relationships with regulators / the government, and existing membership, to develop a unique alternative data strategy, including working with the various independent alternative data providers. Exchanges could also work with their listed companies to mine and commercialise company data that is not shared in annual reports, such as detailed sales / consumer transactions data, consumer trends, logistics information, and company communications.

Many corporates in Asia have little knowledge of the value of the data they have within their own organisation, much less the proper strategy to commercialise and monetise it. Moreover, independent alternative data providers often lack the scale to find organisations that are willing to partner with them to package and sell their data. We believe exchanges can leverage their scale and connections to listed companies to tackle these issues.

⁵ AlternativeData.org, “Hedge funds scour alternative data for edge on Covid and economy”, 4 August 2020, available at:

<https://www.ft.com/content/8d194207-f6bf-4dde-b0fe-93cb85dfb8a0>

5. THIRD-PARTY PARTNERSHIPS

Exchanges can consider partnering with third party vendors, with the specific model depending on the third party's capabilities, including: (1) sales partnerships; (2) product packaging; and (3) value-adding data services.

Many vendors in the financial services industry have already established strong relationships with potential customers. These incumbent vendors can act as powerful sales and distribution channels for an exchanges' data services. For this partnership to be effective, exchanges would need to adequately educate sales staff on their data service offering and provide adequate incentive mechanisms to drive distribution.

Exchanges can also partner with FinTech companies that operate in the data space, especially in alternative data, by combining their transaction and exhaust datasets with FinTech companies' alternative datasets, creating a more comprehensive suite of data products.

In addition, exchanges can partner with data advisors, such as consultancies, to offer not only raw / cleansed datasets to clients, but also data-driven insights to support their transaction decisions. This represents a more advanced, value-adding service offering, which may be sought after by asset managers looking to acquire unique insights over their competitors.

6. DATA MARKETPLACE

In addition to acting as a data vendor, exchanges can explore the facilitation of data transactions via the establishment of a data marketplace.

Under this model, exchanges can operate an online marketplace platform, on which data vendors can list their data products / services. Data customers could search for and purchase data products / services via the exchange-operated online marketplace, with the exchange extracting a percentage of the revenue as commission. Furthermore, exchanges can sell their own data products, including proprietary transaction data and exhaust data, on the platform.

Once the data marketplace is well-established, the exchange can also consider including other transaction-related services to curate a trading ecosystem. Potential services include automatic trading products and asset monitoring / reporting solutions. Over time, the data marketplace can diversify into a FinTech services marketplace, further enhancing the wallet size of the opportunity.

The most fundamental challenge any marketplace faces during its establishment is the chicken-and-egg problem (i.e. no suppliers will list their products unless there are active consumers, and no consumers will use the platform unless there are a range of available products). However, exchanges have the benefit of having amassed a large base of potential data consumers via their existing exchange operations. As such, we believe they will only need to limit their initial focus to acquiring quality data vendors on the marketplace.

SECTION 6 CONCLUSION

With a changing industry landscape, the importance of leveraging data is fast becoming a key source of driving growth for exchanges around the globe, spurred on by digital evolution, the need for diversification, and more stringent regulatory norms.

Following the introduction of the Dodd-Frank Act and MiFID II, western exchanges have been quick to develop relevant capabilities in the data space, by developing a myriad of trading technology and software offerings, selling value-adding data, and providing advanced analytics. Consequently, they have witnessed a significant increase in the contribution of information services revenue to their overall top-line.

In stark contrast, Asian exchanges have largely lagged in their efforts to monetise the wellspring of data that they possess, remaining heavily reliant on revenue from listing and trading services. However, due to the cyclical nature of listing activity and a paradigm shift towards passive investing taking place worldwide, revenue growth from these traditional income sources is under threat.

Compared to their western counterparts, Asian exchanges have been bogged down by a relatively passive mindset, legacy infrastructure, lack of competition, and low perceived customer sophistication, creating a more limited appetite to change. However, the tide is now turning and the time for change is ripe, with Asian ETF inflows set to skyrocket, slower growth in core market and listing revenues, favourable geopolitical forces bringing deals back home, and regional investors becoming increasingly sophisticated.

Through developing a well-defined data strategy, we forecast a sizeable incremental wallet opportunity worth up to USD 4.23 billion p.a. that regional exchanges can tap into by 2025 from the provision of information services alone. By harnessing the power of data, developing index services, and striking lucrative third-party partnerships, we see ample scope for exchanges in Asia to accelerate their growth and prepare for a digital future. Now is the time to (ex)change.

BY HARNESSING THE POWER OF DATA, DEVELOPING INDEX SERVICES, AND STRIKING LUCRATIVE THIRD-PARTY PARTNERSHIPS, WE SEE AMPLE SCOPE FOR EXCHANGES IN ASIA TO ACCELERATE THEIR GROWTH AND PREPARE FOR A DIGITAL FUTURE

SECTION 7

HOW CAN WE HELP?

Our consultants have extensive experience working with financial institutions on developing and implementing their data strategies. Our project work typically involves supporting our clients across their full strategy and implementation needs, including:

1. OPPORTUNITY EVALUATION

Deep-dive review of the market and alternative data space to determine wallet opportunities, including:

- Detailed internal review to identify data generated during core operations and data exhaust opportunities that have been created, but are yet to be captured and / or utilised
- Market sizing specific data sale opportunities, taking into account regional market dynamics and expected demand from market participants, including target customers
- In-depth case studies of peers with comparable business models who have successfully ventured into the market data space to identify key learnings
- Determine adequacy of data sophistication, in relation to expected demand, and identify key requirements from market participants

2. STRATEGY DEVELOPMENT

Develop an appropriate data strategy, including:

- Define an end-to-end data strategy that capitalises on key revenue opportunities while considering the client's specific objectives and capabilities
- Identify appropriate product development opportunities (e.g. indices) and expansion pathways (e.g. organic growth vs. acquisition) based on financial / strategic / operational fit

- Conduct detailed strategic due diligence to identify shortlisted target market data providers for potential acquisition / partnership
- Develop a detailed business case outlining revenue potential and cost implications
- Establish a robust execution plan, including outlining key workstreams, defining roll-out prioritisation, identifying project owners / sponsors, and establishing project deliverables, along with supporting timelines and milestones

3. OPERATING MODEL DESIGN

Develop a suitable target operating for the client's information services business, including:

- Identify required adaptations to policies, processes, and systems to support the client's growth strategy, including people / organisation, operations / processes, risk / compliance, and IT / infrastructure
- Structure the business in an appropriate manner to minimise conflicts of interest between existing exchange operations and any new data business
- Establish relevant processes for engaging with third party data vendors

4. IMPLEMENTATION SUPPORT

Support the organisation in implementing the established strategy, including:

- Develop overall execution plan, including outlining key workstreams, defining roll-out prioritisation, identifying project owners / sponsors, and establishing project deliverables, along with supporting timelines and milestones
- Establish and oversee an appropriate Project Management Office ("PMO") team to support the organisation's data business

QUINLAN &ASSOCIATES

STRATEGY WITH A DIFFERENCE

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