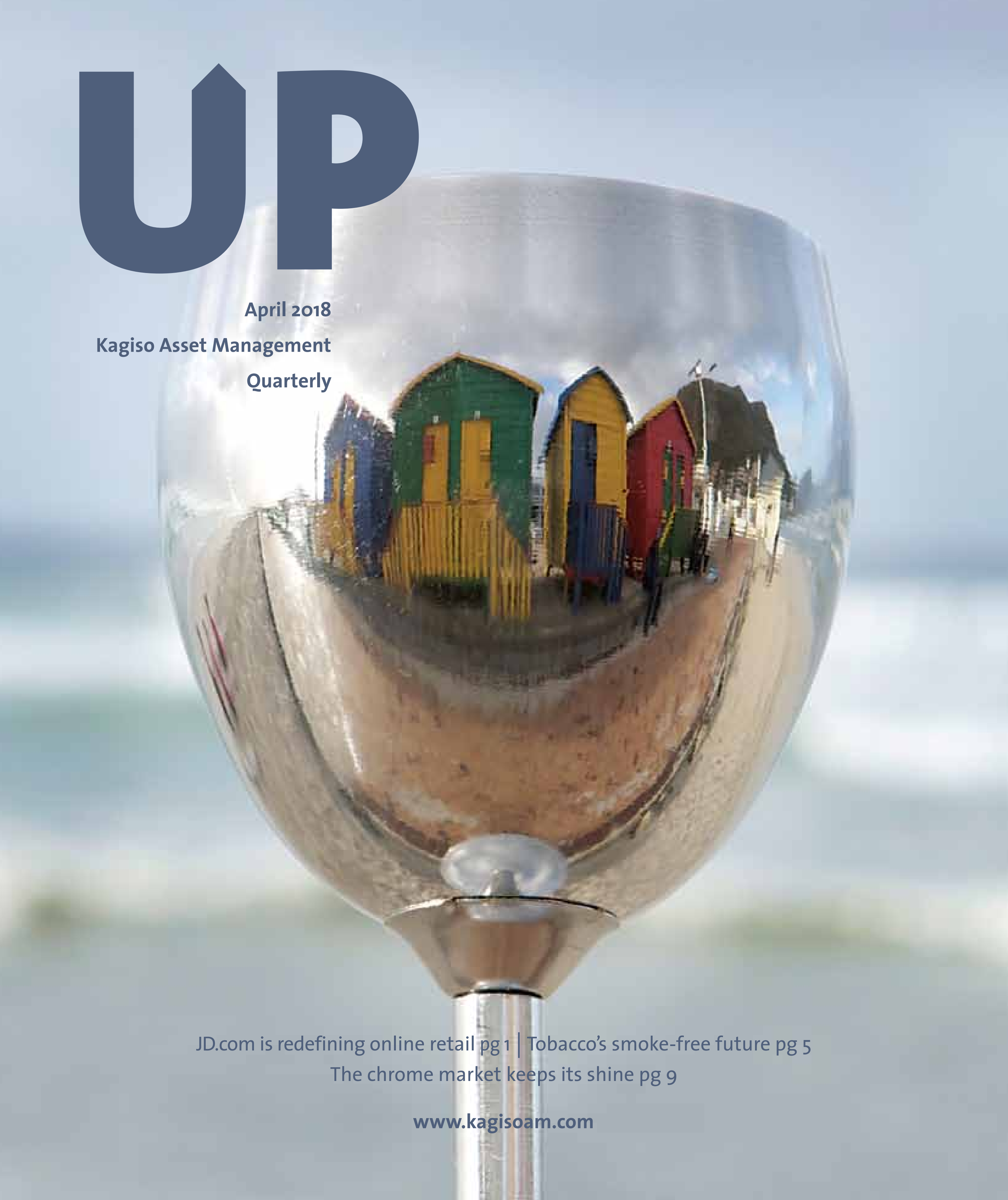

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April 2018

Kagiso Asset Management

Quarterly

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JD.COM

JD.com is redefining online retail

Sarah le Roux - Associate Analyst

“JD.com began in 1998 as a four square metre electronics stall in Beijing. The business had expanded to 12 stalls by 2003 when the SARS epidemic broke out. Fearing for the safety of his employees, founder and CEO Richard Liu temporarily closed the stalls and shifted the business online.

The advantages of the online model soon became apparent, and by the end of 2004 he had shifted his operations entirely online. Thirteen years later, JD.com is the largest single retailer in China.”

JD.com is redefining online retail

A tale of two business models

China's $2 trillion e-commerce market is dominated by two players: JD.com and Alibaba. JD.com acts primarily as a first-party seller, taking ownership of products before on-selling to customers. Inventory is acquired, products stored and delivery executed by JD.com itself, similar to Amazon or Takealot. The few third-party sellers that operate independently on the site use JD.com's logistics network for delivery, with JD.com retaining control over the customer experience.

Alibaba, on the other hand, is primarily a platform for third parties. Millions of sellers operate independent virtual storefronts on its platform, similar to eBay or Bidorbuy. While JD.com chose to focus on the customer, Alibaba positioned itself as a champion of "the little guy" - creating a means for small businesses to benefit from the internet. Rather than operate its own logistics, Alibaba established Cainiao Logistics Company, a central delivery system platform incorporating multiple express delivery providers.

On gross merchandise value sold, Alibaba remains larger, but JD.com is steadily catching up (chart below). In recent years there has been a shift in Chinese preferences away from purely considering price in favour of also valuing quality and service - detrimental to Alibaba, given its restricted control over what is sold and how it is delivered.

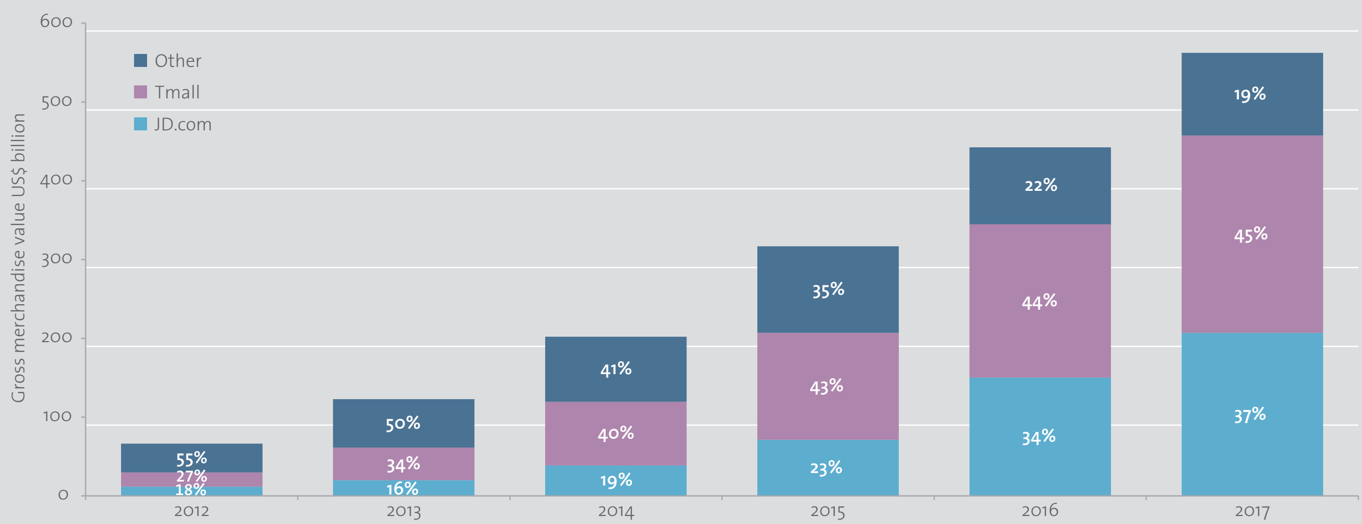
China's largest logistics network

From its earliest days, JD.com's business model has centred on customer satisfaction. Richard Liu saw a gap in the Chinese e-commerce market for reliable product and quality service. A strict "no counterfeits" policy was the first step. However, lack of control over delivery meant customer orders were often damaged, delayed or lost in transit. This changed in 2007 when JD.com began its own logistics business.

Cities in China tend to be densely populated. There are more than 100 cities with a population of over 1 million and the largest, Shanghai, has over 22 million residents. This makes it feasible to have multiple logistics centres to reduce delivery times, with sufficient demand to operate these facilities at full capacity. JD.com operates a network of 486 warehouses and 6 900 delivery/pickup stations covering almost all counties and districts in China.

Products enter the JD.com ecosystem via large-scale sorting centres built in key geographical locations. Here they are stored and then shipped to smaller distribution centres within cities, based on customer orders. JD.com uses its customer purchasing records to analyse buying patterns in each district and predict future customer orders, enabling certain products to be sent to delivery centres ahead of actual ordering, reducing overall delivery time.

China's online business to consumer e-commerce market



Source: Company reports, iResearch, Kagiso Asset Management estimates

Brick and mortar shops have historically maintained an advantage over online in the immediate product access they offer customers. Smart logistics and automation innovations have enabled JD.com to steadily reduce this gap without storing excessive inventory. Eight years ago, JD.com implemented standard same day delivery in all tier one cities. Today, delivery within 24 hours is provided in almost every city in China and averages three hours in major city centres.

Faster delivery times enabled the addition of fresh food retail from 2012. By January 2016, JD.com's sophisticated cold chain network was sufficiently established to launch JD Fresh as an independent fresh food business unit. Live lobsters ordered from Canada can now be delivered in 48 hours to customers' homes in certain parts of China.

Where science fiction meets reality

JD.com's aim is to fully automate its entire logistics system, with a vision to realise even greater speed and efficiency while increasing geographic coverage. In November 2016, JD.com began operating its trial drone delivery programme in rural China. It started with a fleet of 30 drones capable of carrying packages of up to 15kg and travelling a maximum of 50kms. The drones collect parcels from drone launch centres and deliver them to designated "village promoters" (village residents responsible for final delivery to customers). By May 2017, the fleet had increased to 40 drones, with newer models capable of double the capacity and distance of their predecessors.

In September 2017, JD.com opened a 30 000m², fully automated logistics centre in Shanghai. This centre sorts 20 000 packages per hour with almost zero human input. Upon arrival at the facility, products are logged, sorted and shelved by robots. When an order is received, products are picked, packed and labelled - again by robots - before being sent to the appropriate regional pick up area. A network of conveyer belts transports products between the different sections of the logistics centre. Image scanners log products as they zip past and JD.com's smart logistics system directs where they go, monitoring throughout and rerouting as necessary. Driverless forklifts then load the packages onto trucks for delivery to one of the hundred or so smaller delivery centres located around Shanghai.

Augmented Reality applications to improve the online shopping experience have already been launched. For example, when shopping for lipstick, a customer is able to upload a picture to the JD.com app to test out different shades on their own lips. When shopping for a couch, customers can download the JD Dream app and virtually place the couch in their own living room, assessing style and fit.

JD.com drones ready for take-off at drone launch site in Shaanxi

Source: JD.com

JD.com is redefining online retail

JD.com has invested in an omnichannel strategy well ahead of international peers, launching a supermarket, 7Fresh, in Beijing in January 2018. The store is stocked with thousands of fresh products, from flowers to imported meats, and is its first attempt to blur the line between online and offline retailing. Smart mirrors sense when an item is picked up, automatically displaying origin and nutritional information. Autonomous shopping carts will soon follow customers as they shop. Self checkout is available, with an option to pay via facial recognition on the 7Fresh app. Customers living nearby can choose to take their purchases with them or have them delivered within half an hour.

Friends with benefits

In 2014, Tencent acquired 15% of JD.com. Tencent's own e-commerce business, Yixun, was the fourth-largest player at the time and controlled 3% of the market versus JD.com's 22% and Alibaba's 50%. Yixun merged into JD.com, and Tencent began to direct traffic to JD.com via its social media platforms. Tencent's WeChat has 980 million monthly active users - roughly 71% of the total Chinese population - therefore the direct link is a powerful tool for attracting customers. A quarter of first-time JD.com customers come from Tencent, and Tencent has subsequently increased its stake in JD.com to 21.25%.

Shortly after the merger, JD.com partnered with Tencent on marketing solutions for merchants. The combined wealth of user data from Tencent and JD.com is used to assist merchants in understanding their customers and how best to reach them. Targeted advertising has reduced overall advertising volumes while increasing the relevance for potential customers, thereby creating a better overall shopping experience and improved customer conversion.

After Tencent and Richard Liu, Walmart is the third-largest investor in JD.com with a 12.1% stake. Along with its initial investment in 2016, Walmart and JD.com entered into a strategic partnership to increase efficiency by integrating their platforms, supply chains and customer resources in China. The partnership allows Chinese consumers to buy goods directly from Walmart stores on the JD.com platform, providing easy access to a diverse range of US products.

Conclusion

Through its strategic partnerships, world class logistics and continuous innovation, JD.com has rapidly grown into one of the world's largest retailers. Similar to Amazon, the business is currently loss-making as it continues to invest to build scale. Despite its size, it is still in the early stages of its journey, with a long runway of growth and profitability ahead. Investors in our funds with global exposure have already benefitted significantly from our holding and we expect this to continue.

JD.com's automated warehouse system

Products scanned as they enter the facility before being loaded onto automated shelving network

Mini robots zoom across warehouse shifting product pallets

Products loaded onto conveyer belt and delivery details are stamped onto boxes

Driverless forklifts load products onto delivery vans

Source: JD.com

Tobacco's smoke-free future

Dirk van Vlaanderen - Associate Portfolio Manager

Tobacco was first consumed by the native people of Central and South America. It was later introduced to Europe by the early Spanish explorers and then across the globe through Europe's vast trading networks.

Before the Industrial Revolution, tobacco was chewed, or smoked in pipes or premium hand-rolled cigarettes. This changed with the 1881 patent for the first cigarette rolling machine, which enabled the mass production of cigarettes and gave rise to a global industry.

Tobacco's smoke-free future

Early rolling machines produced 200 cigarettes a minute, a significant increase from hand rolling speed. Other than the introduction of cigarette filters in the 1960s and, arguably, flavours more recently, there's been little fundamental change in the product over the last 136 years - until now.

The introduction of next generation tobacco products - battery-powered devices offering an alternative to conventional cigarettes with much-reduced health risks - is challenging industry norms and forcing both consumers and regulators to take notice. We discuss the evolving tobacco industry landscape, its key players and the industry implications of these products.

What are next generation products?

These products heat either tobacco or liquid nicotine into a vapour to be inhaled. They have been available for more than 10 years, but consumer adoption has been slow. Early models offered a poor consumer experience relative to conventional cigarettes (inconsistent mouth feel and lower nicotine hit), but research and development investment has yielded advances which significantly improve consumer experience and nicotine delivery, fuelling wider consumer acceptance.

Next generation products fall into two categories: vapour products and tobacco heated products (THP).

- **Vapour** is the more established category, with an estimated annual market value of $12 billion. Key global markets are the US, UK and Poland. This category includes various e-cigarettes in different shapes and sizes. These devices heat and vaporise an "e-liquid" typically containing nicotine, glycerol and flavourings, but no tobacco. Vapour products appeal to dual-users and those who want non-tobacco flavours, and are cheaper than THPs and conventional cigarettes. The threat of new competition is high as the barriers to entry are relatively low.
- **Tobacco heated products** more closely mimic the experience of smoking. They heat tobacco (a mini tobacco stick) to a high temperature to generate a nicotine-containing vapour. Because the tobacco doesn't burn, the level of harmful toxicants is apparently 90% lower than in conventional cigarettes. THP is currently a smaller market than vapour, estimated at an annual $6 billion, but has shown tremendous growth, particularly in Japan. The barriers to entry for THP are much higher than vapour because tobacco sourcing and blending knowledge remains an advantage for incumbents.

Still small in the context of global tobacco

The next generation product industry generated $18 billion of revenue in 2017, largely from vapour products (chart opposite). This remains a fraction (3%) of the global tobacco market, worth an estimated $770 billion annually, but could have significant

Next generation products: who produces what

Company	Key brands	Heated tobacco products	Vapour products
British American Tobacco	Dunhill, Rothmans, Kent	Glo, iFuse	Vype, Vuse
Japan Tobacco	Winston, Camel, Mevius	Ploom TECH	logic
Philip Morris	Marlboro, Parliament	iQOS	MESH, Vivid, Nicocig, Solaris
Imperial Brands	Davidoff, Gauloises, West		blu

Source: Kagiso Asset Management

potential. The next generation product market is expected to double in the next three years as THP triples existing sales and the more mature vapour category increases by 67%. This will be largely the result of volume growth, a contrast with global cigarette volumes which are declining at 2% to 3% a year. The rush to capture this growing and profitable piece of the pie is intensifying.

Taxes and regulation

Most regulators treat THP as they do conventional tobacco products, because THP is simply another (albeit safer) method for tobacco consumption. THP often attracts lower excise tax per stick (favourable for manufacturer margins) because of the reduced tobacco used. We see a low risk of increased regulation, though governments may look to align the excise tax regime to ensure absolute tax revenues don't decline as THP takes share from conventional cigarettes.

Vapour products face a more difficult regulatory environment as a result of their unknown health risks. Some regulators (including Japan, Australia and Brazil) have banned them outright. Vapour products generally don't attract excise tax (as they are not tobacco products). This is a significant saving as excise taxes can account for 60% to 70% of the retail selling price for conventional cigarettes in some markets. Vapour products are therefore usually cheaper than THP and conventional cigarettes, and manufacturers still make excellent margins.

Profitable growth

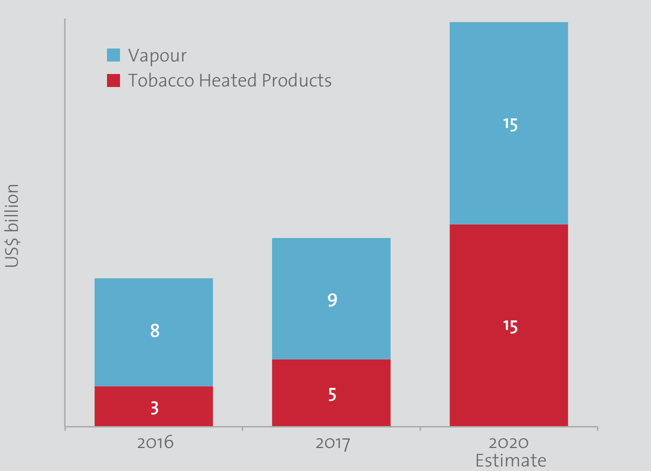
Both vapour and THP are in growth phases which require significant investment in market roll-out and launch costs, currently making them a loss-making category. However, Philip Morris and British American Tobacco (BAT) have suggested these products are more profitable than conventional cigarettes (already the most profitable segment of consumer staples). Therefore cannibalising existing volumes with higher margin next generation products is good for profit growth.

The global tobacco majors are leading the change

Philip Morris is known for its Marlboro brand, but has rapidly become the global leader in THP with its iQOS tobacco heating system - a pen-like device that heats branded tobacco sticks.

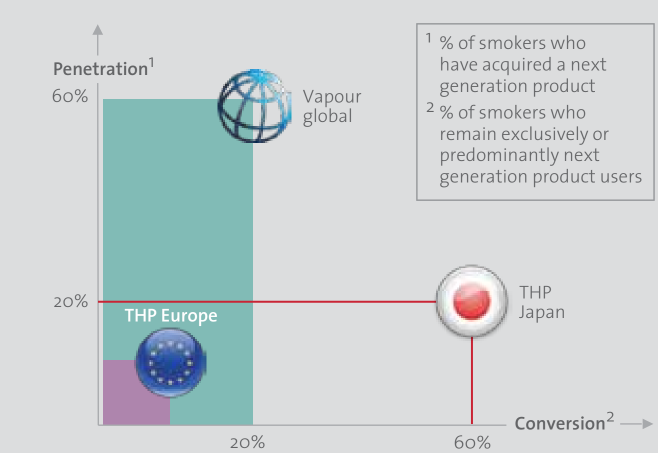
The company has been vocal about its vision for a "smokeless future" and has suggested its future won't lie with conventional cigarettes. It has spent $4.5 billion developing and rolling out iQOS, gaining significant growth, particularly in Japan where it has captured 16% of the cigarette market (chart over page). Certain market idiosyncrasies make Japan a uniquely favourable market for THP - including consumers' affinity for innovation

Global next generation category size



Source: British American Tobacco, Kagiso Asset Management

Penetration and conversion rates for NGPs



Source: British American Tobacco, Kagiso Asset Management

Tobacco's smoke-free future

and gadgets, use of tobacco flavours (menthol market share is 28%) and the ban on vaping.

THP currently represents 13% of Philip Morris's revenue (zero in 2014). The business aims to increase this to 40% by 2025 with plans to enlarge iQOS's current footprint of 38 countries. While we don't believe other markets will be as successful as Japan, it suggests THP is here to stay.

Since 2012, BAT has invested more than $2.5 billion in a broad next generation product portfolio strategy, and is focussed on capturing growth in both THP and vapour. The business was later to market with its THP offering, glo, but has had success in Japan (4% market share) and Korea despite significant capacity constraints, which will alleviate this year. It plans to roll out glo to 18 markets by the end of 2018. BAT has strong market positions in vapour in the US, UK and Poland. Further geographic roll out and an exciting pipeline of new products indicates a good growth profile still to come. The company is targeting next generation product revenue of £5 billion by 2022 - around 20% of group revenue according to our estimates.

Both Japan Tobacco and Imperial Brands have invested less and are behind their competitors. Japan Tobacco recently launched its THP offering (Ploom TECH) in Japan. Imperial Brands has a vapour product (blu) but is only in early trials for a THP product.

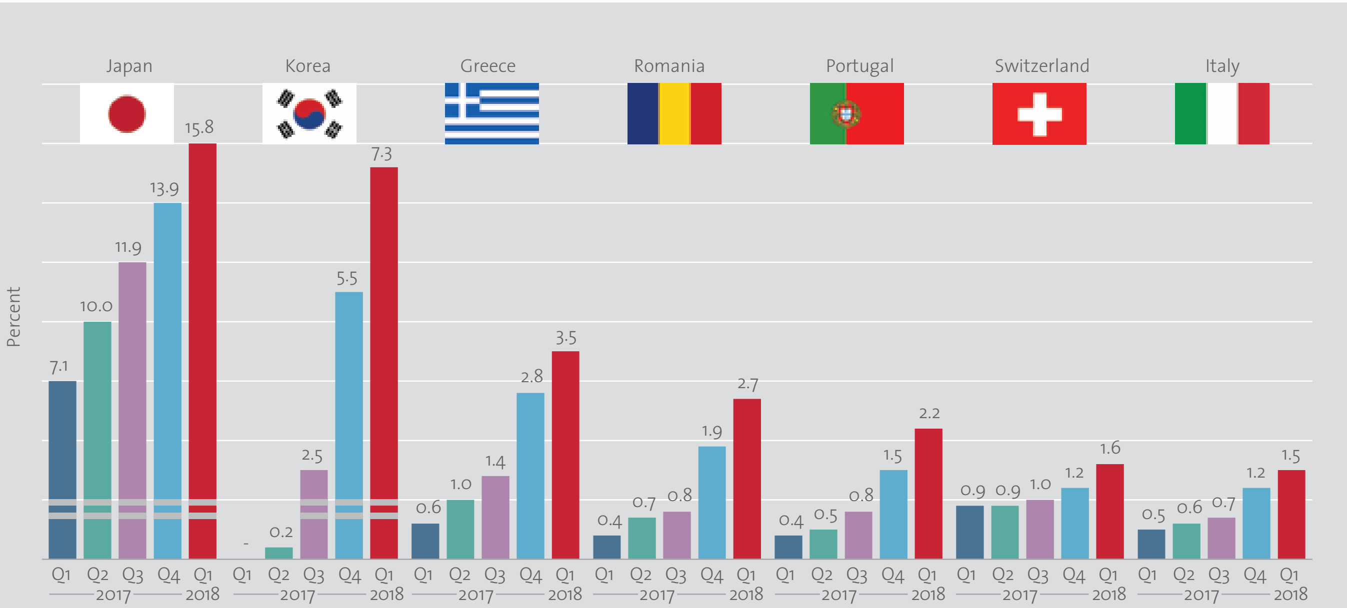
Who wins?

The jury is still out on whether THP or vapour will win-out in time or whether both will coexist. Global penetration of vapour is higher than THP because it has existed for much longer (chart on previous page). As THP is rolled out globally, its penetration rate should increase. Vaping conversion should improve as technology fosters a better consumer experience, while THP conversion is likely to settle somewhere between the European and Japanese levels.

Outlook

We believe the next few years are likely to be exciting and transformational for the tobacco industry. While the rise of next generation products will come at the cost of conventional cigarette volumes, players with a strong and diversified portfolio have the potential to win. Philip Morris's next generation strategy is currently focussed on THP and while the initial success with iQOS looks very positive, we believe this is more than reflected in the much higher share rating than BAT. We believe BAT's strong conventional cigarette portfolio will provide ample cash flow to reinvest behind a broad next generation product portfolio, while delivering good earnings and dividend growth to shareholders. We therefore own BAT shares on behalf of our clients. UP

iQOS: growing national market shares



Note: Underlying share data is unrounded

Source: Philip Morris

The chrome market keeps its shine

Mandi Dungwa - Investment Analyst

Chromium, commonly known as chrome, is a shiny, heat-tolerant and corrosion-resistant metal. Chrome is used predominantly in the production of stainless steel (used widely in consumer appliances), the construction industry, industrial machining, and as a decorative coating in the automotive industry. Chrome's stable structure makes it useful in the textile industry as a dye, and in leather tanning. Its high melting point sees it used in blast furnaces and cement kilns.

The chrome market keeps its shine

Driven predominantly by China's demand for stainless steel, chrome prices have fluctuated in recent years. We take a look at the market dynamics of this relatively low profile but widely used metal, and discuss its increasing significance for many local platinum group metals (PGM) miners.

South Africa is the world's largest chrome producer, last year delivering more than half the global ore supply. Kazakhstan and India are the next largest producers, adding an additional 35% of global supply (with the remainder coming from countries including Turkey, Zimbabwe, Finland and Brazil).

In South Africa, chrome is mined from the Bushveld Igneous Complex, the semi-circular formation north of Gauteng, which is also rich in PGMs. It is extracted at dedicated chrome mines, and as a by-product at certain PGM mines. The Bushveld Complex is made up of three PGM reefs - the Merensky Reef (which contains the highest platinum content of the three), the Upper Group 2 (UG2) Reef (which has the highest chrome and palladium content) and the Platreef in the northern limb of the complex (rich in palladium and base metals such as nickel and copper). Because of the layered nature of deposits in the complex, not all PGM miners have access to chrome deposits, but for many with access to the UG2 Reef, chrome by-product is plentiful.

Ferrochrome, stainless steel and China

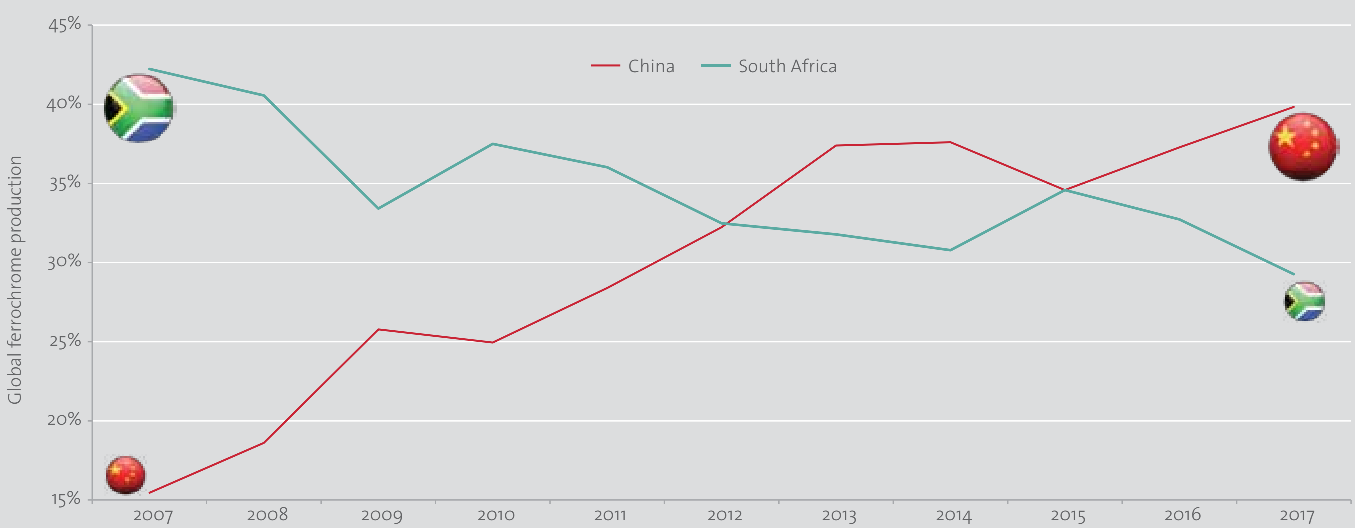
Chrome's shine and resistance to temperature and wear are what put the 'stainless' in stainless steel and make it so valuable for diverse industry applications. Before being added to a steelmaking furnace, metallurgical chrome ore is first converted to an alloy, ferrochrome, made of chrome iron and carbon - a process which removes unstable impurities.

Roughly 50% of South Africa's chrome ore is locally beneficiated to ferrochrome for export. Ferrochrome production is an energy intensive process and any power disruptions reduce outputs. South Africa's recent electricity shortages and tariff hikes (with electricity now accounting for 25% to 30% of production costs) have eroded local ferrochrome producers' margins and curtailed investment in smelters. As a result, chrome ore is increasingly exported to China as a concentrate to be smelted for ferrochrome.

China is now the world's largest ferrochrome producer, but has no domestic sources of chrome ore. South Africa is China's leading ore supplier, exporting more than 50% of its annual production to China (chart below).

With relatively lower electricity costs than South African producers, the largest cost component for Chinese ferrochrome

Share of global ferrochrome production



Source: CRU, ICDA, US Geological Survey

producers is the procurement of chrome ore from South Africa and other regions. South African ferrochrome producers' relative competitiveness to their Chinese counterparts is a function of chrome prices, South African electricity costs and ore transport costs to China. At higher chrome prices South African producers become more competitive than Chinese ferrochrome producers.

South African ferrochrome producers have previously lobbied for export restrictions on chrome ore, advocating for local beneficiation to ferrochrome, thereby forcing a reduction in Chinese ferrochrome production. These proposed interventions have not been implemented. The leading ferrochrome producers in South Africa are Glencore, Samancor Chrome and Hernic, with Samancor Chrome and Hernic being unlisted producers (chart over page).

Glencore, along with its empowerment partner Merafe, has 21% market share of the South African chrome production. It further has rights to buy chrome from several of the PGM producers, making Glencore the largest chrome ore trader in the world. It has 17% market share of global ferrochrome production, comprising 54% of the South African ferrochrome production. Glencore's ferrochrome joint venture is a fully integrated miner and sells its excess chrome ore into the market - to other ferrochrome producers or stainless steel producers. Due to its dominant position, Glencore can act as the swing producer and balance the fundamentals of both the chrome and ferrochrome markets.

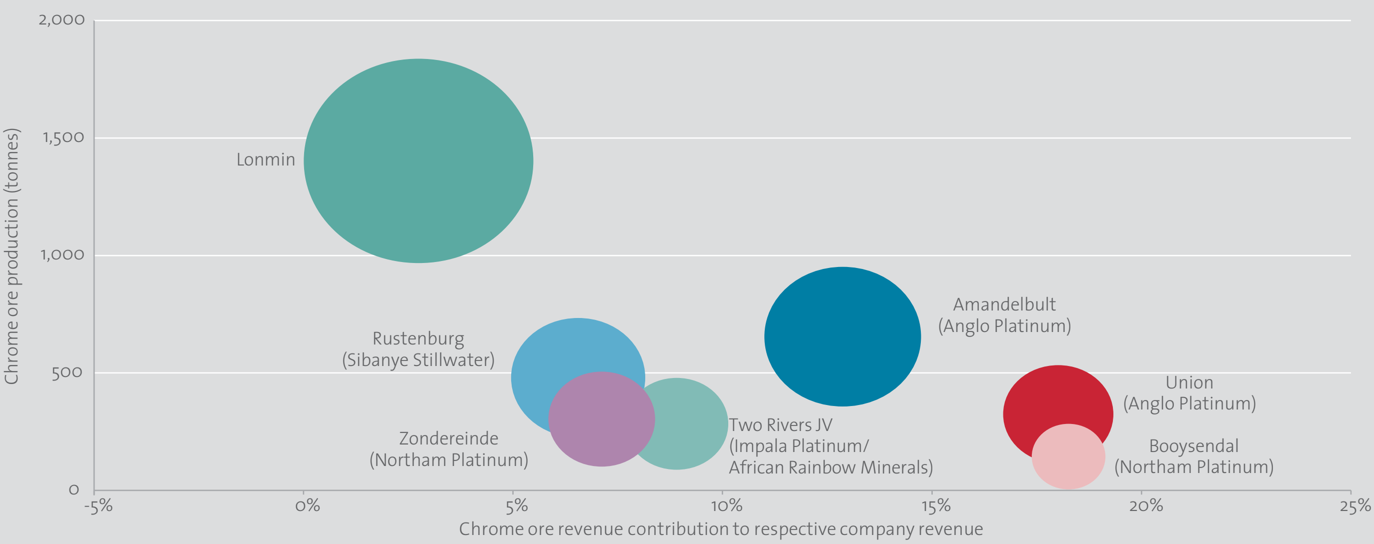
Putting its shine on SA's PGM sector

South African PGM producers have faced a challenging environment over the last decade, with electricity shortages, labour disruptions and weak metal prices all impacting profitability. As a result, over 50% of South African producers are currently not profitable.

For PGM producers, most of their chrome revenue flows directly into earnings, as chrome ore is a by-product of their primary mining activities, and therefore carries minimal additional extraction costs. For some, this has become a valuable contribution to earnings, and chrome ore production from PGM suppliers has grown from 20% of total South African chrome ore production in 2010, to 30% in 2017. Chrome ore has become a particularly material contributor to revenues for miners on the UG2 Reef (chart below), such as low-cost PGM miner Northam Platinum.

For some PGM producers, however, these benefits are eroded by long-standing legacy contracts with local ferrochrome

Chrome production and revenue contribution (FY 2017)



Sources: company reports, Kagiso Asset Management

The chrome market keeps its shine

producers, selling the rights to their chrome ore production at very low prices. Negotiated in the years before China's growth shifted the dynamics of demand, these are life of mine contracts without the option to be renegotiated. Lonmin and Impala Platinum, both major chrome producers, are locked into such contracts - with Glencore the largest beneficiary.

At current low PGM prices, chrome makes up between 30% and 100% of current free cash flow for those companies with high chrome production and favourable pricing contracts.

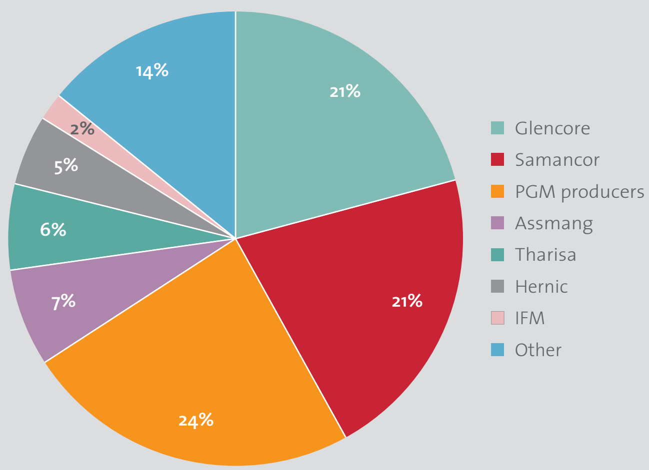
Investment implications

Demand for chrome ore and ferrochrome is driven primarily by the demand for stainless steel, which, in turn, is largely determined by demand from China. The growth of the Chinese middle class consumer market and the country's rapid urbanisation have supported considerable stainless steel demand in recent decades. However, demand growth has declined from a rate of 16% per annum in 2010 to between 5% and 6% in 2017. Our view is that growth rates will stabilise going forward, with global GDP growth rates of between 2% to 3% per annum, still supportive of reasonably high chrome prices.

Chinese chrome ore stockpiles are generally a reflection of current demand trends in China. Port stocks rise when there is weak demand and are drawn down in stronger environments. In early 2016, chrome ore stockpiles reached low levels, chrome prices bottomed and high-cost chrome producers cut production. We saw a resurgence of chrome prices after that with prices reaching all-time highs by the end of 2016. This incentivised growth in production and restocking of Chinese stockpiles.

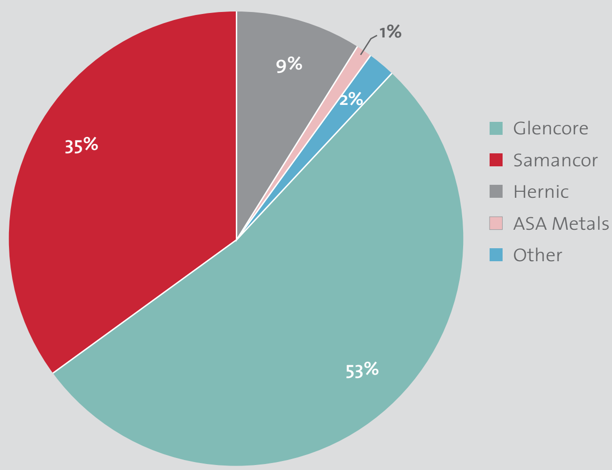
The emergence of China as the largest global ferrochrome producer, without access to domestic chrome ore, is significantly favourable for South African chrome ore producers relative to local ferrochrome producers. Investors in our funds have exposure to chrome ore through our investments in low-cost PGM miners Northam Platinum and Anglo Platinum. Northam has a growing exposure to chrome production as it ramps up its PGM production, dominated by UG2 mines, and Anglo Platinum has a growing exposure to chrome production through its Amandelbult Mine. Both miners sell their chrome at market prices and have full exposure to chrome revenues at virtually no additional cost, which is a massive boost to profitability relative to competitors. UP

South African chrome ore production (2016)

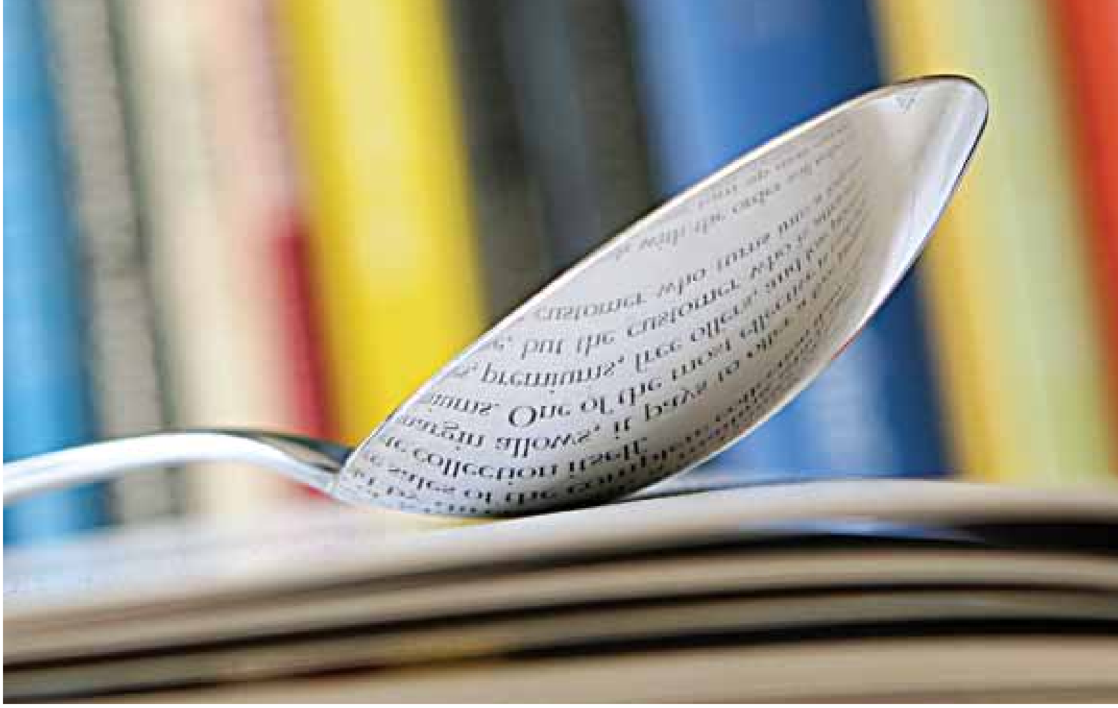


Source: Macquarie

South African ferrochrome production (2016)



Source: CRU, ICDA



Pearson - learning on the job

Jihad Jhaveri - Head of Process

"Pearson is a UK-listed global educational publishing and services company. Once the owner of publications including the Financial Times and the Economist, the business has shifted its focus to education, becoming the largest global player in this field.

Specialising in courseware development, teaching facilitation and assessment - enhanced by new digital technology and artificial intelligence - the business is at the cutting edge of modern educational services."

Pearson - learning on the job

However, the last five years have been extremely tough for Pearson shareholders, with its share price underperforming the FTSE 100 Index by more than 50% over the period. We discuss the reasons for this poor performance, and why we believe Pearson is now positioned for growth as its past investments benefit from a rapidly changing global education context.

The world's largest education company

In 1998, Pearson acquired the educational publishing assets of US-based Simon and Schuster, becoming the world's largest education publisher. Since then, the company has made a series of acquisitions in developing countries and in the education technology space, while disposing of non-education assets.

The business operates in 70 countries and its offerings can be broadly split between two segments. Pearson has a large market share in the established education segment in which it is under pressure to accelerate digital migration. Pearson has first-mover advantage in the growth segment in which it is positioned for near-term growth.

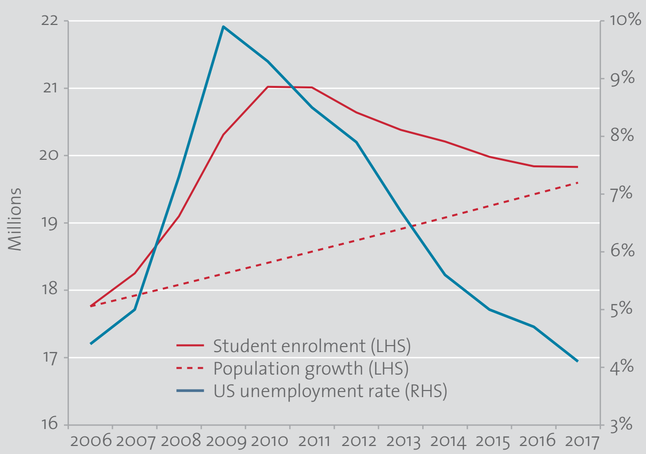
Established education segment

Pearson's higher education business accounts for 30% of its current group revenue, with an established presence in the US, UK and Australian markets. The business receives 50% of its revenue from digital and service channels. Its primary focus is the US undergraduate college market. Pearson partners with academic authors to produce courseware content, which, if chosen by faculty, becomes compulsory course material. Pearson has a leading US market share (40%), with scale advantages that reduce its costs.

In addition to e-book textbooks, Pearson offers digital platforms to assist students and lecturers. It assists students with mastering course material - providing tailored engagements such as interactive graphing and videos, audio content, appropriate hints, feedback, examples, flagging of common mistakes, and assessments. It assists lecturers with interactive real-time student monitoring. Adaptive learning is another key feature, with the IBM Watson system (IBM's artificial intelligence suite) embedded into the platforms since 2016. Its access to continuous large-scale student interaction data will enable Pearson to innovate and improve the efficacy of its platforms more quickly than other edutech companies.

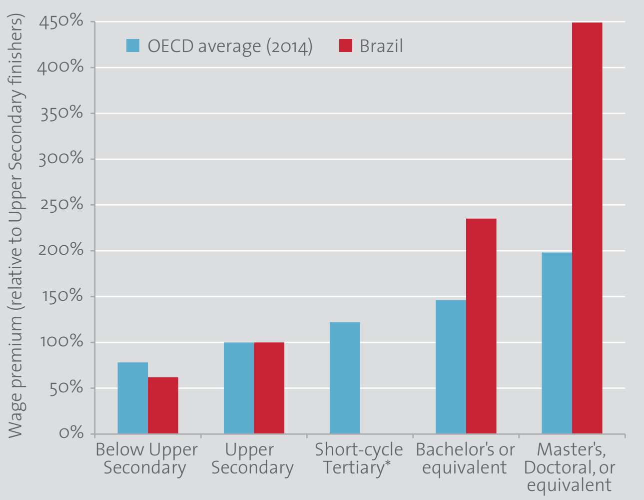
Pearson's assessment business manages formalised testing (test formulation, processing and scoring) mostly for schools in the US and the UK, accounting for 16% of group revenue. These services are provided as a bulk package with contracts typically secured at local government level. The frequency and sophistication of standardised testing is increasing in these markets in line with a growing emphasis on improved

US enrolment cycle



Source: Bloomberg, US Census data, Statista

Relative skill premium for full time working adults



*Data for Brazil's Short-cycle Tertiary is included in the Bachelor's or equivalent category

Source: OECD

foundational learning outcomes. After years of restructuring, the assessment business is well placed versus competitors as its digital business model creates a cost advantage, is better able to cope with fluctuating demand patterns, and can provide richer data analytics to customers. Combined, these established education segment businesses account for 45% of Pearson's total group revenue.

Growth education segment

Pearson is an early investor in the fast growing US virtual schools market. Virtual schools provide digital schooling for learners, which enables high levels of teacher and peer engagement, in a sector with high regulatory scrutiny and quality standards. Long-term US market growth will depend on increasing home schooling, and stronger evidence of positive student outcomes (a PWC study released in March 2018 indicates that like-for-like student outcomes are similar to or slightly better than physical schools).

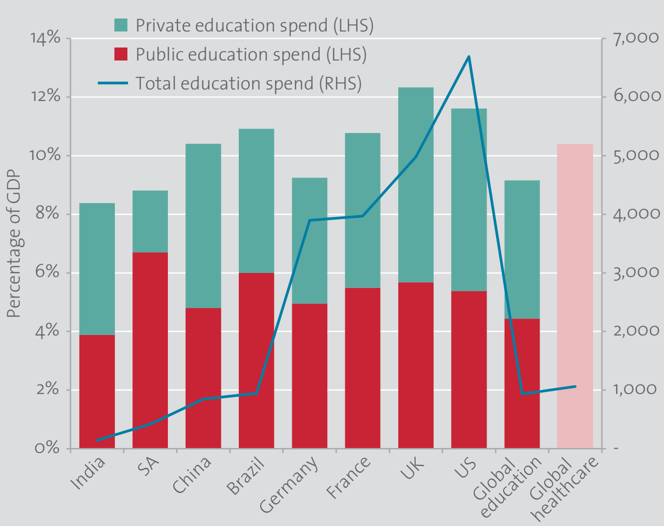
A further growth area is the provision of online programme management (OPM) for universities. An OPM service provider manages online degree offerings, assisting with digital content creation, student recruitment, admission, enrolment, progress tracking, support and assessment. The outlook for growth is robust as Pearson's services enable universities to meaningfully expand potential student reach. However, the upfront investment required to set up new courses means that recent growth is not yet reflected in profit margins. The focus has been on postgraduate courses in the US and UK. Eventual success in the undergraduate OPM market will mean much richer cross-sell opportunities with Pearson's courseware offerings.

English language proficiency assessments are increasingly necessary for living, working and studying in Western countries (with significant growth in the number of students from emerging markets studying in the US, UK and Australia). Because it is cheaper and quicker for a user to pay for the most widely recognised service provider, success in this market is self-reinforcing and only a handful of players dominate. Pearson's strong digital delivery options differentiate its English Language Teaching from competitors and is gaining market share. Pearson's growth education segment businesses make up 33% of total group revenue.

At the leading edge of industry changes

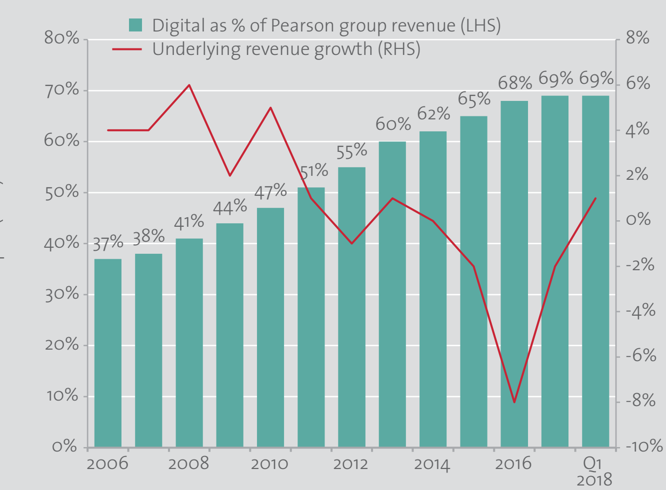
Pearson is leading the industry's shift from physical to digital products. However, digital volume growth has not yet offset declines in physical product sales, putting pressure on revenue. The company embarked on three costly rounds of restructuring and cost-cutting over the last seven years, aimed at decreasing physical cost structures and boosting digitisation. Despite this, profit has decreased and the share price has underperformed.

Comparative education spend as a share of GDP



Source: Macquarie Group, World Bank, OECD, SBG Research, Deloitte

Digital's increasing contribution to group revenue



Source: company reports, Kagiso Asset Management research

Pearson - learning on the job

The greatest challenges have been in its US higher education courseware business where particular market dynamics have created operational headwinds.

Firstly, enrolments are countercyclical and inversely correlated with the unemployment rate as the demand for up-skilling increases during periods of economic stress and is often supported by government subsidies (left chart on page 14). The extent of this boost during the financial crisis was underappreciated, and the business was ill-prepared for the subsequent normalisation and incurred painful losses due to overstocking.

Secondly, in response to revenue erosion caused by a rapid increase in textbook rentals (in particular from Amazon) and used book sales, publishers increased textbook cover prices. This further incentivised the consumer to switch to the rental market, which now represents 30% of the total textbook market. Pearson has begun to roll out a plan to effectively respond to this competitive threat posed by its own content in the secondary and rental markets. It is incentivising the take-up of digital offerings (which have no secondary market) and by limiting print options to its own rental platforms. At present, Pearson's content has a 35% usage share in the US textbook market but the company only has a 20% share of revenue due to secondary markets. This situation means that the company can afford to meaningfully decrease prices as it takes back control of its content and still see revenue recoveries.

The changing global context for education

Global income inequality has accelerated during the recovery period following the financial crisis. A key determinant has been the skill premium in labour markets, which has risen markedly in advanced economies and even more so in emerging economies (Brazil has a 135% wage premium for bachelor degree holders versus upper secondary school finishers, versus the 48% OECD average - see right chart on page 14). Taking into account the cost of tertiary education, forgone earnings during the study period and subsequent lifetime earnings, the value of a good education has never been higher.

A number of current structural trends mean that future investments into education (by governments, learners, service providers and shareholders) will have to be more carefully considered:

- **Funding pressures.** Government educational spending relative to GDP in developed markets has peaked. Global educational spending (9% of world GDP, roughly 50% funded by public sector) is the second-largest spend category after healthcare (left chart on page 15). Facing medium-term cash flow pressures due to ageing populations (rising healthcare and pension provision costs) and already-high debt levels, developed market governments are trimming education budgets - most notable has been the USA with meaningful policy retrenchments since 2015 including a cutback on funding for student loans.
- **Workplace education needs will change rapidly in the medium term.** Trends towards digitisation and automation will require more investment in education and skills. However, the demand will likely shift away from once-off large investments in traditional degrees, towards flexible and frequent vocational training and reskilling programmes.

These dynamics require that education delivery systems become cheaper and more flexible - creating a significant impetus for digital service provision over physical educational material, teaching and assessment.

Learning on the job should mean a payday ahead

Pearson's share of digital and services revenue has steadily increased to just under 70% of group revenue (right chart on page 15). It has used long-standing customer relationships to nurture valuable digital pedagogy - a major competitive advantage against new entrants into the fast-growing digital education market. In time, profit growth will inflect materially positively due to the benefits of digitisation. These benefits include lower working capital needs, much reduced physical costs and market share gains resulting from greater product efficacy.

In addition, many of the digital businesses that are being developed and perfected in the US and UK can eventually be rolled out to emerging markets (the immersive digital higher education courseware, virtual schools and online programme management). Clients in our funds with global exposure have already benefitted from the early stages of this recovery. UP

Kagiso Asset Management Funds

Performance to 31 March 2018	1 year	3 years[1]	5 years[1]	10 years[1]	Since launch[1]	Launch	TER[2]	TC[3]
Unit trust funds[4]								
Equity Alpha Fund	-0.9%	3.3%	7.3%	9.3%	16.6%	Apr-04	1.82%	0.47%
SA Equity General funds mean	4.7%	2.1%	7.4%	8.0%	13.6%			
Outperformance	-5.6%	1.2%	-0.1%	1.3%	3.0%			
Balanced Fund	1.8%	4.5%	7.3%	-	8.6%	May-11	1.51%	0.48%
SA Multi Asset High Equity funds mean	3.5%	3.4%	7.4%		8.8%			
Outperformance	-1.7%	1.1%	-0.1%		-0.2%			
Protector Fund	0.3%	4.4%	5.8%	5.8%	9.6%	Dec-02	1.59%	0.33%
CPI + 5%[5]	8.7%	10.4%	10.2%	10.7%	10.6%			
Outperformance	-8.4%	-6.0%	-4.4%	-4.9%	-1.0%			
Stable Fund	1.6%	5.7%	7.1%	-	7.8%	May-11	1.53%	0.50%
Return on large deposits*	6.7%	6.3%	5.9%		5.8%			
Outperformance	-5.1%	-0.6%	1.2%		2.0%			
Institutional funds[5]								
Managed Equity Fund (SWIX)	0.2%	2.8%	6.8%	9.4%	11.3%	Sep-06		
FTSE/JSE SWIX All Share Index	9.4%	4.5%	10.8%	10.9%	12.5%			
Outperformance	-9.2%	-1.7%	-4.0%	-1.5%	-1.2%			
Managed Equity Fund (Capped SWIX)	-0.8%	-	-	-	4.3%	Jan-17		
FTSE/JSE Capped SWIX Index	8.0%				8.4%			
Outperformance	-8.8%				-4.1%			
Domestic Balanced Fund	3.4%	4.3%	6.2%	8.7%	8.2%	May-07		
Peer median[6]	7.9%	5.8%	9.0%	10.7%	9.8%			
Outperformance	-4.5%	-1.5%	-2.8%	-2.0%	-1.6%			
Global Balanced Fund	3.2%	5.6%	-	-	8.8%	Jul-13		
Peer median[7]	5.7%	5.2%			9.7%			
Outperformance	-2.5%	0.4%			-0.9%			
Sharia unit trust funds[4]								
Islamic Equity Fund	3.2%	6.3%	7.8%	-	11.4%	Jul-09	1.46%	0.23%
SA Equity General funds mean	4.7%	2.1%	7.4%		11.8%			
Outperformance	-1.5%	4.2%	0.4%		-0.4%			
Islamic Balanced Fund	3.6%	5.0%	7.0%	-	6.7%	May-11	1.47%	0.16%
SA Multi Asset High Equity funds mean	3.5%	3.4%	7.4%		8.8%			
Outperformance	0.1%	1.6%	-0.4%		-2.1%			

Highest and lowest monthly fund performance	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest
Equity Alpha Fund	6.6%	-6.0%	8.2%	-6.0%	8.2%	-6.0%	10.9%	-9.0%	11.9%	-9.0%
Balanced Fund	4.8%	-3.0%	5.5%	-4.2%	6.2%	-4.2%	-	-	6.2%	-4.2%
Protector Fund	2.5%	-2.3%	3.4%	-4.2%	3.4%	-4.2%	7.8%	-5.3%	9.5%	-5.3%
Stable Fund	2.1%	-0.9%	3.8%	-3.5%	3.8%	-3.5%	-	-	4.0%	-3.5%
Islamic Equity Fund	5.3%	-2.6%	7.3%	-4.6%	8.1%	-4.9%	-	-	8.1%	-4.9%
Islamic Balanced Fund	4.0%	-2.0%	4.6%	-3.0%	8.2%	-5.4%	-	-	8.2%	-5.4%

[1] Annualised (ie the average annual return over the given time period); [2] TER (total expense ratio) = % of average NAV of portfolio incurred as charges, levies and fees in the management of the portfolio for the rolling three-year period to 31 March 2018; [3] Transaction costs (TC) are unavoidable costs incurred in administering the financial products offered by Kagiso Collective Investments and impact financial product returns. It should not be considered in isolation as returns may be impacted by many other factors over time including market returns, the type of financial product, the investment decisions of the investment manager and the TER. This is also calculated on the rolling three-year period to 31 March 2018; [4] Source: Morningstar; net of all costs incurred within the fund and measured using NAV prices with income distributions reinvested; [5] Source: Kagiso Asset Management; gross of management fees; [6] Median return of Alexander Forbes SA Manager Watch: BIV Survey; [7] Median return of Alexander Forbes Global Large Manager Watch. * Total return of CPI+2% pa from 1 January 2018 (previously: Return on deposits of R5 million plus 2% (on an after-tax basis at an assumed 25% tax rate)).

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