Investment Recipes

by AtonRā Partners

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On the Menu

DIGITAL FEELING

Sensors: Bridging The Real And Digital World

The link between measurable quantity and the digital world

Sensors are ubiquitous, bridging the real and digital world, providing devices with "eyes" and "arms", to sense and control the world. Increasing digitization and IoT, which begins to deploy at scale, act as catalysts for the foreseeable future.

- Sensors sales continue to grow at a substantial rate of ~10% Y/Y.
- In 2019, 83% of total sensor sales were Micro Electromechanical System (MEMS) based.

Digital breakthroughs to sense the impossible

Sensors have become commoditized, but micro/nano-technologies breakthroughs have pushed the limits of sensing capabilities. Some high-precision sensors have the potential to be disruptive given their improved sensitivity.

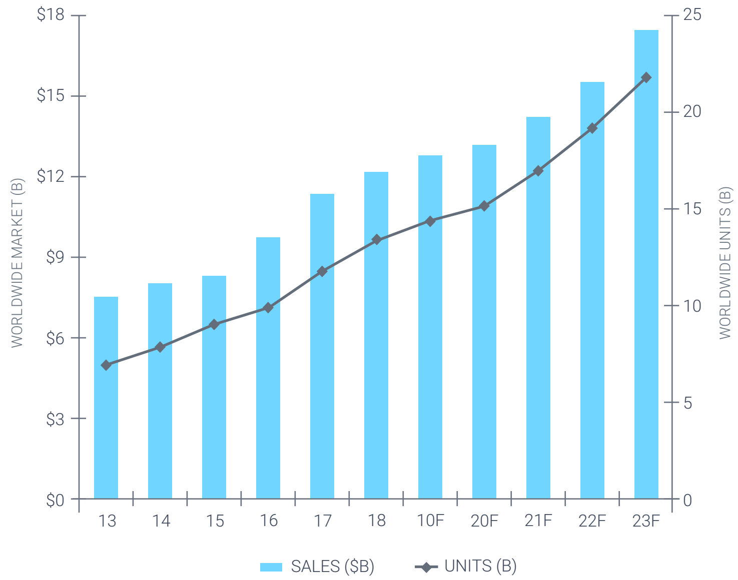
- MEMS combine extreme sensing with decision-making capabilities.
- The latest generation of optical sensors can manipulate light at the nanoscale.

Demand piling up in the industrial sector

Sensors are the peaks and shovels of industrial digitization. Every machine and item becoming “smart” needs sensors. As digitalization expands in every industry, so it will be for the sensor’s growth potential in the next few years.

- High-precision sensing devices are being introduced to improve safety, improve user experience, or add new functionalities to existing products.
- The upgrade of industrial facilities, requiring predictive maintenance and smart automation, are the key growth drivers.

MEMS-BASED SENSOR/ACTUATOR GROWTH



SOURCES:
IC Insight

AI & ROBOTICS

Sensor Technology Leaps Forward

Accelerating vibes

MEMS measure or induce extremely tiny vibrations and accelerations, in a multitude of appliances. Their use spans from gyroscopes to microphones, from frequency generators to pressure sensors, offering higher-precision measurements and reduced sizes.

- Radiofrequency MEMS (used for 5G and telecoms) are growing at 40%, oscillators at 30%, and microfluidic sensors at 20%.
- The top-three players, Broadcom, Bosch and ST Microelectronics, with a combined market share of 25%, generated $3.6bn of revenues in 2018.

Seeing the invisible

Optical sensor are flourishing thanks to advances in material processing and nanofabrication. They play a key role in 3D sensing and many other sophisticated type of measurements.

- The 3D sensing and automotive market are expected to grow at 82% CAGR and 35% CAGR through 2023, respectively.
- Infineon, STMicroelectronics, AMS AG, ON Semiconductors and Sony are the key players in these markets.

Irresistible attraction

Magnetic sensors used to measure rotational speed and direction, linear or angular movement and for proximity detection, are key to control a steering wheel or the position of the brake pedal.

- Increased automation in vehicles and electric vehicles are the key drivers for high-volume demand.
- Today's vehicles are already equipped with ~35 magnetic sensors, but their number is likely to surge in the next few years as we are just at the beginning of the vehicles' automation phase.

SOURCES:
Yole,
Magnetic Sensor Market and Technologies 2017

Ubiquitous

Gearing up for the future of driving

Vehicles are equipped with sensors to improve comfort, safety and functionalities. Sensors related to advanced driver assistance systems (ADAS) are the fastest-growing.

- ADAS-related sensor sales are growing >13%, driven by increasing demand for cameras, radars, and LiDAR sensors.
- Body and chassis sensors are outgrowing automotive sales, as their number/car increases to serve new comfort features.

Thousands of doctors around you

Medical devices are becoming smarter and ubiquitous, and wearables experience wide acceptance and adoption, especially among young people.

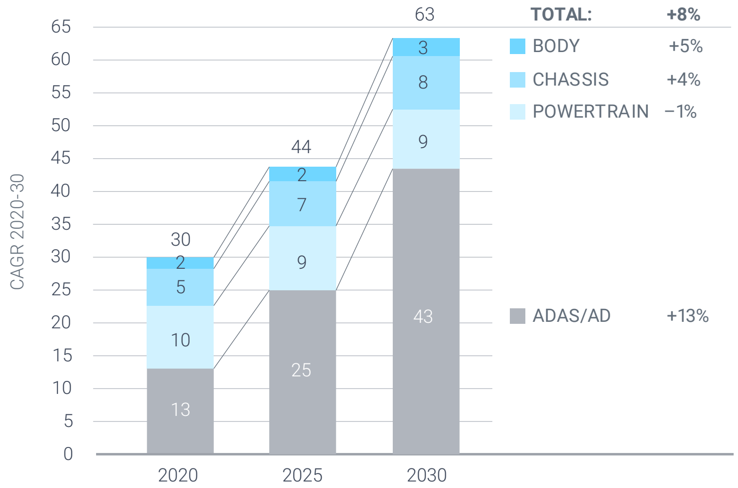
- Airport security cameras equipped with a thermal scanner are crucial in controlling the spread of coronavirus.
- Wearables grow at annualized 10%, driven by the will to track vital signals.
- U.S. usage of healthcare wearables increased at a staggering 33%.

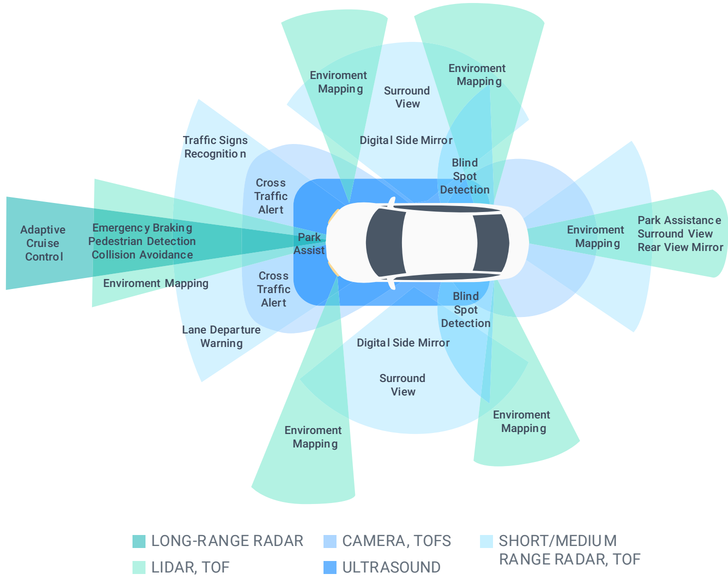
The fourth industrial revolution is here

IoT has started to deliver on its promises within the industrial sector, where billions of sensors and actuators are getting installed on manufacturing and logistic sites. They increase automation, at the same time reducing operational and maintenance costs.

- Capex is being justified by positive and measurable ROIs.
- Volumes are in the order of hundreds of billion of units.
- Annualized growth rates are close to 10%.

TOTAL AUTOMOTIVE SENSOR MARK ET, $BN





SOURCES:
IHS,
McKinsey «Automotive software and electronics 2030»,
Business Insider Digital Health Intelligence

Catalysts

- **Autonomous vehicle.** Automakers are heavily investing in greener, safer and smarter technologies. Sensors represent the soil that will nurture these future developments.
- **Bionics uptake.** Rising healthcare costs trigger prevention as one of the most affordable ways to cure people. Sensors are the eyes, ears, nose and touch monitoring the health of patients.
- **5G Rollout expansion.** RF MEMS or, more precisely, bulk acoustic wave filters are at the heart of every handheld devices. The 5G upgrade cycle will be a clear demand driver for MEMS.

Risks

- **Cost imbalances.** Some sensors still do not solve the cost benefit equation, eventually not fulfilling the purpose for which they have been designed.
- **Cannibalized innovation.** Certain sensor technologies can be used for different purposes. This technological concentration can hinder innovation or the birth of better solutions.
- **Supply chain disruption.** Sensors can suffer from the disruption of a highly interconnected supply chain.

Bottom Line

- Sensors are the fundamental building blocks of the connected world of tomorrow. RF MEMS, optical and magnetic sensors are among the most promising.
- The automotive, healthcare and industrial production sectors are the ones where sensors deployment is getting at an inflection point. We are closely monitoring all the technologies that are deployed into the market as we believe their upside is substantial.

Companies mentioned in this article:

AMS (AMS SW), Bosch (private), Broadcom (AVGO US), Infineon (IFX GR), Melexis (MEL BB), On Semi (ON US), Sony (6758 JP), STMicroelectronics (STM FP)

BLOOD DISORDERS: STOP THE BLEEDING

Technology And Needs Converging

Few treatment options available

From blood cancers to inherited rare diseases, the hematology drug market is worth over $100bn, growing mid-double-digits. These diseases alter crucial blood functions, such as the transport of oxygen or defense against infections. Existing therapies are invasive and expensive.

- Rare blood diseases are life-threatening with narrow treatment options.
- The total costs of standard hemophilia therapies range in the $10mn to $20mn.

The perfect match for gene therapy

Genes instruct how blood cells reproduce or function. For many rare blood diseases, defective genes have been spotted already, making them the ideal targets for gene-therapies.

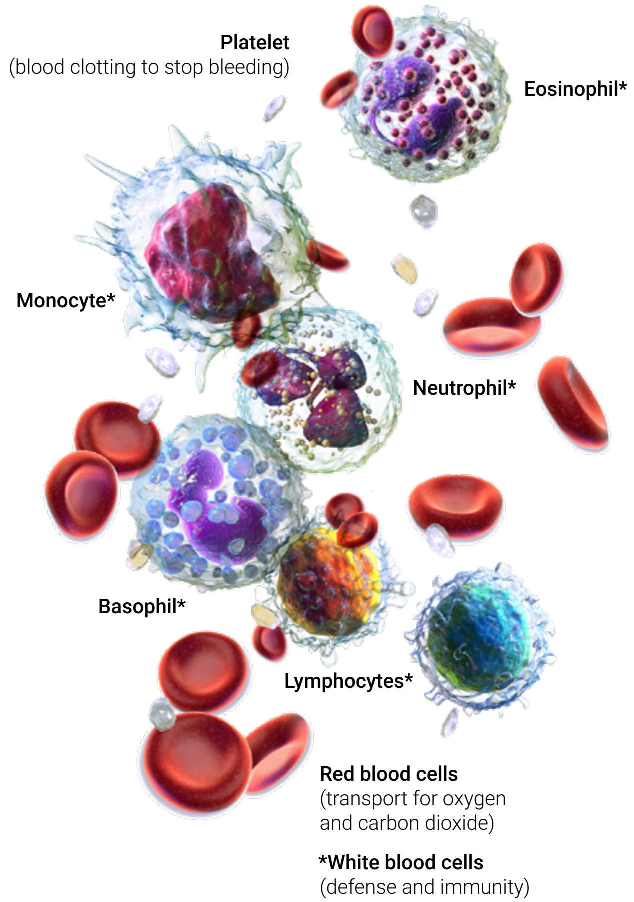
- Data released in 2019 showed that for many of the blood diseases, a partial repair of the gene function might be enough to improve blood conditions.
- In 2019, Bluebird Bio paved the way with the first approved gene therapy for a rare blood disorder (β-Thalassemia).

This year is full of promises

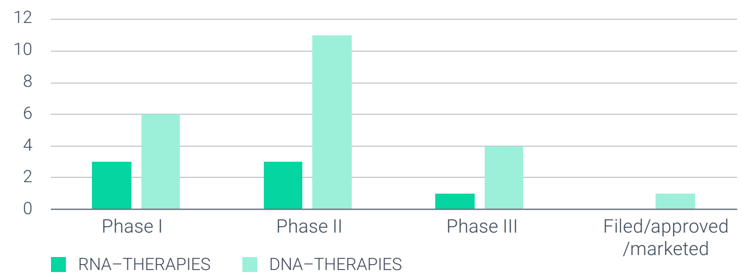
In rare diseases, gene-therapies for blood diseases are nearing approval. Within gene-therapies, RNA-based therapy is also an interesting approach that we closely monitor.

- BioMarin's Valrox ($4bn to $5bn peak sales potential) might be the first hemophilia gene therapy entering the market and an FDA decision is expected by the summer.
- Spark/ Roche's SPK-8011 and Sangamo/Pfizer's SB-525 are the two other programs closest to approval.
- Alnylam, together with Sanofi, is running an RNA-based program with Phase III data expected in 2020.

SOURCES:
Global Market Insights, National Hemophilia Foundation (NHF),
Medical gallery of Blausen Medical 2014



NUMBER OF HEMATO GENE THERAPIES



Threat To The Elixir Of Life

It's about controlling the bleeding

Hemophilia, Sickle Cell Disease, and β-Thalassemia are the most common forms of rare blood diseases. Over 400K patients are affected by hemophilia (a genetic disorder preventing the blood from clotting normally) worldwide, and there is no cure available today.

- Hemophilia has two primary forms, A (80% of cases) and B (20% of cases), both characterized by insufficient levels of clotting proteins (respectively Factor VIII and Factor IX deficiency) needed to seal wounds, control bleeding, and promote healing.
- Sickle Cell Disease and β-Thalassemia are genetic disorders caused by a misleading gene coding for hemoglobin, an oxygen-carrying protein.

An economic burden beyond the clinical risk

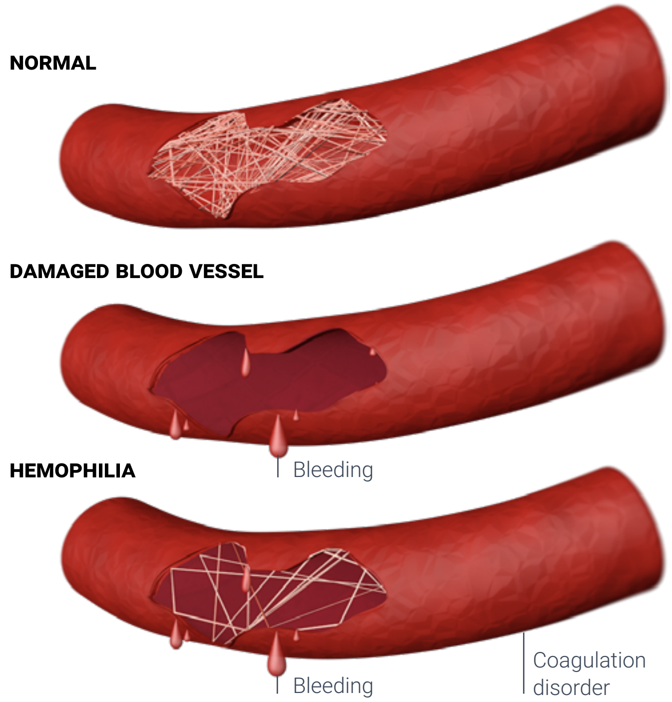
The costs of existing treatments are high, averaging $300k/year and close to $1mn for the more severe cases. We can easily understand that only patients living in richer countries have access to such treatments, while the economic impact on healthcare spending is significant.

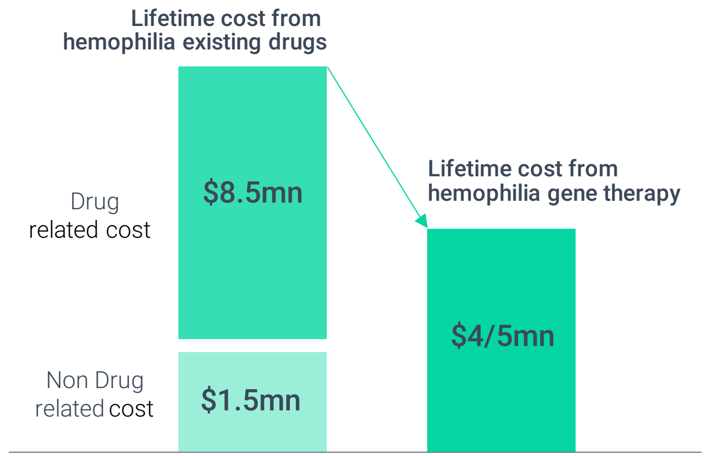
- Clotting factor replacement or prophylaxis is the standard of care for hemophilia and β- thalassemia, respectively. Both require several injections per week to replace the clotting factor that is missing.
- Bone marrow transplant represents the only permanent cure for β-thalassemia. Hematopoietic stem cells (located in the bone marrow) are responsible for the development of all types of blood cells.

Genes therapies need to prove their longer-acting durability

Gene therapies eliminate or reduce the need for regular injections. High upfront costs must prove to have an edge vs. recurring expenses incurred with standard therapies.

- Recent studies have shown that gene therapies ultimately save money for the system.
- The cost of gene therapy for hemophilia is estimated at $2 to $3mn per injection, but its efficacy can last up to 10 years or more.
- Payors are likely to look very closely at the long-term efficacy of these products. BioMarin recently stated that most of the insurers are ready to pay a single high price.





The ‘20s Might Be The Years Of A Cure

"The first therapeutic area we will focus on is Hemophilia”, Scott Gottlieb.

In 2018, the then FDA’s commissioner, Scott Gottlieb, emphasized the significant potential of gene therapy for hemophilia.

- The FDA established accelerated approval criteria for companies developing gene therapies for hemophilia, providing less uncertainty in the regulatory framework.
- Gene therapies might eventually displace the hemophilia recombinant factor market (20K individuals in the US and almost 90K in Europe) over the longer term.

Why should gene therapy work for Hemophilia?

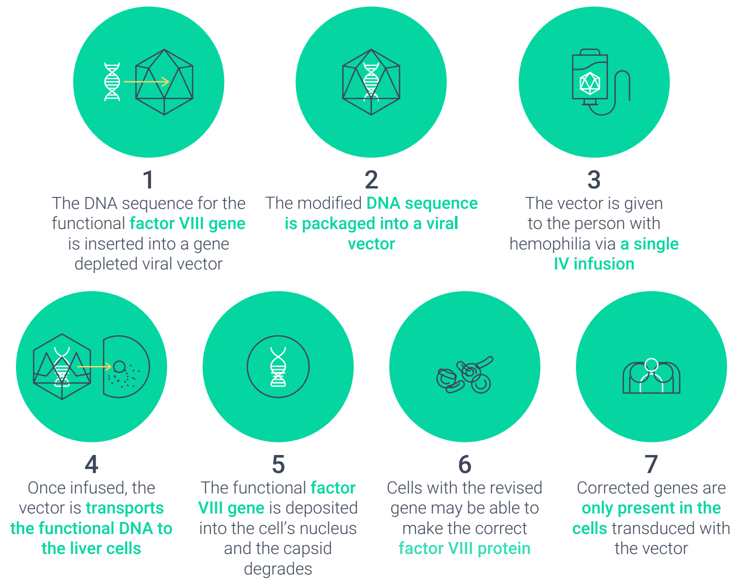
Gene therapy might very well be effective in Hemophilia A & B as the flaw comes from a single gene producing such proteins. From published clinical data that we have seen so far, a modest increase in clotting proteins significantly reduces bleeding, providing high hopes for this therapy.

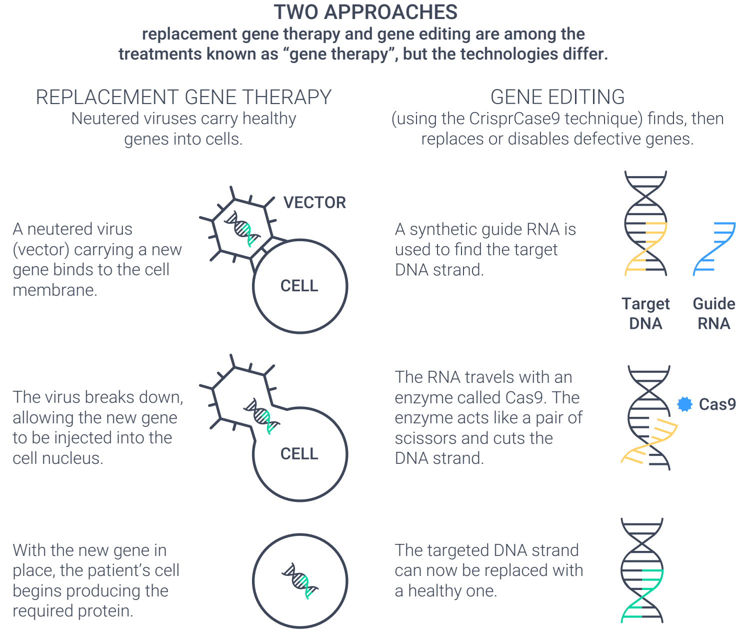
- Hemophilia A was the first to be targeted by biotech companies as it is the most important in terms of patients’ potential. The first company likely to get the FDA approval this year is BioMarin.
- UniQure’s AMT-061 was the first gene therapy to enter Phase III for Hemophilia B and could be on the market by 2021, ahead of competitors (Spark and Sangamo notably).

CRISPR/CAS 9 as the ultimate cure?

Gene editing, using the CRISPR/CAS 9 technology, should emerge as a one-shot, once for all therapeutic option. If clinical trials show long term efficacy and safety, the first products might enter the market in 2025.

- In collaboration with Vertex, CRISPR Therapeutics is developing its lead program CTX001 on Sickle Cell Disease and β-Thalassemia.
- Editas Medicine presented pre-clinical data supporting its approach to both diseases. The first patient will be dosed by early 2020.





Catalysts

- **Data from larger cohorts expected in 2020.** Vertex and its partner CRISPR Therapeutics will report additional results on β-thalassemia and sickle cell disease.
- **Gene therapy for blood disorders conference.** This conference will be held from 3 to 5 March 2020. Several companies, including Bluebird, Editas, or Roche, will present additional data.
- **M&A deals on the hemophilia space.** After the Spark acquisition by Roche last year, UniQure, Alnylam or BioMarin could be excellent M&A candidates as their products might reach the market soon.

Risks

- **Safety risks.** The main challenge remains on safety as gene therapy is applied to stem cells, from which all cells are created.
- **Slower commercial uptake of Bluebird's therapy.** Bluebird received EU approval in 2019 on β-thalassemia. Given the high price (€1.57mn), insurances might only choose to reimburse this therapy for the most severe form, limiting its commercial opportunities.
- **Drug pricing.** If approved, the gene therapy on hemophilia will become the most expensive drug in the world. BioMarin has already announced a price range of $2-$3mn. Reimbursement for this cure will certainly be subject to negotiation.

Bottom Line

- With the recent approval of Bluebird β-thalassemia gene therapy in the EU, and several hemophilia candidates seeking approval within the next two years, we believe that few of our Biotechnology portfolio's components are set to benefit.
- For many blood diseases, defective genes have been identified, making them highly compatible with gene therapy.

Companies mentioned in this article:

Alnylam (ALNY US), BioMarin (BMRN US), Bluebird Bio (BLUE US), UniQure (QURE US), CRISPR Therapeutics (CRISPR US), Editas Medicine (EDIT US), Roche (ROG SW), Sangamo (SGMO US), Spark (Acquired by Roche), Vertex (VRTX US)

ARE SURGICAL VALVES SET TO DISAPPEAR?

Shaking-up Heart Valves Treatments

The new “golden standard” for heart-replacement

Open-heart surgery has been the standard of care for heart valve replacement, but TAVR (Transcatheter Aortic Valve Replacement/Repair) and TMVR devices (Transcatheter Mitral Valve Replacement/Repair) are becoming the preferred option, given their less invasive nature.

- Nowadays more than 300k patients have been treated with TAVR and more than 80k with TMVR.

A bright future ahead

Increasingly more patients are asking for non-invasive heart valve procedures. Driven by reimbursement extensions and expanded coverage to a lower-risk population, transcatheter heart valves are to overtake Surgical Aortic Valve Replacement SAVR).

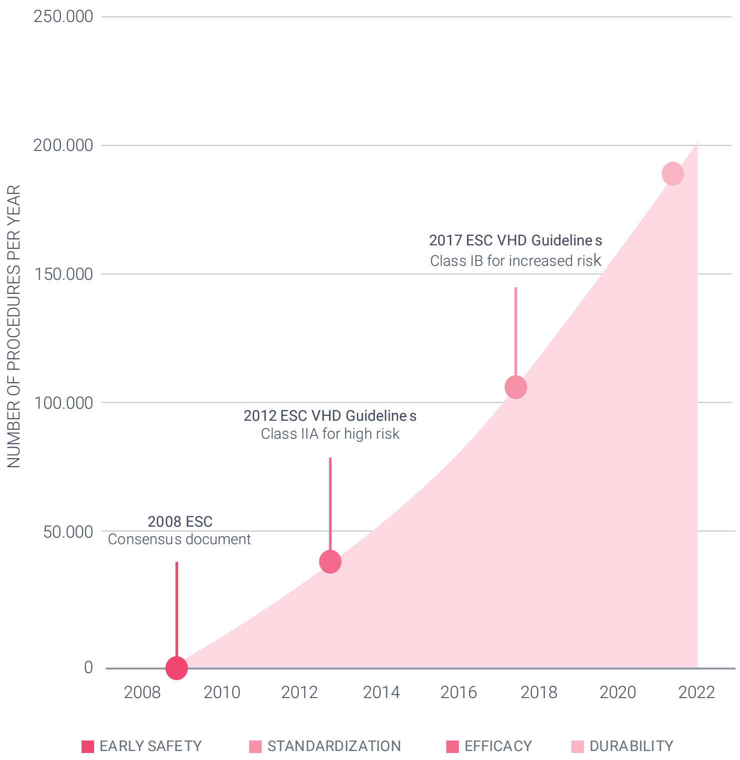
- The global market for TAVR/TMVR is estimated to grow by 15% CAGR and reach $8bn by 2023.
- Penetration rates are still low: in the U.S., TAVR barely represents 50% of procedures.

Few players dominating the space

Three players currently dominate the TAVR/TMVR market, with a 98% cumulative market share. The tight regulatory approval process creates high barriers to entry for newcomers.

- Edwards Lifesciences holds the lion’s part with a 55% market share. Medtronic and Abbott Laboratories follow with 29% and 14%, respectively.
- Livanova last year halted its TMVR program after evaluating the steep challenges of this market.

TAVR ADOPTION IN EUROPE



SOURCES:
Pharma Transcatheter Aortic Valve Adoption Rates, Journal of American College of Cardiology,
Positive Projections: TAVR/TMVR Market Likely to Double by 2023, BCC Research

Massive Adoption

Less invasive, cost-effective and disruptive

TAVR and TMVR devices repair or replace existing heart valves without open-heart surgery but through blood vessels (picture on the right). The non-invasive approach reduces the total cost of patient care and improves clinical outcomes.

- Abbott's MitraClip reduces the risk of hospitalization by 47% and the risk of death within 2 years by 37%.
- Edwards' Sapien system reduces hospital stays and prevents deaths and strokes.

Expanding the addressable market

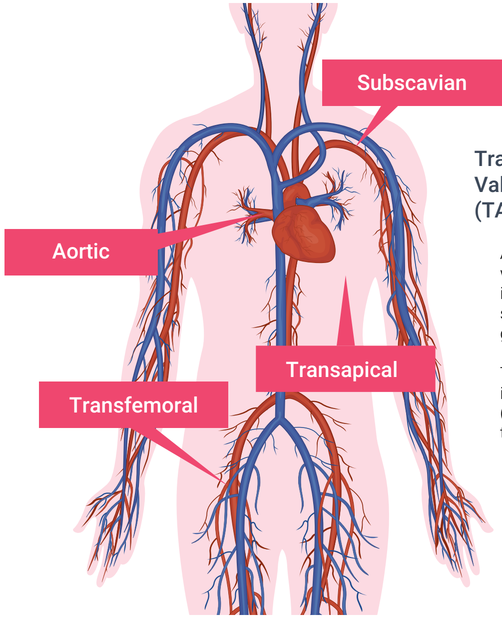
Minimally invasive procedures for heart valves have typically targeted patients considered too risky for open-heart surgery. Now the U.S. regulatory body is expanding indications to a younger and lower-risk population.

- The FDA has recently extended the approval of TMVR to moderate-risk patients, and clinical trials for other indications are underway.
- Last year TAVR devices won an extended indication for low-risk patients. They are now on their way to an "all-risk indication".

Improving market access

Clinical evidence on the efficacy of transcatheter heart valves procedures has sparked reimbursement expansion. The Center for Medicare and Medicaid Services (CMS) is now recognizing the effectiveness of these technologies.

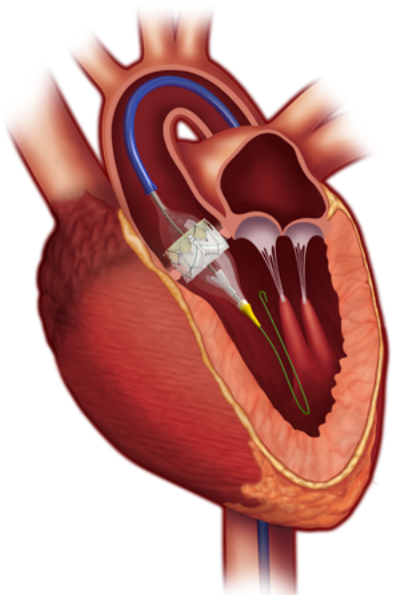
- In 2019 the CMS eased conditions for hospitals wishing to adopt the technology.
- CMS is considering a National Coverage Determination (NCD), which would prove that this technology results in significant health benefits and would be available more rapidly to patients.



Transcatherer Aortic Valve Replacement (TAVR)

A balloon catherer equipped with a replacement valve is inserted into one of the main sites shown at left. It is then guided to the aortic valve.

The two most common insertion sites are transfemoral (through the groin) and transapical (through the ribs).



SOURCES:
Placement of Aortic Transcatheter Valves 3, PARTNER 3, American College of Cardiology,
Evolut Surgical Replacement and Transcatheter Aortic Valve Implantation in Low Risk Patients – Evolut Low Risk, American College of Cardiology

Few Companies In The Sweet Spot

Edwards Lifesciences is leading the TAVR market

In the TAVR market, Edwards Lifesciences and Medtronic have achieved a dominant position. Edwards Lifesciences stands out as the prime leader.

- Edwards' Sapien is the only TAVR device approved in the EU for low-risk populations.
- Recent clinical trials show a lower risk for Edwards' Sapien vs. Medtronic's CoreValve Evolute R.

Abbott dominates the TMVR market

Abbott seems to be ahead on the TMVR race. In the U.S., its MitraClip System faces no competition, and the situation is unlikely to change in the near term. On the other hand, in the EU, the state of the market is slightly different.

- In the U.S. Edwards Lifesciences and Medtronic just started their pivotal trials, and with that, no approval is in sight before 2023.
- In the E.U., Edwards Lifesciences is rolling out its TMVR device (Pascal).

On a rocketing growth phase

TMVR and TAVR businesses have become important growth drivers for their manufacturers.

- Abbott's MitraClip sales grew 30% Y/Y in 2019, reaching $700mn.
- Edwards' TAVR sales experienced a 20% Y/Y organic growth in 2019 and are expected to reach the $3bn mark in 2020.

SOURCES:
Impact of Sapien 3 Baloon-Expandable Versus Evolut R Self – Expandable Transcatheter Aortic Valve Implantation in Patients With Aortic Stenosis, Circulation, AHA Journals

Catalysts

- **New product launches.** In 2020, Abbott expects the approval of its tricuspid (TriClip) and TAVR (Portico) valves procedures, expanding its market beyond TMVR.
- **Reimbursement increase.** The Center for Medicaid and Medicare (CMS) is reviewing the National Coverage Determination (NCD) of MVRT devices. The CMS plans to complete the analysis by May the 14th. The new policy is likely to spark adoption.
- **New indications.** TMVR and TAVR devices are undergoing clinical trials for new indications. New FDA approvals may expand the market of such technologies.

Risks

- **FDA denial.** If the FDA decides to turn down the approval of new products, companies' businesses could be drastically affected.
- **Competition intensifies.** Boston Scientific had its Lotus Edge TAVR device approved by the FDA in April 2019 for high-risk patients. The company is beginning enrolling intermediate-risk patients in its REPRISE clinical study.
- **Safety issues.** Companies must evaluate the long-term safety and effectiveness of the devices to ensure patients have access to high-quality medical devices. If any adverse outcome arises during these studies, companies may be severely affected.

Bottom Line

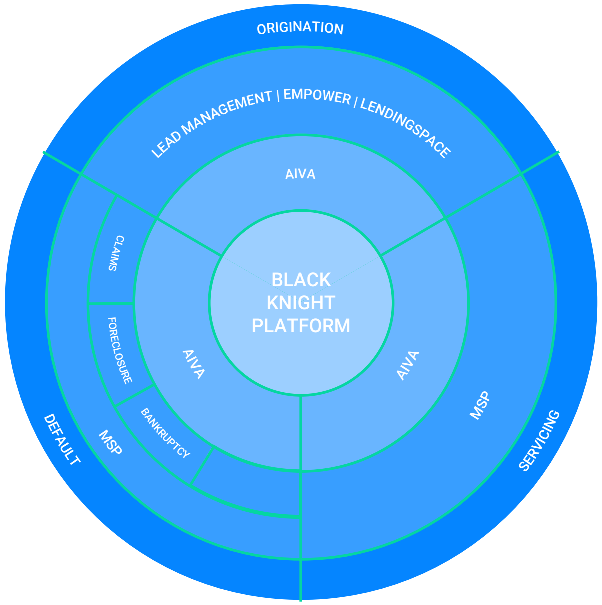
- Less invasive transcatheter approaches represent the new frontier of heart valve technology. We believe that these technologies will eventually become the golden standard of care for heart valve treatments.
- TAVR and TMVR markets are undergoing rapid adoption, driven by reimbursement and a lower risk population expansion. We are currently invested into these themes through investments in Abbott Laboratories, Edwards Lifesciences, and Medtronic.

Companies mentioned in this article:

Abbott Laboratories (ABT US), Boston Scientific (BSX US), Edwards Lifescience (EW US), Livanova (not listed), Medtronic (MDT US)

BLACK KNIGHT INC. – THE CHAMPION OF PROPTECH

A Knight Who Combats Inefficiency In Real Estate



Black Knight digitizes inefficient Mortgage and Real Estate markets

Digital automated solutions offered by Black Knight Inc. speed up identity, income, and insurance verification, improve customer experience, and reduce costs. The company also provides reliable property databases used by almost everyone in the real estate industry.

- Solutions by Black Knight allow mortgage applications to be processed within 1-4 days, 10 times faster than the industry average.
- The mortgage application fee may go up to $500, twice of what Black Knight offers.

Offers the most comprehensive product on the market

Black Knight's MSP® (Mortgage Servicing Platform) is the first platform that combines origination, servicing and default processing in one product. The company constantly adds new and expands existing features of its platform staying ahead of competitors.

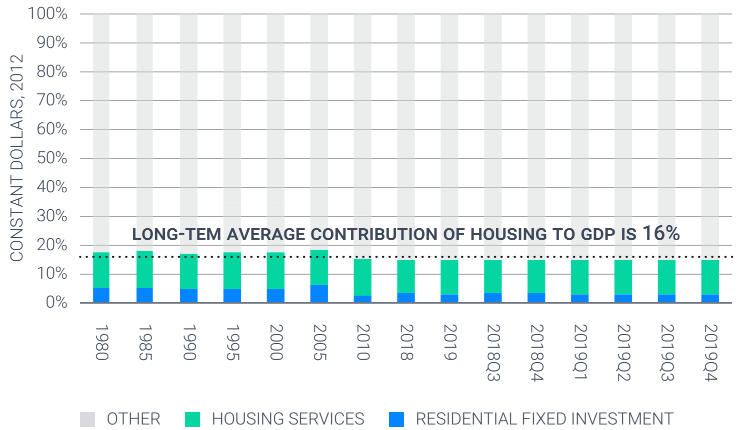
- The platform is successfully servicing over 50% of all US Mortgages by dollar value.
- Thanks to strong financials, Black Knight is constantly acquiring new technologies that it adds to its MSP® product line, further innovating and disrupting the market.

Achieved omnipresent integration of AI and Machine Learning

The company has produced the first-ever virtual AI assistant AIVA which may be integrated into any existing product on the market. It mimics cognitive thinking, eliminates repetitive tasks, reduces operational costs, and lowers loan processing to minutes.

- AIVA can save up to 70% per loan in processing costs, and process 20x more volume than an average team of analysts.
- Using ML algorithms, AIVA may be fully operational within days.

HOUSINGR EMAINS AN IMPORTANTC OMPONENT OF GDP



SOURCES:
Black Knight Inc. (corporate website and Annual Reports),
Housing's Contribution to Gross Domestic Product,
AtonRâ Partners

Innovative And Focused Pure-Player

A Pure player with a unique integrated platform

Competitors of Black Knight are either too diversified or target only specific areas of Proptech, consequently losing major opportunities to cross-sell. Black Knight, on the other hand, offers exclusively Real Estate products that may be used on a standalone basis or added to any 3rd party platform on the market.

- Most competitors lack Black Knight's focus and scale, e.g., Built digitizes only loan management, while Qualia simplifies record keeping.
- The company's unique Digital Assistant AIVA may be integrated into any mortgage, banking, or data analytics software in the market within two days.

Focused on expanding its total addressable market

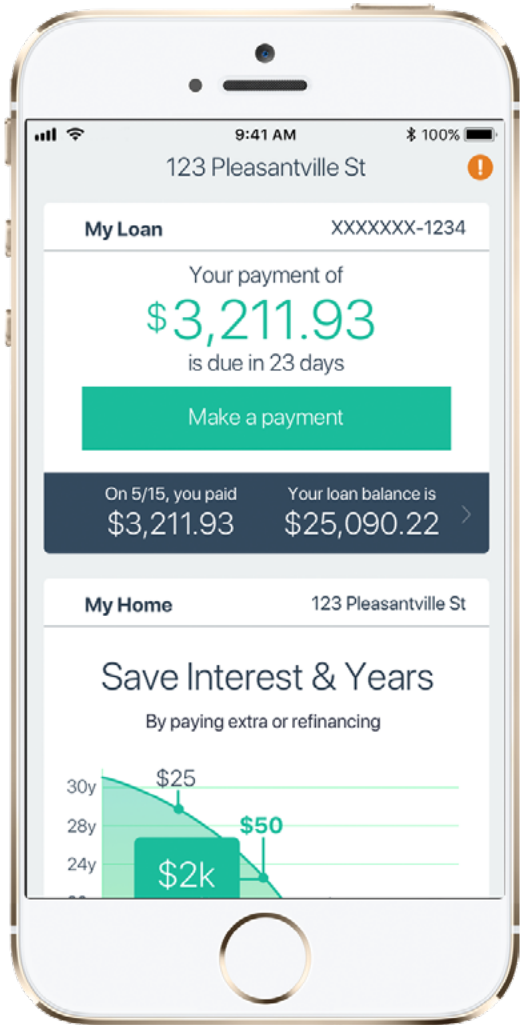
The company plans to expand its client base by introducing the first product for banks. This new platform will enable banks to better and more efficiently target specific clients.

- Black Knight is looking to expand internationally or to move into new lending areas such as Auto, to leverage its existing MSP® Platform.

Outclasses competitors with digital innovation and AI

Black Knight is constantly leveraging AI technologies to outpace its competitors and remain the market leader with a 23% market share.

- New products drive 3-5% annual growth, each tuck-in M&A 1-2%.
- On 14 February 2020, the company signed a contract with Quicken Loans. This partnership will allow Black Knight to add an innovative customer service solution to its MSP® Platform.



SOURCES:
Black Knight Inc. Annual Reports, AtonRâ Partners,
https://www.blackknightinc.com/markets-we-serve/mortgage/loan-servicing/#

Best Positioned To Bring Tech To Real Estate

Black Knight is best placed to modernize the Real Estate market

Property is the largest asset class in the world but the last one to embrace technology. Apart from Airbnb in property lending, Black Knight is the only player in the real es- tate market offering high-value tech solutions in areas such as construction, transfer and mortgage.

- The housing services industry contributes $3.5tn (13.5%) to the US GDP. The sheer size represents a massive opportunity for Black Knight in this market.

Black Knight Property accelerates property transfer

Buying or selling property takes months. Black Knight improves this process by using reliable databases and AI. This alleviates problems such as shortage of data, manual paperwork, and dependence on not incentive-aligned agents.

- Forbes states that about $1.3tn worth of existing homes transacts every year.
- It takes up to 4.3 months to buy a home with approximately 6% lost in transaction costs. Black Knight cuts in half time and costs.

Riding the 3rd innovation wave: what is next for Proptech 3.0?

Black Knight is winning the race by riding the 3rd innovation wave embracing automation, Big Data, Virtual Reality (VR), and AI.

- Big Data and AI align potential buyers with a suitable property.
- With VR a home buyer may shop for a home easier, faster and more efficiently.

REAL ESTATE PAIN POINTS FOR DIFFERENT STAKEHOLDERS

OWNER	• Long Lead time - 4.3 months to buy a home/ mortgage and 2.8 months to sell) • 6% of value lost in Large Transaction Costs
BROKER	• Lack of Data and Limited cooperation - inexistent broker network and analytics • Unproductive - Most Brokers sell/transact zero properties a year.
TENANT	• Unaffordable, manual, tedious process of leasing, paying and searching
SUBCONTRACTOR	• Manual and delayed payments
INSTITUTIONAL INVESTOR	• Inefficient matching of supply and demand • Limited data to make investing decisions

SOURCES:
https://www.forbes.com/sites/valleyvoices/2019/02/22/the-proptech-opportunity/#43a3e6dd5826,
https://www.eu-startups.com/2018/11/10-proptech-startups-2018/,
Technology in the real estate sector (PDF),
AtonRâ Partners

Catalysts

- **Shortage of available properties.** Home sales are down, demand for renting real estate is up. Black Knight would benefit by offering technologies that facilitate sales or improve the connection between owners, managers, and tenants. Additional data inflow would further improve its algorithms.
- **Launching an exchange platform.** Black Knight plans to significantly expand its addressable market soon by helping banks target their existing customers without a mortgage contract with a new "exchange" module.
- **Acquisitions of new innovative startups.** The company is well-positioned financially to continue its M&A policy. Finding innovative and ground-breaking startups like AIVA would significantly drive Black Knight's growth.

Risks

- **High customer concentration.** With the top five clients accounting for 37% of topline, Black Knight would suffer heavily from losing a single client.
- **Losing the legal battle with PennyMac.** Failure to win the lawsuit against PennyMac and its platform that mimics Black Knight's MSP®, would lead to $340mn losses and reputational damage.
- **Premium Valuation.** Black Knight is trading at higher valuation multiples than its Fintech peers, FY20 P/E 31x vs 20x respectively, and the stock will suffer harsh derating should the company not deliver as expected.

Bottom Line

- We believe that Black Knight is one of the best Proptech players in the market, and likely to be the market leader over the next 5 years.
- Given its operational efficiency, strategic acquisition policy, and a high degree of innovation, we are confident about the company's long-term growth.

Companies mentioned in this article:
Airbnb (not listed), Black Knight Inc. (BKI US), Built (not listed), PennyMac (PMT US), Quicken Loans (not listed), Qualia (not listed)

THE REBIRTH OF ALTERNATIVE LENDERS IN CHINA

2020: Inflection Point For Online Lenders?

Chinese consumer finance is still in the early stage of development

Despite a growing household debt, the spending potential of the low-to-medium income of the Chinese consumer remains massive. With that, consumer finance has its best days ahead as China lags developed countries by a wide margin.

- As per NIFD, 40% of adults never had access to consumer-finance services.
- Credit cards per capita stand at 0.5 in China vs. 2.3 in the U.S.
- 61% of young Chinese use online loans vs. 45.5% for credit cards (Nielsen)

A sweet opportunity for online lenders… that yielded to excesses!

P2P online lenders entered the market with the promise to use technology to provide quick credit to borrowers and higher yields to investors. The lack of regulation fueled unscrupulous practices.

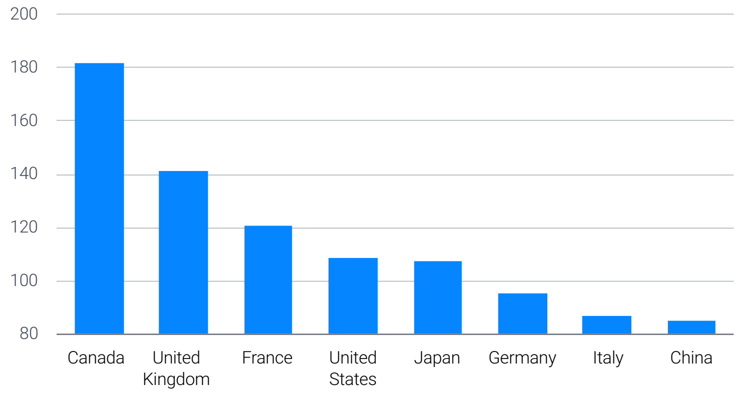
- Almost half of the platforms in place before 2016 were Ponzi schemes.
- Loss of confidence in the system prompted lenders to withdraw their funds, forcing many platforms into bankruptcy.

Time to invest as regulations have cleaned up the industry

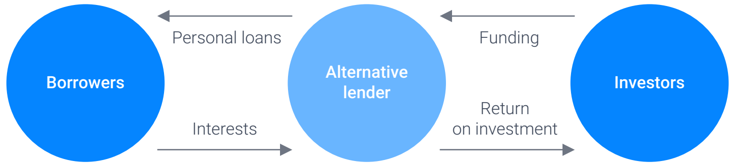
Following the P2P debacle, the Chinese government enacted over 100 new regulations in 2015, triggering the closure of 90% of P2P platforms. As the clean-up nears completion, the timing of getting exposure to this multi-billion market is right.

- In 2019, stiffer controls were put in place and platforms must connect their real-time operation data with the Chinese regulatory system.
- Ant's Financial Huabei and Tencent WePay are experiencing fast growth in their consumer lending business.

HOUSEHOLD DEBT (% NET DISPOSABLE INCOME)



P2P LENDING IN CHINA IS STRAIGHTFORWARD. IT USUALLY DOES NOT RELY ON AN ISSUING BANK, AS OPPOSED TO OTHER COUNTRIES.



SOURCES:
iResearch, National Institution for Finance and Development, PwC, OECD, Fitch, AtonRâ Partners

Regulation Rhymes With Consolidation

A whirl of excitement before the downfall

Thousands of online websites were launched to try to capture a piece of the consumer lenders' growing pie. Activities bordering the illegal, based on Ponzi schemes or usury interest rates, flourished within an unregulated framework.

- The number of online lenders in China rose to over 3'500 in 2015 before going abruptly down to around 400 currently.
- Loans originated on online platforms in China reached more than 2.5% of the GDP during the record year of 2017, compared to approx. 0.2% and 0.1% in the U.S. and Europe, respectively.

U-turn on regulations: short-term pain for long-term gain

In November 2019, the Chinese government gave two years to legacy P2P platforms to exit their business or to apply for special status such as "small loan providers".

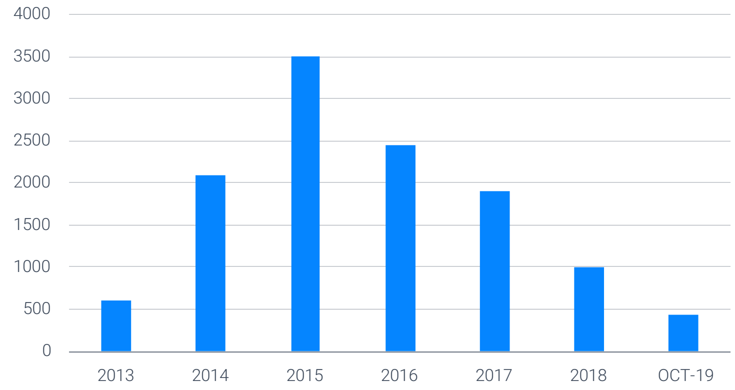
- Close to 6,000 platforms were linked to problematic or illegal activities.
- The closure of the P2P platforms impacted more than 2mn investors.

The final phase of consolidation

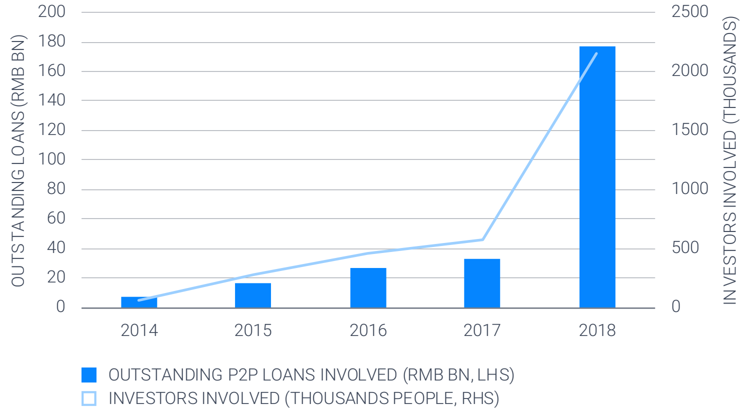
We estimate that between 50 to 100 companies are likely to remain in business by the end of 2021.

- M&A activity will increase between the remaining companies and only a handful of online lenders will remain.
- Selectivity is critical as the last phase of consolidation will mainly involve companies going out of business.

NUMBER OF P2P PLATFORMS IN CHINA



COLLATERAL DAMAGES OF THE INDUSTRY CONSOLIDATION



SOURCES:
iResearch, National Institution for Finance and Development, PwC, technode, wdzj.com,
National School of Development of Peking University, China Banking and Insurance Regulatory Commission, AtonRâ Partners

Paving The Way For A Rebound

The professionalization of the alternative lending industry

New regulations forced companies to professionalize their operations by getting institutional funding, increase their capital, and develop fraud detection systems.

- For instance, LexinFintech, a prominent platform, saw its funding source from individual investors declining from 53% in 2017 to less than 10% in 2019.

The emergence of a few market leaders

Companies adjusting their models and applying for new licenses are the natural leaders of tomorrow. Such companies nowadays represent an attractive investment opportunity given their addressable market.

- Surviving alternative lenders have gathered financial data on hundreds of millions of users and generate billions of dollars of revenues in aggregate.

Future developments for online lenders

Consumer finance in China barely started. The growing middle-class have new consumption behaviors that will ultimately require financing.

- Online lenders will have the opportunity to diversify their activities by reducing their dependence on short-term micro-loans.
- Future opportunities will match developed countries' use of personal loans, e.g. college and education, house rental or improvement, etc.

SOURCES:
LexinFintech company report,
AtonRâ Partners

Overview Of The Listed ADRs

A variety of business models

We provide here details on few selected Chinese alternative lenders listed in the U.S. These companies have the financial strength to meet additional regulation requirements but operate different business models. Most of these companies can rely on their solid base of active users.

- The regulatory framework weighs on the valuation of these companies, trading at a significant discount compared to their developed countries' peers.
- They compete against the Chinese internet giants (Alibaba, Tencent, JD.com) that have all launched consumer finance activities.

LEXINFINTECH

LEXIN乐信

- Market cap of $2.3bnLoan balance: RMB 51.5bn.
- Focus on white-collar educated young adults – delinquency rate at 1.4%.
- 6.1mn borrowers, 16.7mn users with an approved credit line, 62.6mn registered users.
- The company offers personal loans, a virtual loyalty and credit card, and an e-commerce platform where clients can get installment loans.
- Major shareholders include JD.com and several private equity companies.
- Well-positioned in the changes of regulations, with 6 licenses.

360 FINANCE

360金融 360 Finance

- Market cap of $1.3bnLoan balance: RMB 70.6bn.
- Focus on white-collar educated young adults – delinquency rate at 1.1%.
- 14.7mn borrowers.
- The company offers a digital revolving line of credit.
- The 360 Group is the main shareholder of the company. 360 Finance attracts new customers thanks to the mobile apps of 360 Group products and its network of approx. 1 billion customers.
- Well-positioned in the changes of regulations, with 5 licenses.

QUDIAN

趣店 Qudian.com

- Market cap of $0.7bnLoan balance: RMB 38.4bn.
- Focus on payroll debt, factory workers – delinquency rate at 10.5%. The lower credit quality is offset by higher profitability and lower financial leverage.
- 6.3mn borrowers, 33.8mn users with an approved credit line, 78.3mn registered users.
- The company offers a digital revolving line of credit.
- Shrinkage of loan volume, and withdrawal of profit guidance. They are adapting their licenses to meet the new regulatory framework.

FINVOLUTION

信也 FINVOLUTION

- Market cap of $0.6bn
  Loan balance: N/A.
- Delinquency rate at 3.7%.
- 5.5mn borrowers, 102mn registered users.
- Funding from individual investors to be reduced (currently about 25%).

YIRENDAI

宜人贷 www.yirendai.com

- Market cap of $0.4bn.
- Two divisions: consumer lending and wealth management (AuM RMB40bn).
- 150k borrowers.

SOURCES:
Companies reports / Facts and figures as of 30 September 2019,
Market cap as of 05 February 2020

Catalysts

- **More regulations.** The Chinese Government is likely to require additional licenses from online borrowers to increase the level of protection for borrowers and lenders. This will trigger further consolidation in the sector – only the market leaders will survive.
- **Non-performing credit card debt.** The delinquency ratio of credit cards in China is on the rise. We expect banks to impose stricter rules to issue credit cards. More people will look at alternative lenders to get funding.
- **Deepened economic reforms.** China is shifting to a consumption-driven market, benefitting the consumer finance industry, among others. Additional reforms will be required in the mid-term to accomplish this goal.

Risks

- **Data security.** Owning the financial information of tens of millions of people may raise the appetite of hackers. A severe attack may harm the entire industry.
- **Tax rates.** Most of the pure players pay a special tax rate in China of 15%, as they are considered as High and new tech enterprises. New regulations may increase the tax rate to 25%.
- **Coronavirus.** As Chinese authorities advise people to stay home, many people are frightened to shop or eat out. Without massive government stimulus, a lasting outbreak will have a direct impact on consumer spending and eventually on alternative lenders.

Bottom Line

- Stricter regulation on Chinese alternative lenders allowed to clean up years of excesses. As the consolidation phase is nearing completion, few online lenders have emerged as market leaders who stand to benefit from the appetite for financing by Chinese consumers.
- We like pure players with a high-quality credit book. These companies are likely to experience lower default rates in case of an economic slowdown and could be perfect takeovers for the Chinese internet giants who would like to further consolidate into consumer financing.

Companies mentioned in this article:

360 Finance (QFIN US), Alibaba (BABA US), FinVolution (FINV US), JD.com (JD US), LexinFintech (LX US), Qudian (QD US), Tencent (TCEHY US), Yirendai (YRD US)

WEX INC. – LEADER IN BUSINESS PAYMENTS

Wex Is Driving Innovation In The Corporate Payment World

Business expenses payments need to get digitalized

Businesses power the global economy, spending $170tn each year on suppliers and employer-related expenses. Many of these expenses are still paid with time-consuming and inefficient methods like paper checks and cash.

- Outdated payments methods limits spending controls, add complexity and may even lead to frauds.
- 75% are back-office expenses like raw materials, services and office supplies, the rest being front line expenses like payroll, travel, tolls and fuel.

Fintech are gaining market share in the business payment market

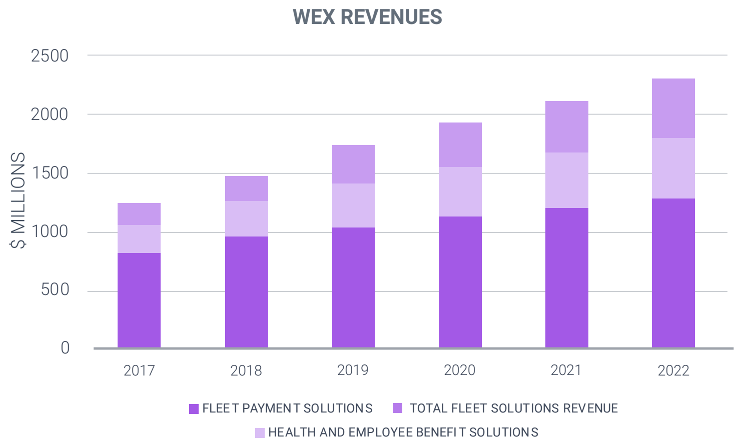
Financial technology companies simplify the way corporates pay and manage their expenses helping them to automate, secure, digitize and control their front end payments saving time and money.

- They mostly give front-line employees the ability to pay for all kind of expense through corporate payments cards.
- The link between a specific card and an individual employee gives the employer the ability to monitor spending efficiently and adjust limits when needed.

Wex manages travel, corporate and health expenses in a single platform

Wex, with strong competitive positions in each of its segments thanks to functionality, servicing capability and price, is the undisputed leader in Fleet Solutions. Through acquisitions it is now carving out an important presence as well in the Travel & Corporate and Health Solutions markets.

- Recently Wex has bought Noventis, a bill pay asset and Discovery, a benefits administration servicing solution provider.



MOBILE PAYMENTS

Fleet Solutions

Fleet-cards: a no-brainer choice

Fleet cards allow fleet managers to control the most significant variable expenditure of a fleet better. Specialized reporting then simplify administration and increase efficiency

- Employers can limit the amount, type, and the number of fuel transactions, as well as eliminate frauds and unauthorized purchases.

Fleet card market

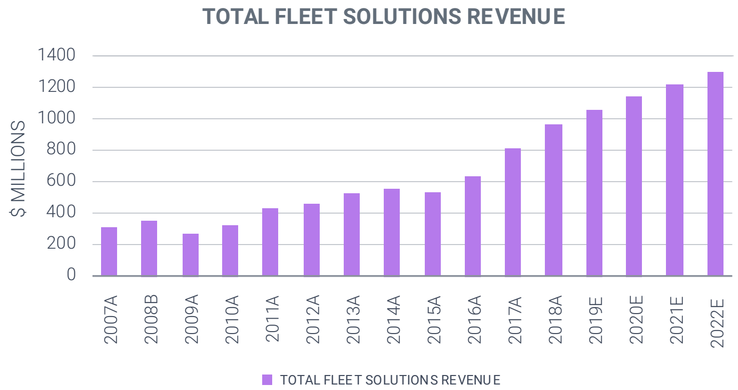
There are 335mn commercial vehicles in the world, and Wex identifies 147mn of them as their Total Addressable Market (TAM). The fleet card market is under-penetrated, and the industry is ripe for innovation and consolidation.

- With an installed customer base of 12.4mn vehicles, Wex's market opportunity remains very appealing.
- Fleet cards account for less than 50% of U.S. fleet fuel spend today and way less outside the U.S.

Wex's Fleet Solutions Business competitive advantage

Wex is continuing to outperform the fuel card market thanks to the dominant size of its closed-loop fuel networks in both the U.S. and Australia, covering 90% of fuel stations.

- They have a direct contractual relationship with both the merchant and the fleet, and only Wex transactions can be processed on these networks.
- They have strategic relationships with five of the largest U.S. fleet management providers and nine of the top 10 major oil companies that use their private label solutions.



SOURCES:
iResearch, National Institution for Finance and Development, PwC, OECD, Fitch, AtonRâ Partners

Travel And Corporate Payments

B2B payments are accelerating away from check

Wex's travel and corporate business solutions benefit customers by streamlining account payables and reconciliation processes.

- They integrate seamlessly into the customer's payments system, quickly assessing the status of outstanding and historical payments with an intuitive dashboard and standard reports.
- They create single-use virtual card numbers for each invoice with a specific amount limit and expiration day for more secure payments.

Travel and Corporate Solutions business market

Travel and Corporate market is assessed at $9bn of which Wex has a 3% penetration rate, and management is targeting organic growth of 10-15%.

- Their strategic relationships include four of the largest online travel agencies in the world.

Wex's Travel and Corporate Payments solutions competitive advantage

Wex runs a very large, complex software stack sold as a white label to its financial institution partners. They work directly with large corporate themselves powering their account payables files to pay suppliers and providers.

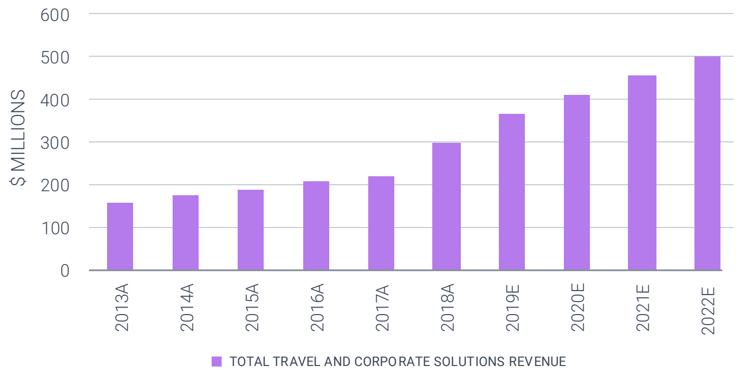
- They also serve customers with payment-in-a-box service, mainly with virtual cards.
- Their best-in-class technology capabilities allow them to have no currency constraints, no scheduled downtime, and account set-up in minutes.

TRAVEL & CORPORATE PAYMENTS AT A GLANCE

Travel		
Market size		$1.6B
Issued spend		Mid- high Twenty billions
Currencies		21
Countries		210
Key operating segments:		
Online Travel Agencies (OTAs)	Corporate Travel Managers (TMCs)	Travel Wholesalers (Bed Banks)

Corporate Payments		
Market size		$7.5B
Issued spend		Mid-high Single digit billions
FI Partner spend		~$25B
V-card Endpoints		2.5M+
Key operating segments:		
Corporates	Financial Institutions	Partners

TOTAL TRAVEL AND CORPORATE SOLUTIONS REVENUE



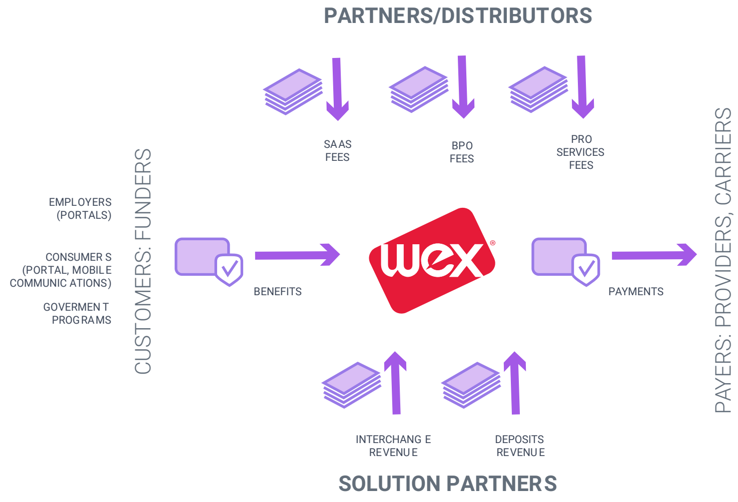
MOBILE PAYMENTS

Health Solutions

Expanding into Healthcare expense management

Wex provides a SaaS product to support healthcare benefit programs and the better management of healthcare expenses. The company has relationships with approximately 343k employers, reaching 28mn consumers.

- Revenue is generated primarily from SaaS-based monthly fees to partners and interchange fees from spending on customer debit cards issued.



Health growing at a fast pace

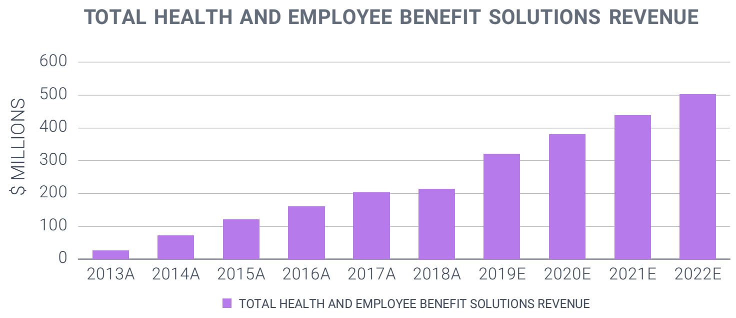
The Health Solution business represents 18% of sales for Wex, and management expects to continue gaining share, targeting organic growth of 15-20%, making it their fastest-growing business unit.

- Wex sees a $2.4bn Health total addressable market, growing low to mid-teens, of which it has 9% penetration.
- More than 50% of the Fortune 1000 companies are already on the Wex Health Cloud platform.
- Thanks to their partnership with Paychex, Wex is now targeting smaller employers.

Wex's Health Solutions competitive advantage

Through the acquisition of Evolution1 in 2014 and Benaissance in 2015, Wex Health has become a leading provider of cloud-based healthcare payments technology.

- Their large partner network allows them to cross-sell new products effortlessly and to have the firepower to innovate continuously.
- The company benefits from revenues predictability and a high retention rate thanks to its best-in-class SaaS business model.



MOBILE PAYMENTS

Catalysts

- **Integration of Chevron in U.S. and EG Fleet in Europe.** 2020 will be a year in which the integration of the west coast portfolio of Chevron and the recent EG fleet portfolio acquired in Europe should provide above market growth to Wex fleet business.
- **Consolidation in the Digital Corporate Payments market.** Wex announced the acquisition of eNett (B2B payment solutions for the travel industry) recently, and Optal (B2B transactions), for $1.7bn. We expect more acquisitions as this is still a fragmented market.
- **Consolidation in the Health Solutions Market.** Wex management expects that last year merger of HealthEquity, US's largest independent health savings account ("HSA") and WageWorks, a leader in administering HSAs and complementary consumer-directed benefits ("CDBs"), will drive further consolidation.

Risks

- **Fuel Price Fluctuations.** Wex revenues are directly correlated by fuel prices. A $0.10 move in fuel prices drives $14-15M of revenues and $0.20 of EPS upside/downside.
- **Electric Vehicles adoptions.** Wex is trying to diversify its business away from the Fleet Solutions as they are aware that their competitive advantage is at risk as EVs take a growing share of the commercial vehicles pool.
- **Debt could become an issue if interest rates increase.** Wex has an Interest Coverage Ration of 6.2x but given that $2.4bn of its debt is floating, an increase of interest rate could quickly become a problem.

Bottom Line

- Wex Inc., a global leader in corporate payments solutions, is well positioned to take advantage of corporates' need to simplify their payments systems in order to reduce costs, lower frauds and improve their accounting capabilities.
- We recently added Wex Inc to our Mobile Payments portfolio.

Companies mentioned in this article:

Benaissance (Private), Discovery (Private), eNett (Private), Evolution1 (Private), FleetCor (FLT US), HealthEquity (HQY US), Noventis (Private), Optal (Private), WageWorks (WAGE US), Wex Inc (WEX US)

REMOVING CO_2 FROM THE AIR

Carbon Capture At A Glance

Multiple methods already exist

Removing CO_2 from the atmosphere is possible with techniques ranging from the natural ones: e.g. planting trees, restoration of marine habitats, enhancing soils, to more advanced processes involving capture from a fixed point source or directly from ambient air.

- Captured CO_2 can be sequestrated or used as a feedstock for the production of fertilizers, biofuels, polymers, concrete, etc.
- Processes involving the high concentration of CO_2 e.g., ammonia, steel, hydrogen or natural gas processing, represent 90% of all carbon captured.

Urgent Action Is Needed

Most industry experts have pinned their hopes on carbon capture technologies for meeting climate targets, putting the whole sector on the spotlight.

- In its Sustainable Development Scenario, the International Energy Agency (IEA) estimates 2.8bn tons/yr of CO_2 to be captured by 2050.
- The number of CCUS industrial-scale facilities will have to increase from 19 to +2’000 by 2040.

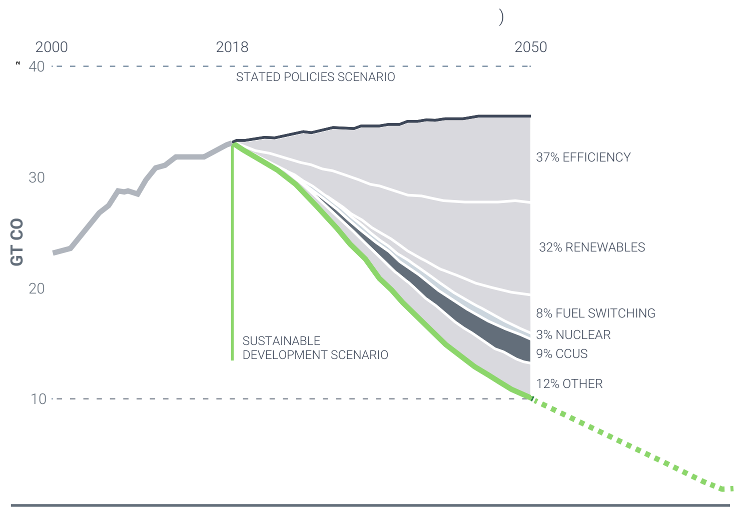
A Nascent But Promising Industry

With less than 0.1% of the world’s total CO_2 emissions captured, the Carbon Cap- ture Uti- lisation & Storage (CCUS) industry is at its infancy. Ramping up the sector to match optimistic climate scenarios, would require investments of hundreds of billions USD.

- Of the 40bn tons of CO_2 emitted last year, only 39mn tons were captured.
- By 2030, the Global CO_2 Initiative estimates 7bn tons/yr of CO_2 captured.

SOURCE:
Global Status of CCS 2019, Global CCS Institute
Putting CO_2 to Use, IEA, 2019

EMISSIONS REDUCTIONS IN THE IEA'S SUSTAINABLE DEVELOPMENT SCENARIO (SDS)



NOTE: CCUS (CARBON CAPTURE UTILISATION AND STORAGE)

A Spotlight On The Technology

Capture, transport, store or use it

CO_2 first needs to be captured, either directly from the air or separated from the gas produced at industrial processes. It is then compressed & transported to either be stored underground, directly used, or converted for later use.

- Today, 57% of the captured carbon is used in urea manufacturing for fertilizers.
- The remaining is mostly used for enhanced oil recovery, where CO_2 is injected into oil fields to improve extraction.

Cost is key

The viability of CCUS technology is highly correlated with carbon prices. Economics varies depending on where CO_2 is sourced, its purity, and the volumes captured by the facility.

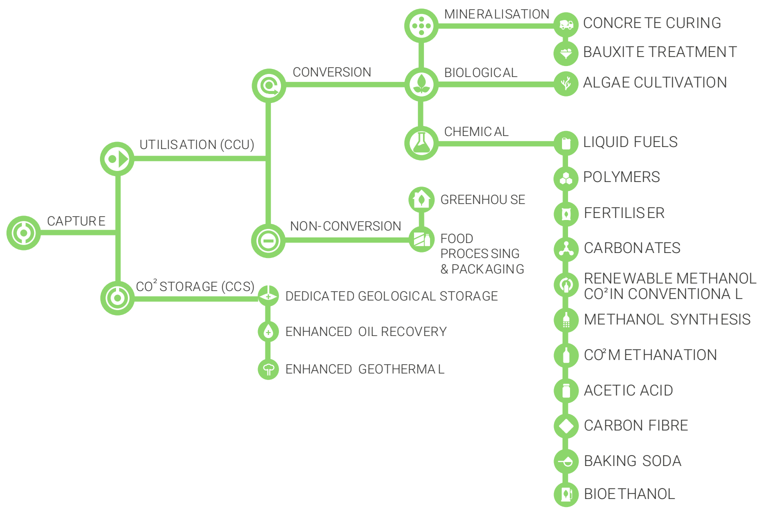
- The cost for CO_2 capture can vary from around $20 to above $100 per ton.
- Ammonia production emits high-purity steams of CO_2, which can be used at almost no-cost to make urea.

First, grab the low hanging fruit

In many industrial verticals, the separation of CO_2 is part of the production process. We believe that the opportunities will emerge in applications where small investment is required.

- Hydrogen production from steam methane reforming, ethanol production, or natural gas processing all produces high-purity CO_2 streams that can be easily used.

UTILISATION AND STORAGE PATHWAYS



SOURCE:
Global Status of CCS 2019, Global CCS Institute
Putting CO_2 to Use, IEA, 2019
20 Years of Carbon Capture and Storage, IEA, 2016

Scale Up Or Die Trying

A drop in a bucket

The biggest challenge for CCUS is its scale. Currently it is nowhere near enough to have a meaningful impact on global warming.

- Economies of scale could cut the unit cost of CCUS by half.
- Absorption of CO_2 in cement, hydrogen, and algae-based biofuels are new areas to be developed.

Government support is needed

Policymakers support CCUS through tax credits, carbon taxes, or direct investments in new projects. We believe that increasing incentives are essential for reaching economic viability.

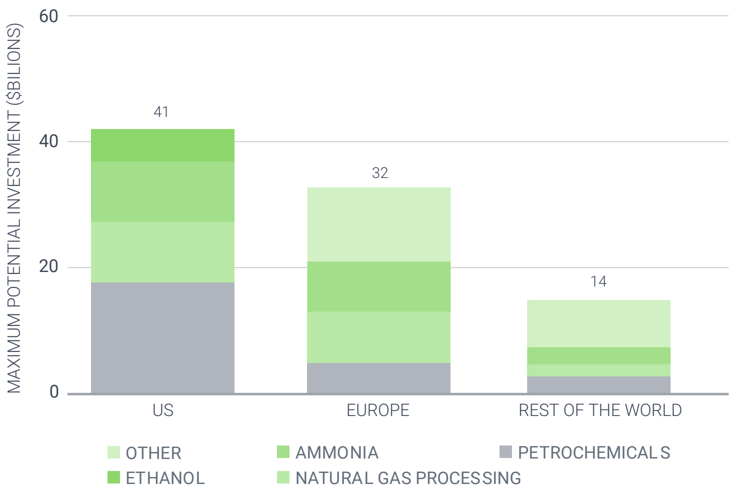
- In 2018, the U.S. expanded its 45Q tax credit by granting $35 per ton of CO_2 captured & used commercially and $50 per ton permanently sequestered.
- The E.U. Emissions Trading System (ETS) allows companies to trade their “emissions allowances”.

A hundred-billion-dollar industry

Government incentives and new opportunities could generate up to $90bn in new investments over the next decade.

- Only 19 (13 in the U.S.) large-scale CCUS facilities (>400’000 tons/yr of CO_2 captured) are in operation, whereas 32 are in development.
- Bypassing the price of sequestrating from all transport-based CO_2 emissions on oil production would increase the barrel price by roughly $58 (see details on the next page).

UP TO $90BN OF CCUS INVESTMENT IS POSSIBLE OVER THE NEXT DECADE



SOURCE:
Global Status of CCS 2019,
Global CCS Institute

Are We Ready To Pay $58 More In Crude Oil Prices To Offset All Transport-Related CO_2 Emissions?

A simple calculation gives the order of magnitude

Here below we provide a simplified calculation on what would be the extra cost per Oil barrel if all transport-related CO_2 capturing costs were included.

Basic Data

- Transport-based CO_2 Emissions = 8bn tons per year
- World oil production = 94.72mn barrels per day

Assumptions

- Geological storage availability is not a limiting factor.
- CO_2 is being captured mainly from power generation and industrial processes (iron & steel, cement, and chemicals).
- The cost of carbon sequestration is estimated at $250 per ton (as per IEA Clean Technology Scenario).

Results

- Cost to sequestrate all transport-based CO_2 emissions:

$$8 \times 250 = \$2'000\text{bn per year}$$

- Derived additional cost for each barrel of Oil:

$$\frac{2 \times 10^{12}}{94.72 \times 10^{6} \times 365} = \$57.58$$

SOURCE:
https://www.iea.org/reports/tracking-transport-2019
https://www.statista.com/statistics/265203/global-oil-production-since-in-barrels-per-day/
https://www.iea.org/reports/the-role-of-co2-storage

Catalysts

- **Corporate Push.** Companies will increasingly see CCUS as a way to clean up their image. The latest example being Microsoft pledging to become carbon-negative by 2030 & invest $1bn in carbon capture.
- **Rising Carbon Tax.** A carbon price of $40 per ton (current $25) would increase carbon capture volumes by ten folds (IEA estimates). In the E.U., the Carbon tax goes to the Innovation fund, which then finances CCUS projects.
- **Next-Generation Tech.** Innovative carbon capture technologies are being implemented in pilot projects, e.g. Ion Engineering's non-aqueous solvent or Linde-BASF's advanced aqueous amine solvent, creating "learning-by-doing" momentum driving the costs down and fostering CCUS takeoff.

Risks

- **High upfront costs.** CCUS facilities incur high upfront costs which are not economically viable today for most applications.
- **Public Concerns.** While carbon capture & storage technology is gaining in popularity, local populations might become concerned about potential safety risks associated with geological carbon sequestration.
- **Low Carbon Price.** If carbon price is too low, it would be more profitable for large industries to keep polluting & pay carbon taxes vs. deploying the required carbon capture technologies.

Bottom Line

- Carbon capture is a nascent but promising industry which could surely contribute to climate change mitigation.
- Today's main actors are either out of our scope (oil & gas and big chemical companies) or small non-listed companies (e.g., Climeworks in Switzerland). Nevertheless, we keep the whole CCUS sector on our radar as part of our Sustainable Future universe.

Companies mentioned in this article:

BASF (BASF SE), Climeworks (not listed), ION Engineering (not listed), Linde (LIN US)

TESLA – AN INNOVATOR PROPELLING INNOVATION

Out Of The Storm To Bring New Light

Financial instability a ghost of the past

Tesla went through "hardcore" cost-cutting efforts and solved its delivery issues. Its cash position benefitted, and its business has become financially sustainable.

- It laid off 9% (June 2018) and 7% (January 2019) of its workforce.
- Units delivered almost doubled from 1Q19 to 4Q19.
- Sales reached 367k units in 2019, a 15% share in the Electric Vehicles market.

Electric Vehicles inching closer to the masses

Combustion-engines vehicles are not the cheapest alternative anymore , as Tesla has been able to offer competitive pricing along with stunning performances.

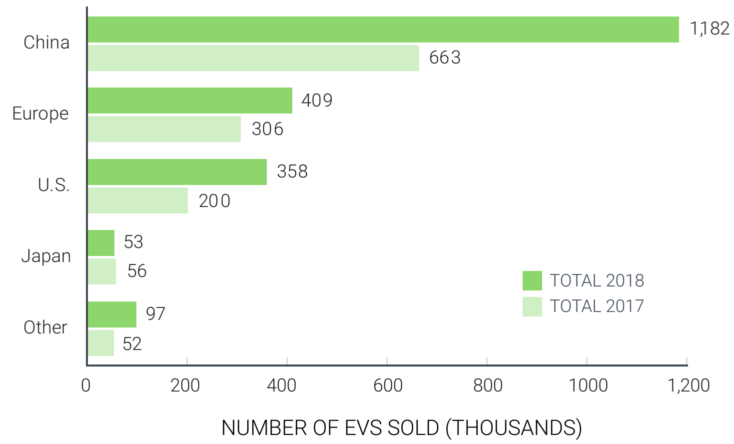
- Model 3's sticker price is aligned to well-known models such as Audi A4's, BMW 3-Series, and Mercedes C-Class – all hovering at around US$39k.

Potential is still huge

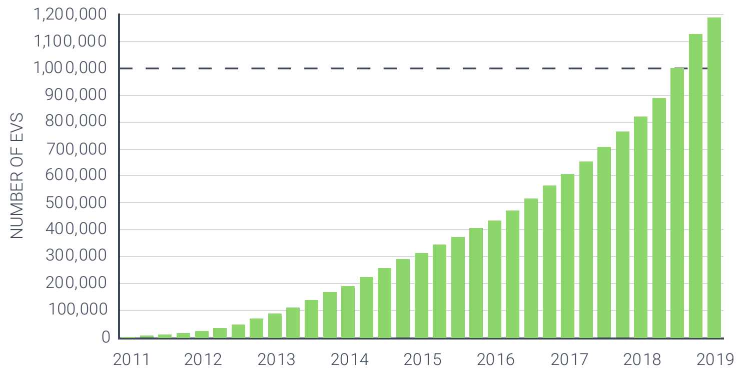
Electric Vehicles still represent a tiny fraction of all cars, but market share is increasing fast. The U.S. and China are the fastest-growing markets.

- 1.2mn EVs were on the U.S. roads at the end of March 2019, a market share of 1.8%.
- 2018 EV sales increased by 79% y/y in the U.S., 78% in China, and 34% in Europe.

GLOBAL EV SALES 2018 VS. 2017



ELECTRIC VEHICLES ON THE ROAD IN THE U.S.



SOURCE:
https://www.eei.org/issuesandpolicy/electrictransportation/Documents/FINAL_EV_Sales_Update_April2019.pdf

A Bright News Flow

2020 guidance to confirm Tesla turned the page

Data reported during the last quarterly earnings confirmed that sustainable cash flow generation maybe finally in reach, even though capital expenditure still needs close monitoring.

- 2020 deliveries are to exceed 500k units comfortably.
- Capital expenditure of $1.3bn was significantly lower than guidance, contributing to positive free cash flow ($1.1bn) in 2019.

Capacity expansion to settle delivery issues

New Tesla's factories (China and Germany) will enable more efficient and faster production compared to its California plant.

- The two factories will add 1mn vehicles overall. China's is already live, whereas Germany's will be ready by 2021.

Room for boosting Tesla's competitiveness further

The increased production volumes will bring economies of scale already in 2020, and location will also help with pricing and margins.

- Model 3 produced in China may be priced up to 20% lower thanks to reduced production costs.

SOURCE:
https://www.gartner.com/en/newsroom/press-releases/2019-11-14-gartner-forecasts-more-than-740000-autonomous-ready-vehicles-to-be-added-to-global-market-in-2023

Catalysts

- **Model Y launch.** Model Y has 75% of parts in common with Model 3, and thanks to improved manufacturing, is cheaper to produce than Model 3's.
- **Chinese factory ramp-up.** Trigger lower ASP, and overall Model 3 margins will improve once the Chinese facility starts to expand production.
- **AV/robotaxi platform.** Tesla expects to launch the first robotaxi in 2020. The company will charge a 25%-30% commission on revenue rides.

Risks

- **CyberTruck not complying with European regulation.** As presented, the vehicle would likely fail the automotive testing and safety protocols.
- **Subsidy cuts in China.** Beijing plans to phase out subsidies to new energy vehicles after its 5-year program ends this year.
- **Delay in the German factory construction.** Strikes in Germany are ongoing as environmental concerns have been raised about the designated site.

Bottom Line

- Tesla solved the biggest issues affecting the company: deliveries and financial sustainability. The company is moving on in increasing production scale through its Chinese and, soon, German factories.
- Tesla pioneered the affordable EVs market and still leads the race.

Companies mentioned in this article:

Tesla (TSLA US)

CHARTS FOR THOUGHTS

Coronavirus - Spreading Market Volatility?

Spreading alarmingly fast

The initial data about the Coronavirus pandemic were showing a geometric progression of about 50%, with resulting projections pointing to >1mn cases in a very short timeframe (less than a few weeks).

- The initial progression rate is the equivalent of each infected person spreading the contagion to about 2.5 persons: a rate considered normal and "average" in the initial phases of most pandemics.

Dangerous and deadly

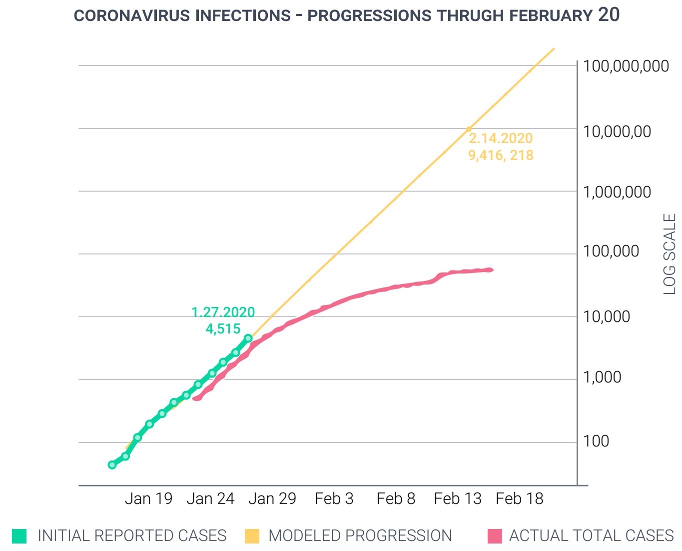
News headlines focused on the reported cases of death from Coronavirus. As for all new form of viruses, there is no immediate cure available and initial cases are at a higher risk of misdiagnosis. As the numbers become statistically significant, they fall back to the norm.

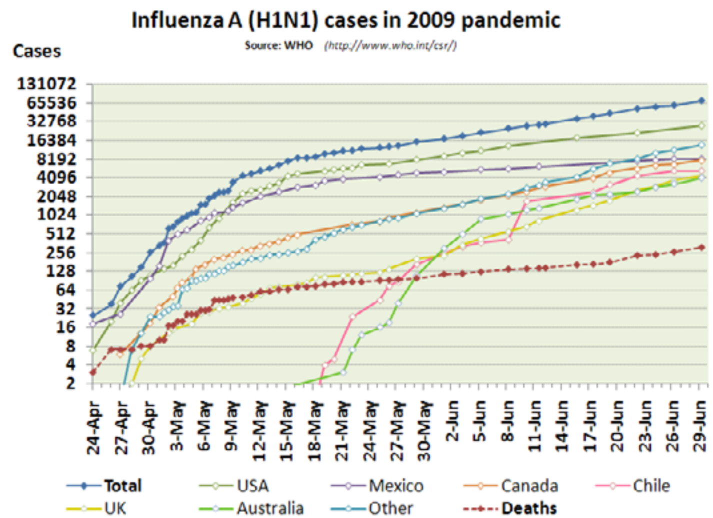
- Mortality rates hover at 2-3%.
- Confirmed «serious» cases are about 20%.

Markets reacting to the threat – are they?

Financial markets did show volatility as the pandemic was making headlines across the world and financial commentators were quick to point the two as correlated. Indeed the pandemic is not fully under control, and no suitable cure is yet on the horizon – as a risk-pricing mechanism, markets may be simply doing their job.

- But statistically savvy investors know that correlation does not imply causation.





SOURCE:
https://www.biancoresearch.com/coronavirus-growth-rates-and-market-reactions-2/
https://www.worldometers.info/coronavirus/
https://en.wikipedia.org/wiki/2009_flu_pandemic_by_country

CASUAL FRIDAY

SOURCE:
http://spikedmath.com/568.html

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AtonRâ Partners is a conviction-driven asset manager combining industrial and scientific research with financial analysis. AtonRâ Partners focuses on long-term trends powerful enough to be turned into thematic equity portfolios.

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