CREDIT SUISSE

The Future. Now

Investing for
the long term

Supertrends

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Foreword

Dear Client

I am pleased to present Credit Suisse's Supertrends, the long-term investment themes our Research specialists have carved out for you.

These themes, based on our House View, link long-term trends like the political change in Western countries, demographic shifts or rapid technological progress to concrete investment opportunities geared to the long term. They provide a tangible link between today's major developments and investors' portfolios and, I believe, can improve portfolios' risk/return profile in the long run. They enable us as a bank to connect societal needs – take infrastructure – with funding by private investors, while providing the latter with sound investment ideas and sources of yield and return.

In-depth knowledge of the issues at stake, investment expertise and a vision to create tailored investment solutions – this is the contribution financial institutions such as Credit Suisse can make for clients.

I trust you will find the Supertrends and investment ideas interesting and relevant.

Michael Strobaek
Global Chief Investment Officer
Credit Suisse

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Editorial

The Future. Now

Investing for the long term

As investors wonder how to best handle high valuations of many assets, they automatically turn to thematic investments that can benefit from long-term societal trends.

The expectation is that such investments do not depend as much on the daily ups and downs of the financial markets, but seek to profit from the predictability and sustainability of multi-year trends. Demographics, transformational socioeconomic and political developments as well as technological and scientific progress are at their core.

In this context, we are presenting Credit Suisse's Supertrends: Angry Societies – Multipolar World, Infrastructure – Closing the Gap, Technology at the Service of Humans, Silver Economy – Investing for Population Aging and Millennials' Values are the long-term themes we expect to dominate in the coming years and provide investment opportunities.

Supertrends are the fruit of the collective expertise of Credit Suisse's Investment Strategy & Research. I hope you find our work inspiring and useful.

Dr. Nannette Hechler-Fayd'herbe
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Angry Societies – Multipolar World

Rising inequalities within Western countries and frustration over perceived or real failures of the political establishment to deal with current societal challenges are leading disenchanted middle class voters to demand change. This brings to power governments with strong mandates for a policy more oriented to support the domestic economy, create jobs at home and address some of the pain points of the Western middle class.

In short

The years of hyperglobalization helped reduce inequalities across countries but raised inequalities within countries, leading to the social disenchantment that is now driving political change in many Western countries. Looking ahead, we expect a period characterized by economic policy that seeks to support domestic consumers and redistribute growth to sectors with high domestic employment. This will likely shift the spotlight to national champions and brands, defense and security and emerging market consumers, areas we consider multi-year investment themes.

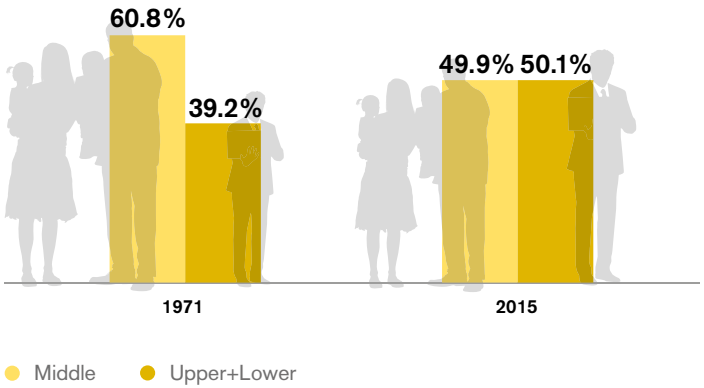
1.1 Disenchanted Western middle class

Since the financial crisis of 2008, inequalities have grown globally, not so much among countries but within them, and especially in the developed countries. The economic policy mix of fiscal austerity and very loose monetary policy adopted in most developed economies to face the crisis proved particularly detrimental to the Western middle class. Tough labor market conditions with persistently high unemployment and stagnating incomes following the economic recession were exacerbated by ↗ **hyperglobalization** and disruptive technologies. This combination left many middle class households permanently worse off after the crisis. In stark contrast, the wealthiest 1% of households at the same time significantly increased their wealth, which led to the widespread sense among the Western middle class of having lost out the most in the last eight years.

↗ **Keywords** see end of chapter.

Figure 1

Middle income Americans are no longer the majority
Adult population by income tier



Source: PEW Research, Credit Suisse

Furthermore, that same middle class grew more and more frustrated about the apparent inability of the political establishment to deal with key problems such as seemingly uncontrolled migration and the rise of terrorism. This led citizens across the developed world to mobilize to drive political change, the results of which have become increasingly apparent. In the UK, a majority of voters said yes to exiting what many saw as an estranged European Union. In the USA, voters elected president a political outsider who vowed to break with political traditions. In the Eurozone, there is strong support for political leaders who are ready to tackle the current economic and societal problems. Newly elected governments have strong popular mandates and can be expected to keep their electoral promises. Therefore, the next 4–7 years are likely to bring about economic policy measures aimed at appeasing the Western middle class in the developed markets.

1.2 Issues important to the Western middle class

The middle class attaches great importance to safety and security, whether it is job security or simply individual security. Therefore, we believe that incoming governments will seek to strengthen domestic economies through job creation, wage increases and potentially regulation or taxation of industries that are seen as eliminating jobs. These new governments are likely to strive to restore the prosperity of the middle class, invest in national security and defense and stimulate private consumption. Investors can expect sectors and companies that benefit from such policies to see an upswing in sales, revenues and market valuations.

1.3 Focus on national champions and brands

So-called national champions spring to mind in this context. These companies can be the subject of soft mercantilist measures like government incentives to build factories at home, of public shaming if they outsource production, of a reduction or suspension of corporate taxes if they invest domestically. Such large companies have an inherent multiplier effect that politicians can use to drive their agenda. National champions further employ a large workforce in their home market. This reduces their vulnerability to protectionist measures and dependence on globally integrated manufacturing processes. Finally, national champions generally are a strategic interest for their home country.

In the present context, strategically important industries are likely to create jobs for low-skilled workers, the "forgotten" group in Western societies. Such industries include **general manufacturing, construction, telecom equipment** and **IT manufacturing.** A second important group includes **manufacturers of cars or airplanes** that employ a large part of the domestic workforce. Beneficiaries of "buy local" initiatives can be found in the **materials sector** as well as the **retail** and **wholesale industries. Healthcare in Europe** is seen as a future job creator for better-educated young workers considering the demographic trends of the continent. Moreover, the sector is considered a preferred employer among Millennials, according to the ↗ **NSHSS Scholar 2016 Millennial Career Survey.**

National brands, meanwhile, are an extension of the national champions. Such brands are well recognized, have global reach and recognition and are associated with a national champion. They therefore have diverse revenue streams and a loyal customer base that is inclined to stick with the brand even if protectionist measures push up prices. National brands are important because they enjoy the benefits of political lobbying to broaden their global reach. Most national brands are found in the **consumer sectors.**

Investor takeaways see end of chapter.

1.4 Spotlight on security and defense

Politicians naturally focus on defense companies since they are the main recipients of government grants for defense contracts. A second driver of increased defense spending goes beyond domestically oriented job creation. As geopolitical uncertainties and tensions between military heavyweights rise, the balance of power continues to shift. After the end of the Cold War, the world enjoyed more than 30 years of "Pax Americana," with the USA the dominant military superpower and European NATO member states undergoing a major demilitarization. As a result, European NATO countries' defense spending today is just 1.5% of GDP compared to 3.6% in the USA, 2.1% in China and 4.5% in Russia. As part of the shift to a more multipolar world, recent years have seen regional powers become increasingly assertive in their desire to increase military influence in areas that they consider strategically or politically important. The new US administration, for instance, has proposed the following:

1. Increased US defense spending. According to US President Donald Trump's first draft budget, defense spending is slated to grow by USD 52.3 bn in 2018 – an increase of 10% and about as much as the entire annual defense budget of Russia. The biggest spending increases are proposed for **aircraft procurement** (+11.6%), **conventional weapons systems for the army** (tanks, trucks, etc.), as well as **research and development of new weapons systems.** Additional funds have been earmarked for the fight against ISIS.

2. Increase of USD 1.4 bn or 11.3% for the National Nuclear Security Administration (NNSA) in the Department of Energy. The NNSA maintains the nuclear arsenal of the USA. The additional funds are to be used for research and development as well as life extension of existing nuclear warheads.

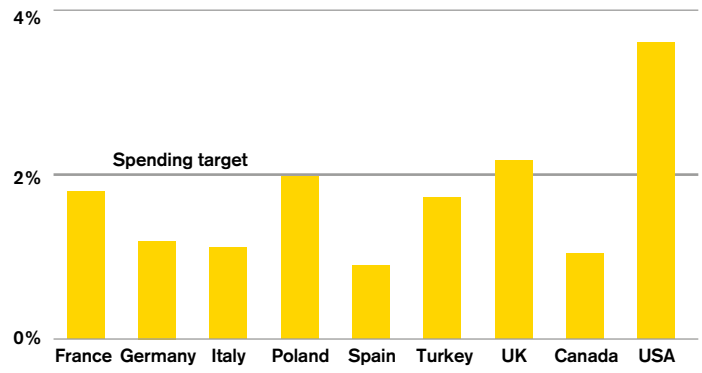
3. Increased pressure on NATO allies to fulfill the NATO target of defense spending at or above 2% of GDP and equipment spending at or above 20% of defense spending.

4. The proposed budget expansion for the Department of Defense and the Department of Energy's NNSA is heavily geared toward the fight against terrorism, particularly in Iraq and Syria. This requires not only the **procurement of airplanes, helicopters and drones,** but also an increased focus on research and development as well as ↗ **cyber security.**

In Europe, NATO guidelines call for defense spending of a minimum of 2% of GDP. Of the biggest European NATO members, only the UK and Poland currently meet this target. Particularly Germany, Canada and Spain spend much less, typically around 1% to 1.5% of GDP. Germany and France, the two nations that have an increased need for defense spending and have pledged to increase their defense budget to meet the NATO targets, account for about 5% of all defense spending by NATO. Higher spending of these two countries will likely drive **European defense companies'** earnings.

Figure 2

Defense expenditure as a share of real GDP (%)



Source: NATO, 2016, Credit Suisse

We also expect technology to be increasingly used for civil security. In this regard, urban safety, safety of traffic and, of course, the protection of health and human lives are key priorities. The market for homeland security technology is thus expected to grow rapidly. **Explosives detection, infrastructure protection and surveillance of public places** are among the areas where IT **hardware and software** such as **drones, robotics and artificial intelligence algorithms** come into play. Significantly improved semiconductors and the expansion of the **Internet of Things (IoT)** provide new means to protect societies against new security threats. According to research and consultancy firm MarketsandMarkets, the information security market will grow to USD 170 bn by 2020 from USD 70 bn today.

1.5 Increased focus on EM consumers

Since emerging markets (EMs) were the big beneficiaries of the decade of hyperglobalization, it is often assumed that they would suffer in a more multipolar world. However, EMs are not as exposed to international trade as people generally think. While the exports of countries like South Korea and Argentina account for more than 50% of GDP (similar to Switzerland), in a majority of EM countries, exports only make up a third or less of GDP. Furthermore, EMs have a powerful domestic growth driver: their own consumers. In fact, many EMs are now at a stage of development where they can transform into more consumer and services-driven economies. China is a case in point. We expect the EM consumers to be at the heart of policy focus in the future.

At Credit Suisse, we have for years researched the developments in emerging market consumers. Our latest Emerging Market Consumer Survey yielded the following conclusions:

1. Improving consumer sentiment: Consumers' responses reveal that there is more optimism when it comes to personal finances, the possibility of a major purchase and the outlook for inflation. Economies in Asia are currently best positioned to improve personal finances. India, Indonesia and China lead when all sentiment indicators are aggregated. This trend is also visible in commodity-exporting nations such as Brazil, South Africa and Russia.

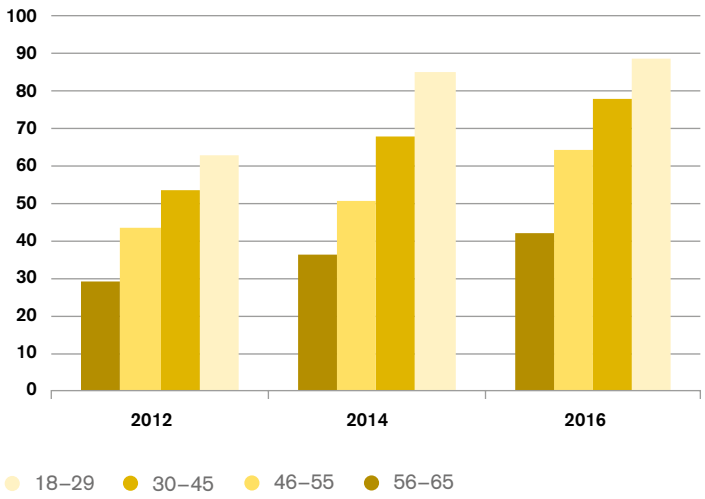
2. Pick-up of discretionary spending: This is already visible in **vehicle sales,** which are growing at an annual pace exceeding 20%. Survey responses suggest that the outlook for discretionary spending remains positive, with spending intentions strongest in categories such as **holidays, fashion items and personal care products.** Spending intentions for holidays are particularly strong, though they are mostly focused on **domestic travel.**

3. Consumers turning to domestic brands as the US dollar strengthens: The US economy has been in expansion for nearly eight years, and the US Federal Reserve has started to tighten monetary policy. This has put upward pressure on the US dollar and downward pressure on commodity prices, which are the main exports of many emerging economies. As a result, the terms of trade for emerging markets have tended to deteriorate. Domestically produced items are therefore becoming more attractive. National consumer champions will likely benefit from this trend. **Indian** consumers, for example, report a strong and growing preference for **domestically produced auto brands.** The strength of domestic brands is not just the result of increasing reliability and lower prices, but at times also regulation. In **Brazil,** for example, the **pharmaceutical** market is dominated by **domestic players** thanks among other factors to stringent regulatory requirements that protect the market from imports.

4. Healthier and more connected: More affluent lifestyles and demographic change are giving rise to a trend toward healthy living. Consumers surveyed this year are reporting a strong willingness to spend on **skincare, quality food and sportswear.** Declining consumption of unhealthy products including tobacco and alcohol appears to be a broad-based trend. Furthermore, consumers are increasingly connected. In Brazil, 91% of those surveyed have internet access. 57% of low-income consumers had internet access last year, compared to just 36% in 2012. Younger generations, including Millennials, are significantly more likely to be connected (Figure 3). In addition, nearly a third of consumers shop online today, a share that has more than doubled since 2011.

Figure 3

Consumers with internet access by age group (%)
Growth across all cohorts



Source: Emerging Consumer Survey, 2017, Credit Suisse

Investor takeaways

The key beneficiaries of this first supertrend are, in our view:

- manufacturing, construction, telecom equipment and IT manufacturing producers in industrialized countries, materials, retail and wholesale industries and healthcare companies in Europe
- aircraft producers, conventional and new weapons system providers, cyber security companies, surveillance system and data managers and European defense companies
- EM domestic travel and holiday providers, selected domestic auto, pharma and consumer brands and e-commerce companies, international fashion, personal care, quality food and sportswear companies

For more information, please contact your Credit Suisse advisor.

Hyperglobalization
Driven by technical innovations, the global economic system is rapidly evolving into a single, fully integrated market.

The NSHSS Career Survey incorporates the opinions of more than 13,000 high school and college students as well as young professionals in the areas of career choices, employers, workplace environment, communications, educational goals and global issues of importance.

Cyber security is the protection of computer systems from the theft or damage to their hardware, software or information, as well as from disruption or misdirection of the services they provide.

Infrastructure – Closing the Gap

A global wave of new infrastructure programs has captured the attention of investors. From India to the USA, governments have turned to infrastructure spending as a means to stimulate domestic economic growth. We review the opportunities for investors as infrastructure spending programs develop and gradually move our focus from transport infrastructure – which has been the first priority of many governments – to water, energy and affordable housing.

In short

The need for infrastructure spending is clear, as is the political will to invest in infrastructure projects. Investors also appear ready to allocate capital to infrastructure spending. However, it is challenging for investors to find ways to benefit from such opportunities. We continue to maintain a list of equities related to infrastructure spending, but as the first direct beneficiaries of transport infrastructure spending have seen equity values price in heady expectations for future earnings growth, we turn our attention to housing and energy infrastructure as the next beneficiaries. Investors can consider direct participation in infrastructure projects or investments in infrastructure funds.

2.1 An ideal economic policy tool

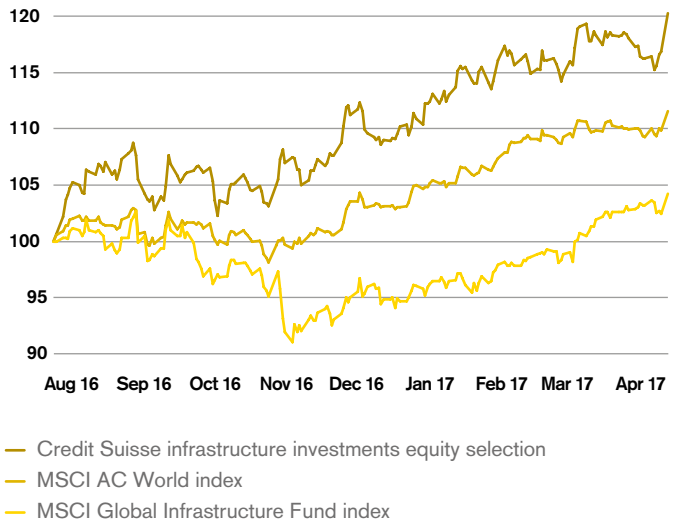
In August 2016, we identified infrastructure as an investment theme which we believed would garner greater attention from the capital markets. The rationale was that the effects of unconventional monetary policy were wearing off, and there was an increasing consensus that a mix of expansive monetary policy and fiscal policy was needed to get out of the global gloom trap. Thus it seemed sensible to advise clients to consider infrastructure exposure in their portfolios. After all, infrastructure investments typically lead to job creation. Moreover, they are a strong economic multiplier, leading to productivity gains. With real rates in many parts of the world still negative, the environment is ideal to fund infrastructure projects.

There are multiple ways to gain exposure to infrastructure investments, depending on investors' risk appetite and tolerance of illiquidity. The most straightforward route for private investors is to focus on sectors and companies that would benefit from a policy focus on infrastructure, screen them against their company fundamentals and invest in those stocks that screen attractive. This strategy has worked well. The Trump administration's pro-growth policy plans have given infrastructure equities a material boost in recent months. The selection of stocks with earnings exposure to infrastructure spending that we actively manage is up 18% in USD since last August.

We believe that infrastructure investments in listed equities remain interesting and would also like to remind investors that the USA plays only a small part of a global trend. China, for example, spends around CNY 9 trn (USD 1.3 trn) a year on infrastructure. However, valuations of most equities exposed to infrastructure spending now largely capture the potential, and further investing requires a focused approach. So let us look at the potential for various types of infrastructure spending, in particular transport infrastructure, affordable housing and energy infrastructure. We see direct equity participation in commercial infrastructure projects as particularly interesting for long-term institutional investors like pension funds. However, specialist knowledge is key given several risks and challenges.

Figure 1

Credit Suisse infrastructure investments equity selection
Total returns (in USD)

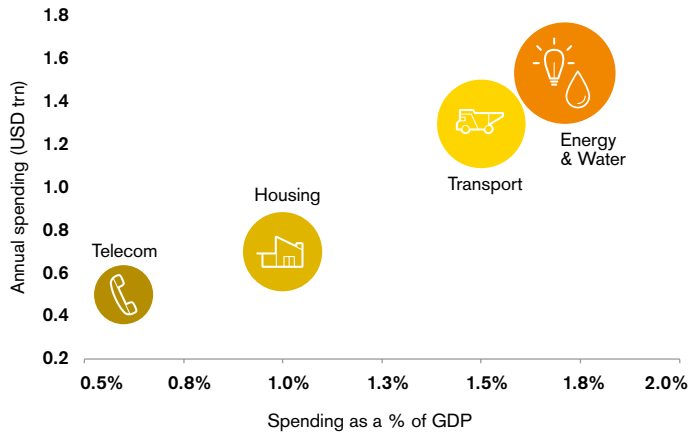


Source: Thomson Reuters, Credit Suisse

Last data point: 24/04/2017. Historical performance indications and financial market scenarios are not reliable indicators of current or future performance.

Figure 2

Opportunities in infrastructure assets
Bubble size represents aggregate spending over the next decade



Source: McKinsey Global Institute, Credit Suisse

2.2 Transport infrastructure

Most infrastructure programs list transport infrastructure as their first priority. While developed markets focus on road repair, emerging economies are expanding their road, rail, port and airport infrastructure. Germany's Federal Ministry of Transport and Digital Infrastructure has adopted a plan to spend EUR 290 bn on the construction and modernization of roads, bridges, railways and waterways by 2030. The US Congress passed the USD 300 bn "FAST" Act under President Barack Obama for road and transport infrastructure, and spending is already underway. A further USD 201 bn in local spending initiatives have also been approved.

What's more, Congress is discussing additional infrastructure spending of USD 1 trn. Asian countries are ramping up investments as well. China, for instance, plans to build 2,830 kilometers (km) of new railway tracks by 2018 and 30,000 km of roads over the next five years.

Such infrastructure programs will require large amounts of steel, cement, industrial metals and building materials. They will also require engineering services, planning and industrial equipment for construction. We believe the **materials suppliers to transport infrastructure and construction projects** will be early beneficiaries. **Large-scale cement and aggregate producers** are likely to get a boost from highway construction spending, while **steel companies** should benefit from construction activity in ports, bridges and railways. **Construction equipment and component suppliers, engineering companies** should also benefit.

When investing, we believe it is essential to concentrate on both bottom-up fundamentals as well as quantitative analysis in order to find companies in sectors and countries with a high probability of achieving attractive returns. We therefore draw on the know-how of **Credit Suisse HOLT's** valuation methodology as well as on the insights of the fundamental Equity Research analysts to determine which companies have exposure to growing end-market demand and have financial market valuations that do not yet reflect the opportunity.

Keywords and **Investor takeaways** see end of chapter.

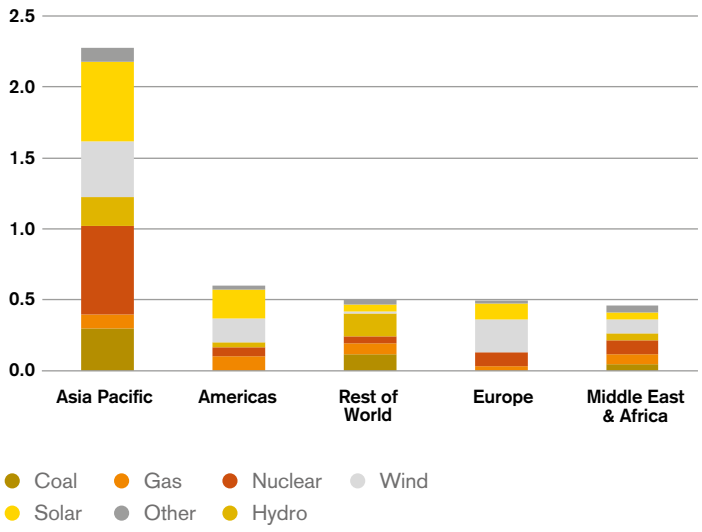
2.3 Water and energy infrastructure

The energy sector has undergone a major transformation in recent years due to new regulations, including those governing environmental impact standards with an increased focus on clean energy. According to **Bloomberg New Energy Finance (BNEF)**, globally nearly USD 4.4 trn will be invested in new power generating capacity over the next ten years, ~USD 2.3 trn of which in Asia with a focus on renewables. The increased use of renewable energy should drive spending on **improving electricity grid infrastructure** and interconnection and provide opportunities for **battery storage.** The European Commission, for example, aims to connect European energy networks, increase the security of energy supply and contribute to sustainable development by integrating renewable energy sources across the EU. It has allocated EUR 5.4 bn to the Trans-European energy infrastructure project through 2020. Meanwhile, Africa – estimated to hold 10% of the world's hydrocarbon resources – offers significant potential for the oil industry, but remains relatively underexplored. Potential investments of USD 42 bn over the next ten years could lift refining capacity by 1.7 million barrels a day, based on analysis by Bloomberg. In the USA, President Trump has signed executive orders to advance the USD 3.7 bn Keystone XL and Dakota access pipelines. Energy infrastructure in the USA is receiving increased investment due to greater demand, capacity bottlenecks and aging equipment. However, the American Society of Civil Engineers (ASCE) estimates that there is still a significant funding gap of USD 177 bn to meet the nation's energy infrastructure needs through 2025. The Trump administration's efforts to deregulate the energy industry should be a key catalyst for future spending, in our view.

Water is a further critical infrastructure resource. As an industry, agriculture remains the largest consumer (69%) of water, followed by industrial (19%) and municipal corporations (12%), according to the Food and Agriculture Organization of the United Nations. The growing global population is exacerbating water sanitation and scarcity problems. According to the OECD, the number of people living in areas seriously affected by water supply shortages will

Figure 3

Capital investments in power generation (USD trn)



Source: Bloomberg New Energy Finance, Credit Suisse

likely rise to four billion by 2050. While water supply poses a serious challenge globally, it can also be seen as a huge investment opportunity. **Utility companies,** along with government organizations, will increasingly be called in to build **sustainable water infrastructure,** in our view. China, for instance, currently plans to invest ~USD 330 bn in water infrastructure. Meanwhile in the USA, **upgrading aging and leaking pipe systems** and **meeting drinking water infrastructure needs** will require at least USD 1 trn over the next 25 years, according to the ASCE.

We see **gas and electric utilities, renewables, power generation facilities, transmission** and **distribution pipelines and smart grids** as key beneficiaries of spending.

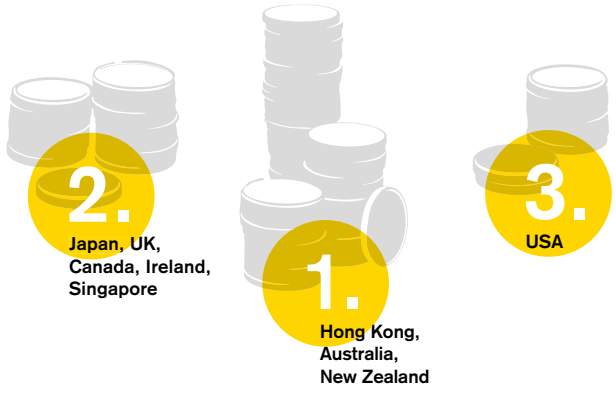
2.4 Affordable housing

A further development need which has received scant attention from investors so far concerns public housing. Affordable housing usually means the housing needs of lower and middle income groups. Financially, in many economies, affordability is defined as cost of housing that does not exceed 30%–40% of household income. The World Bank and the United Nations define affordability of housing as a function of the ↗ **median house price** divided by the median household income. Any housing market with a median multiple of above three is defined as unaffordable, ranging in categories from moderately to severely unaffordable.

According to the Demographia International Housing Affordability Survey 2017, there are three severely unaffordable major housing markets with median multiples of 5.1 or more, including China (Hong Kong) with a multiple of 18.1, New Zealand (10.0) and Australia (6.6). Major housing markets with a seriously unaffordable rating include Japan with an average multiple of 4.1, the United Kingdom (4.5), Canada (4.7) Ireland (4.7) and Singapore (4.8).

Figure 4

Most unaffordable housing markets



Source: Demographia International Housing Affordability Survey, Credit Suisse

Urbanization is amplifying the issue, as an estimated 54.5% of the world's population currently live in urban areas. By 2030, this is forecast to rise to ~60%, according to the United Nations. The overcrowding of cities has driven up property prices, making housing unaffordable for the lower and middle income groups. According to the McKinsey Global Institute (MGI), if current trends continue, the number of households that occupy unsafe and inadequate housing or are financially stretched could reach 440 million (or ~1.6 bn people) by 2025. To fill this gap, the investment in construction alone would amount to USD 9–11 trn. With the cost of land, the total market value estimated could be as high as USD 16 trn. The **largest markets for low income housing units** would be **China, India, Russia, Brazil and Nigeria.**

Governments have started to take action. The UK has announced plans for a GBP 2.3 bn housing-infrastructure fund to unlock land for housing and a further GBP 1.4 bn for the construction of affordable housing. Canada has dedicated USD 11.6 bn to affordable housing over the next decade, while Australia plans to spend close to USD 11 bn a year on affordable and social housing. Meanwhile, the Indian government has launched the "Housing for All" scheme, which aims to build ~22 million low-cost homes across urban areas by 2022. But the affordability gap is too large to be met with government subsidies and income support alone. Market-based approaches are also needed.

The most powerful lever to create affordable housing is to reduce land and construction costs. By developing satellite cities outside the big centers but along public transportation networks, land costs can be reduced by more than 50%. Private developers developing land in partnership with government entities as well as manufacturers of **rail-based local transport systems** should benefit in this context. Thorough adoption of productivity measures such as efficient procurement using building information modeling (BIM) software tools and **pre-fabricated parts** could result in savings of more than 30%, according to business experts. **Architecture, engineering and construction (AEC)** companies that pioneer the use of these new technologies are best positioned to capture the huge demand for affordable housing.

Alternative low-cost building materials can also provide meaningful savings. The McKinsey Global Institute 2014 report on the affordable housing challenge highlights that in India, for example, builders use bricks made of fly ash, a waste product from coal-fired power plants, to replace cement.

Moreover, operating and maintaining property at reduced costs contributes meaningfully to affordable housing. Improving energy efficiency has been shown to reduce annual housing costs materially, and a number of governments are providing subsidies to retrofit homes. In the building industry, **companies providing insulation, windows** as well as **efficient heating and air-conditioning systems** benefit from this multi-year trend.

Finally, providing access to affordable housing loans is the third lever of making housing affordable. This often involves the connection of mortgage lenders (typically local banks) to the secondary capital markets. In many developed and developing countries, **financial intermediaries,** sometimes **national mortgage corporations** or **separate agencies,** have been created to purchase loans from banks and issue debt securities **(covered bonds)** to investors. By securitizing mortgage debt, investors obtain a claim on the underlying assets at a reduced risk. For borrowers, costs are lowered, as they can access broader and better funding.

Figure 5

Alternative low cost building material

	Material	Description
Walls	Fly ash bricks	Made from fly ash/volcanic ash along with sand, lime and gypsum, used as a brick substitute for walls; created from by-products of power plants and industrial waste; environmentally friendly and cheaper substitute
	Clay fly ash burnt bricks	Made from soil, fly ash, sand and fuel coal; replacement for conventional bricks; manufactured with lower emissions and fuel consumption
	Compressed earth blocks	Soil with minimum levels of clay compressed along with a small proportion of cement in walls, interlocking blocks minimize mortar and plaster, low energy consumption during production, manufacturing machines can be made mobile
	Hollow concrete blocks	Cement, sand and aggregates along with industrial waste such as fly ash, blast furnace slag used to produce blocks that can substitute for bricks; energy and cost efficient, allows faster masonry completion
	Cellular lightweight concrete	Cement, fly ash, sand and foaming agent; substitute for conventional bricks/blocks in multi-story buildings; reduction in deadweight can reduce costs in structure and foundation; high thermal insulation
	Ferrocement wall panels	Cement, sand, aggregates, fiber and welded mesh combined to create panels of required shapes and sizes; allows for speedy construction
Roofing	Micro-concrete roofing tiles	Tiles made from cement, aggregates, fiber and welded mesh combined to create panels of required shapes and sizes; allows for speedy construction
	Ferrocement roofing channels	Cement, steel and welded mesh suitable for large spans; speedy installation and 30% cost saving over traditional reinforced concrete roofing; 60-75% lower deadweight
	Reinforced concrete planks and joists	Cement and sand mixed with steel and binding wire; used for structural roofing, load bearing, and framed structures
Finishing	Bamboo mat boards	Bamboo and polymer boards are an alternative to plywood for use in partitions, door/window shutters, infill paneling, cladding, etc.
	Glass Reinforced Polymer (GRP) doors, shutters and frames	Glass fiber, natural fibers, polyurethane foam, resins and curing agents used as a substitute to wooden doors and shutters
	Mosaic and checkered flooring tiles	Cement, sand, aggregates, pigments, marble chips and powder mixed to create mosaic tiles; used as cost effective flooring alternatives inside homes

Source: SHEE, UN-Habitat, McKinsey Global Institute, Credit Suisse

Investor takeaways

The key beneficiaries of this second supertrend are, in our view:

- materials suppliers, large-scale cement and aggregate producers, steel companies, construction equipment and component suppliers
- gas and electric utilities, power generation facilities, transmission and distribution pipelines, smart grids, water sanitation and desalination facilities
- rail-based local transport systems, pre-fabricated parts producers, alternative low cost building materials producers, companies providing insulation, efficient heating and air-conditioning systems
- emerging market national mortgage corporations and covered bond issuers

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Bloomberg New Energy Finance (BNEF) is a research organization that helps energy professionals generate opportunities.

The **median house price** is the mid-point of all the houses/units sold at market price over a set period.

Credit Suisse HOLT provides a full suite of interactive tools to help you make more confident investment decisions: fundamental analyses, idea generation, portfolio allocation and benchmarking. www.credit-suisse.com/sites/holt/en.html

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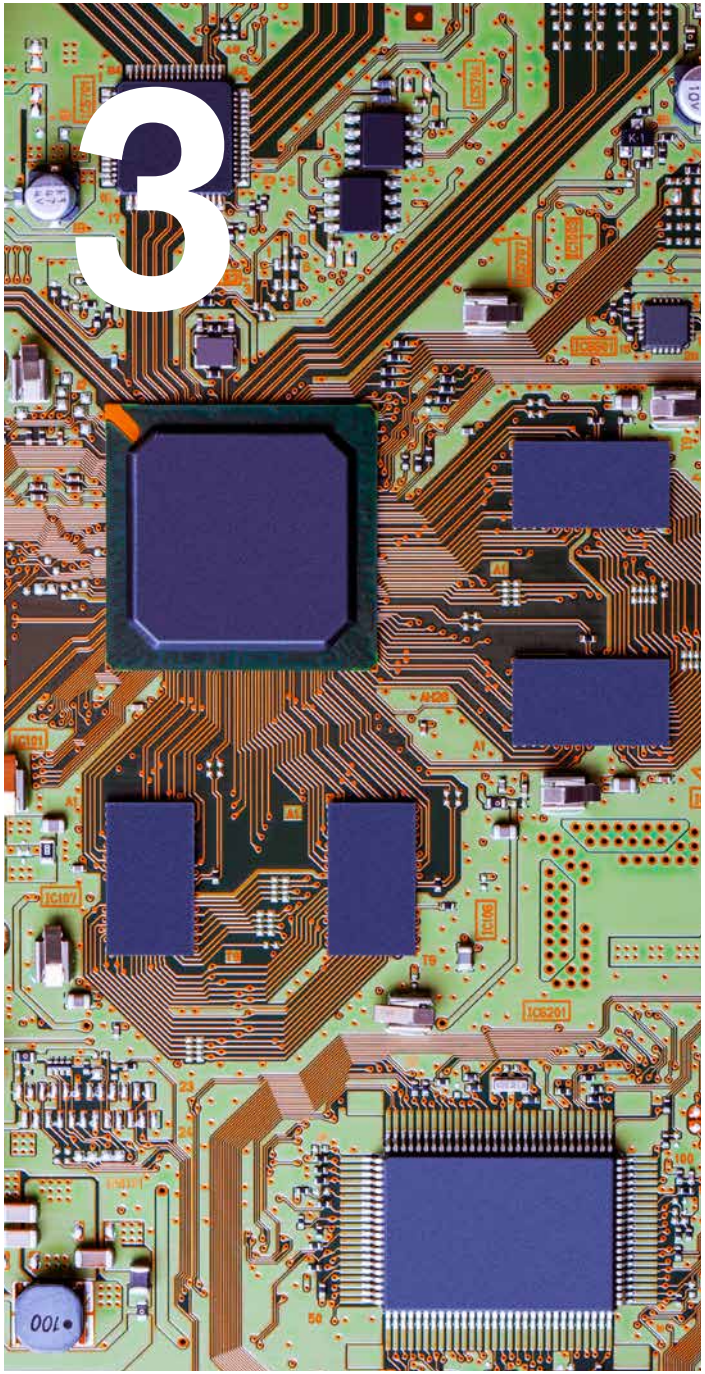


Technology at the Service of Humans

In recent years, technology has increasingly been regarded as a threat, with cheap robots, algorithms and programs seen as eliminating jobs and making human talent redundant. As initial thoughts about potential regulation or taxation are floated, technology and innovation that make workplaces safer, increase productivity and provide better products and services for people are in focus.

In short

Technology at the service of humans is set to remain a key topic in the years to come. Digitalization paves the way for innovation, with internet platform companies and firms offering virtual reality and augmented reality technologies among the main beneficiaries. The sheer amount of data that continues to grow strongly will result in opportunities for cyber security and data waste management. The fourth revolution of the industry will continue to mostly benefit vendors of semiconductors and robots. Healthtech, the internet and the human genome project offer fields for investing in the future of the healthcare industry.

3.1 The power of digitalization

Digitalization has been one of the most pervasive phenomena of recent years. The International Data Corporation (IDC) expects data created to reach 44 trillion gigabytes in 2020. It is true that digitalization has disrupted businesses in areas such as media, retail, publishing and advertising and, yes, it has made certain firms and business models obsolete. However, it has also spread to sectors such as automobiles, finance, insurance and healthcare, where it provides better customer experiences and helps improve customer loyalty. It has also been at the source of new businesses, and its creative potential is at least as formidable as its disruptive power. We believe that digitalization is here to stay. In the coming years, the big winners are likely to be so-called **digitizers that offer above-market sales growth and rising operating margins** owing to economies of scale and efficiency.

Investor takeaways see end of chapter.

Internet platform (IP) companies in particular should continue to be the major beneficiaries of this trend. They constantly innovate to cater to the structural shift toward more enriching online experiences. These companies should benefit the most, in our view, due to their network and scale, with an already huge customer base that provides significant operating leverage to expand their businesses globally. Digitalization should also benefit **web advertising agencies** considering the gradual shift from offline to online advertising. In addition, **companies** that create new ecosystems based on the **Internet of Things (IoT)** and **cloud computing** should also gain in the long term.

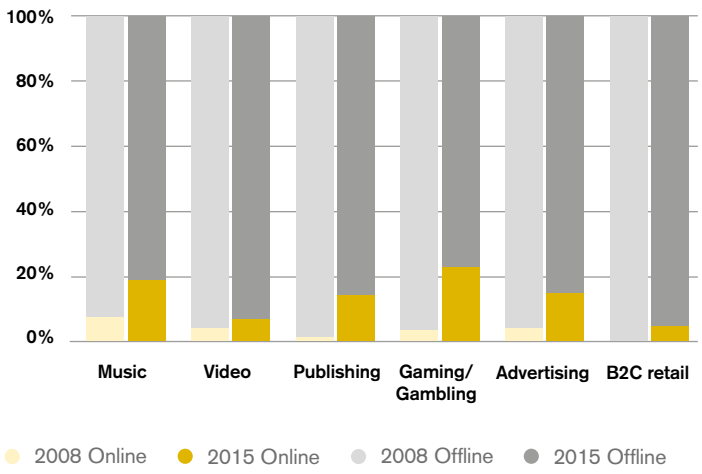
While digitalization supports growth, it also has negative sides, with data theft a prominent risk. In this respect, we think that cyber security will continue to be among the most resilient areas of IT spending as the number of digital threats continues to rise. Furthermore, the exponentially growing flood of data that is automatically stored might lead to increasing costs. The Veritas Global Databerg Report reveals that 52% of all information currently stored and processed by organizations around the world is considered "dark" data of unknown value. Another 33% of data is considered redundant, obsolete or trivial (ROT). If left untamed, business data will cost organizations around the world a cumulative USD 3.3 trn to manage by the year 2020. This could be a growing area of new business for **companies that help to qualify, manage and clean data storage.**

Digitalization provides equally compelling opportunities in non-IT sectors. The need to innovate and increase operational efficiency is going to drive long-term trends such as big data, the IoT and virtual world. For example, we believe that digitalization will cause a shift in how sectors such as industrials or consumer discretionary innovate to ensure their products meet customer needs.

Technologies like **virtual reality (VR) / augmented reality (AR),** the IoT and robotics offer tremendous opportunities in this regard. While VR/AR can help companies enhance customer experience, technological innovation allows the creation of new robots or automation systems in non-industrial sectors such as healthcare and industrials. However, the power to innovate is highly dependent on incremental investments that companies make to become digital. Any macroeconomic weakness could impact IT spending and investments in innovation, which, in turn, could dampen growth. Therefore, it is essential to follow a disciplined lifecycle management of investments in digitizers and preferably use managed investment products.

Figure 1

Increasing online consumer spending



Source: A.T. Kearney, Credit Suisse

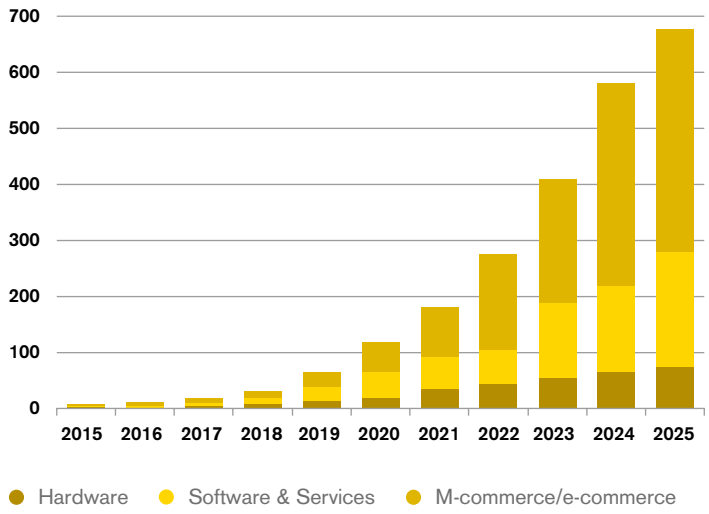
Keywords see end of chapter.

3.2 Virtual and augmented reality

Virtual reality has picked up strongly in recent years. Devices like Samsung Gear VR shipped 5 million units in 2016 (against expectations which ranged from 2 to 5 million units). We believe total shipments reached 8–10 million units in 2016, including Oculus Rift, HTC Vive and Sony PS VR products and others. While the numbers look healthy, we believe that lower hardware price points could support an even higher adoption of the technology. We envisage **virtual and augmented reality (VR/AR)** to move beyond technology and gaming enthusiasts into areas such as **consumer applications and manufacturing.**

Figure 2

VR/AR market could potentially grow to the size of the current smartphone market
in USD bn



Source: Gartner, Credit Suisse

Figure 3

Addressable market Virtual and Augmented Reality

2015–2018	2018–2023	2023–2030
Focus on gaming (VR)	Focus on interaction (VR/AR)	Focus on commerce (VR/AR)
• Big VR glasses • PC • Video games • Treadmill	• Slim glasses • Start of AR • Holograms • Gloves	• VR integrated in daily life • Buying house, shopping etc. • Mass market
Potential market size: USD 8 bn	Potential market size: USD 68 bn	Potential market size: USD 600 bn

Source: Gartner, Credit Suisse

Another very interesting area for VR/AR is education, with several start-ups such as Immersive VR, Alchemy VR, Curiscope and even Alphabet making inroads. VA/AR is helping education service providers to offer a more enriching and interactive experience. The primary idea for virtual worlds is that they enable immersive learning, which will assure higher attention and active involvement from students. For example, students can virtually be among native Italians while learning the language or can tour space while studying astronomy.

The long-term outlook for the VR/AR market is very positive. We expect the market for VR/AR hardware and software to potentially become even larger than the current smartphone market (USD 600–700 bn) and grow at the same pace as the latter in 2001–2015. It is not only the gaming market that VR could impact strongly. This segment is merely a catalyst and a good advertisement for numerous other applications that could evolve in the next 10 to 15 years. Apple is now thought to be working on incorporating AR capabilities in its new flagship iPhone 8. This, along with several other examples, confirms our view that the VR/AR theme has long-term growth potential.

“Digitalization provides equally compelling opportunities in non-IT sectors. The need to innovate and increase operational efficiency is going to drive long-term trends such as big data, the Internet of Things and virtual world.”

3.3 Artificial intelligence

Artificial intelligence (AI) is an integral part of digitalization. The progress made by the IT industry in collecting, analyzing and managing data in real time now enables us to make intelligent machines and computer programs that can learn by themselves and solve problems that previously required human intelligence.

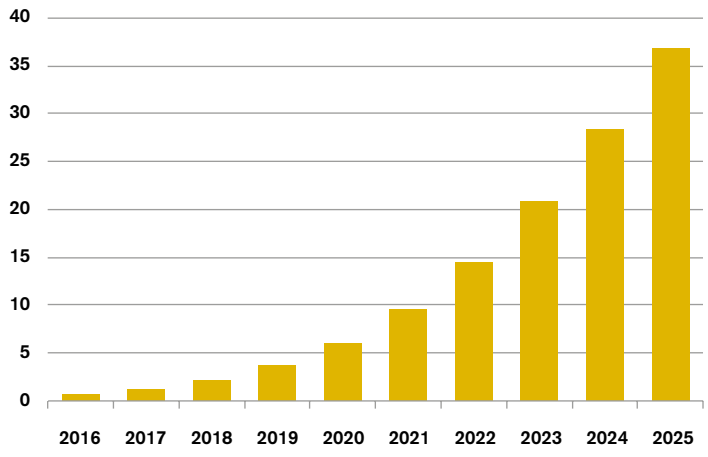
AI is expected to touch most industries one way or another, as it is believed to significantly improve productivity, cut costs and provide a competitive advantage. According to research by Statista, worldwide AI revenue should grow by a CAGR 2016–2025E of around 57% to USD 36.8 bn. Autonomous vehicles, speech recognition and natural language processing are currently in focus with products such as Amazon’s Alexa or Google’s home assistant gaining immense popularity. While these large companies are expected to maintain their lead, there is also a strong ecosystem for **AI-related start-ups** that have attracted strong interest from venture capitalists.

From an investor standpoint, we believe it makes most sense to focus on “enablers” **(companies which provide products/ systems that facilitate IT solutions/services** e.g. **semi-conductor companies** etc.) that, in our view, will be the first to benefit from the expected growth in AI usage and machine learning. Other beneficiaries are the cloud platform providers that already offer “AI as a service” platforms on which companies can build their own tailor-made AI solutions. A third group of enablers are **IT service companies,** which could benefit from rising corporate demand.

According to market researcher IDC, the area of software & services is expected to attract close to half of all AI revenue, with a focus on applications such as text/media analytics, search, visualization and navigation, as well as cognitive software platforms. Of the sectors, financial services and healthcare have been the first sectors to invest heavily in AI over the past decade due to the vast amount of customer data these institutions possess.

Figure 4

Rising revenues worldwide in artificial intelligence
Revenue in USD bn



Source: Statista, Credit Suisse

3.4 Industry 4.0, cobots and smart automation

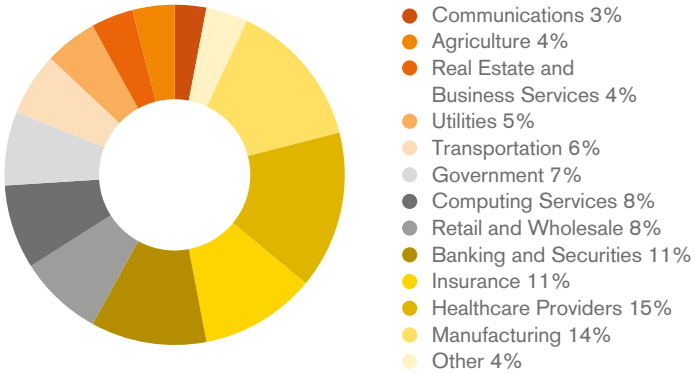
The expansion of the internet to mobile and things and advanced sensing and analytics offer new fields for automation. This is often referred to as "industry 4.0" or "the 4th industrial revolution." According to an Acatech study, industry 4.0 is expected to improve the efficiency of manufacturing by 6%–8%. This looks quite impressive, but is not really a revolution. The real revolution is the shift to digital business models that make things smarter using connectivity (IoT), analyze the collected data in a more sophisticated manner (big data), manage the data and share it via the cloud (Internet of Services – IoS). This is expected to have a positive impact in various fields – smart manufacturing, smart homes, smart grids or smart cities.

According to a study from US research and advisory firm Gartner, the sectors that should provide most economic value added from the IoT by 2020 are manufacturing, healthcare and financials.

Beneficiaries of this trend are **companies addressing the big data and business intelligence market** and **vendors of semiconductors** that provide the needed processing power for big data management in **datacenters, cars (self-driving)** or industrial processes. Other beneficiaries are **vendors of robots** (traditional manufacturing robots as well as new human-interactive ↗ **cobots**) or **providers of factory automation software that can integrate data, processes, business systems and people.** Other companies that focus on **maintenance and the utilization of plants and machines** are also likely to benefit. Other areas that automation is expected to revolutionize are **self-driving cars, logistics** (delivery systems via drones or robots and warehouse automation) and **precision farming.**

Figure 5

Economic value-added from IoT by sector in 2020E



Source: Gartner, Credit Suisse

3.5 Healthtech and the internet caretaker

Globally, healthcare costs are on a steep upward trajectory. Not only do societies spend more as they get older and wealthier, they also spend more as healthcare moves up on people's priority list. In the quest to optimize patient outcomes and healthcare expenditure, digital health opportunities play a vital role. With new tools at their disposal, people are increasingly assuming responsibility for their health, well-being and disease management. At the same time, care providers are innovating and using digital tools to drive better patient outcomes. With the emergence of **remote patient monitoring solutions, telehealth offerings** as well as **health education** and **health management portals** gaining traction, digital health is reshaping the current standard of care.

When looking at the wide range that digital health encompasses, remote monitoring strikes us as the area that provides the highest value-added given its utility in managing chronic diseases which place a tremendous strain on health budgets. For instance, a pilot by Vivify Health in heart failure patients using remote monitoring reduced the number of necessary monthly inpatient visits by the patient group from over three to under 0.4 and costly emergency room visits by over 70%. Furthermore, self-management, for example for diabetes patients, provided through cloud-connected **continuous glucose monitoring solutions** can dramatically reduce dangerous episodes compared to the current standard of care while improving patients' quality of life.

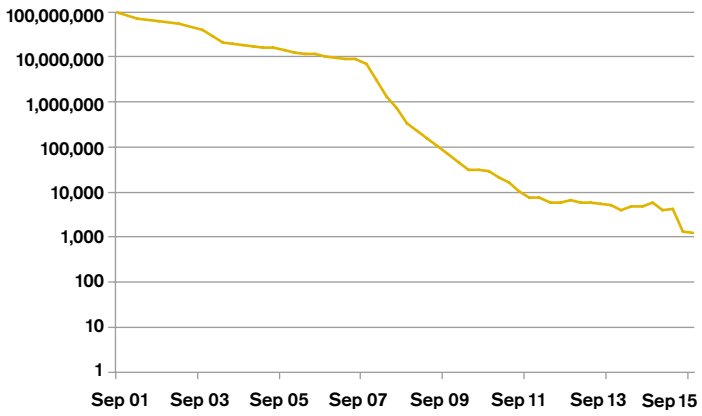
We are thus optimistic that digital health solutions can produce winners along the healthcare value chain – patients, physicians, caretakers, hospitals and insurance companies. However, it will be paramount for digital solutions to be properly and carefully balanced with expert advice from an actual physician.

3.6 Healthtech and the human genome project

A little over fifteen years ago, the human genome project was officially concluded, deciphering the first full human genome. The US National Human Genome Research Institute estimates that the entire project cost USD 2.7 bn and stated at the time that the project "will likely pay for itself many times over on an economic basis." The latter was based on the belief that the basic research insight gained would benefit the biotechnology and drug industries and have a tangible human health impact. This has proven very correct. What certainly has helped is the rapidly declining sequencing cost (see chart). We believe that now is an exciting time for **biotechnology companies,** as they should be able to capitalize on novel therapeutic promises in areas such as **immunotherapy or gene therapy.**

Figure 6

Sequencing cost per genome
in USD



Source: National Human Genome Research Institute, Credit Suisse

Investor takeaways

The key beneficiaries of this third supertrend are, in our view:

- top digitizers, internet platform companies, web advertisement agencies, companies that create IoT, cloud computing companies, data management and cleaning companies
- virtual and augmented reality companies, Artificial Intelligence-related start-ups, vendors of semiconductors, IT service companies, vendors of robots, providers of factory automation and maintainance software providers, self-driving cars, logistics and precision farming specialists
- remote patient monitoring solutions providers, health education and management portals, biotechnology companies specialized on immunotherapy and gene therapy

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3

Virtual reality (VR) typically refers to computer technologies that use virtual reality headsets to generate the realistic images, sounds and other sensations that replicate a real environment or create an imaginary setting. VR also simulates a user's physical presence in this environment.

Augmented reality (AR) is a live direct or indirect view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data.

A **cobot** (from collaborative robot) is a robot intended to physically interact with humans in a shared workspace. This is in contrast with other robots, designed to operate autonomously or with limited guidance, which is what most industrial robots were up until the decade of the 2010s.

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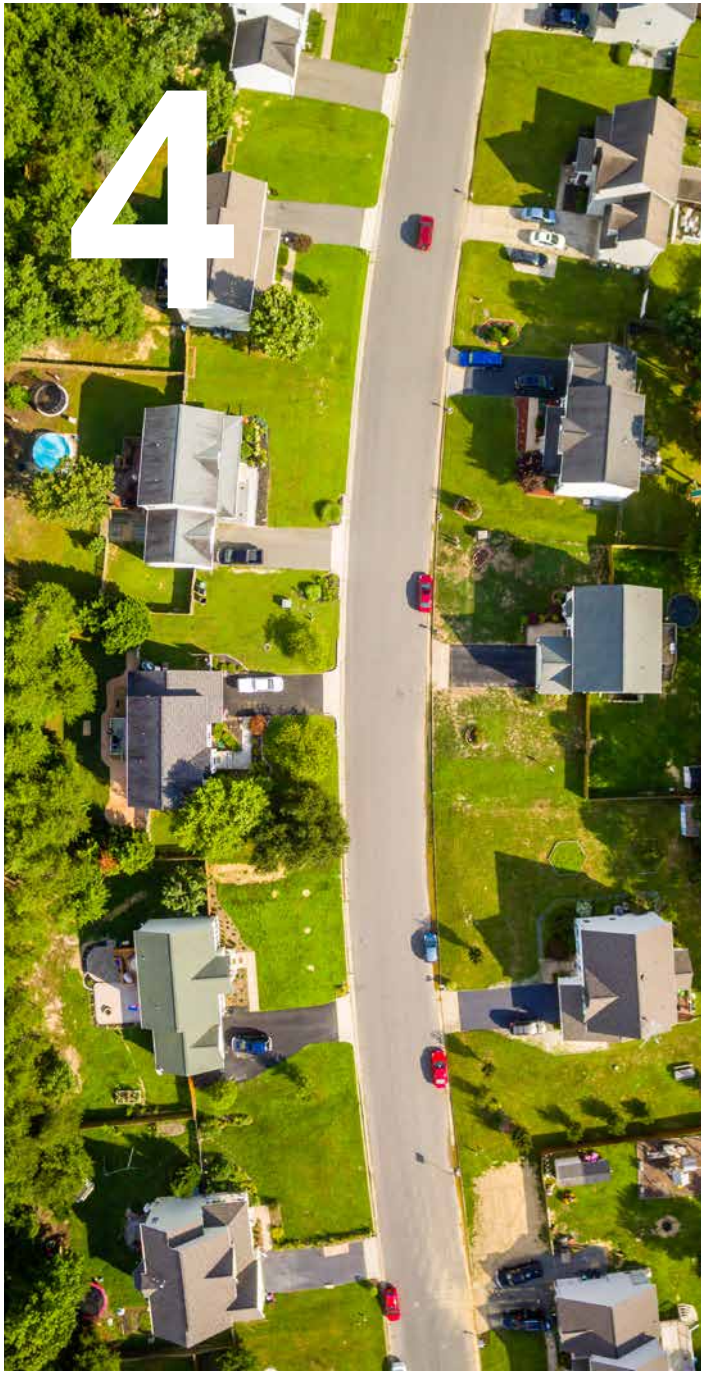


4

Silver Economy – Investing for Population Aging

We expect the unrelenting and seismic shift in the age composition of populations to impact consumer goods, healthcare, real estate and financial services markets. Besides some inevitable challenges, there will also be great opportunities for companies catering to a senior population that we expect to grow to more than 2 billion people by 2050.

In short

Although there is a general agreement on the trends related to aging, we are ill-equipped to grasp their magnitude in terms of the shift in societal composition: We expect the addition of more than a billion senior citizens by 2050 and an associated drop in the dependency ratio to pose immense challenges, but also present opportunities. In our view, investors positioned along the continuum of senior wants and needs – such as senior-centric consumer goods, healthcare services, senior housing, as well as wealth management and pension solutions – should see attractive returns.

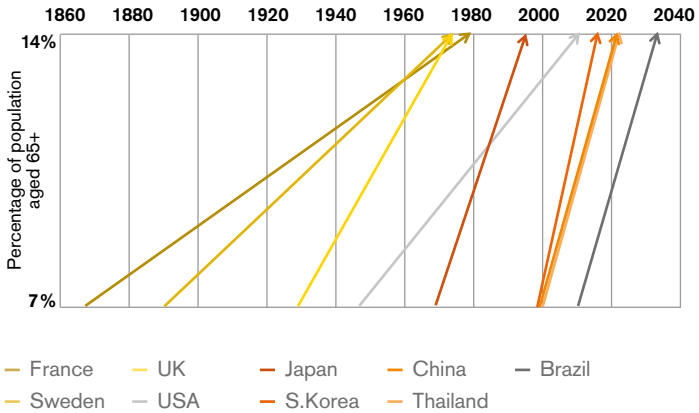
4.1 Population aging in numbers

Population aging is a demographic trend often associated with Europe, where fertility rates have been declining for decades and are already below the population replacement level of 2.1 in many countries. Japan is in the same camp, and China's rapidly aging population due to its one-child policy is also grabbing increasing attention. But there is less awareness about the tidal demographic change awaiting us globally in the next three decades. By 2050, it is estimated that the population aged 60+ will rise to 2.1 billion globally from 900 million in 2015. The median age worldwide will be 36.1 years in 2050 compared to 29.6 today. Life expectancy will increase by one year every five years.

Six of 10 women and slightly over 5 of 10 men born between 2000 and 2005 can be expected to live to 80. Unlike today, experts estimate that 80% of all people 60+ will live in emerging markets by 2050. While today there are 7 workers for 1 elder person, in 2030 there will be only 4.9 workers. Already 48% of today's retired population does not receive any pension. But one in four persons aged 65+ does not expect to be able to ever fully retire. 80% of older people have at least one chronic disease, and an estimated 75% of healthcare spending is on the elderly. By 2020, the spending power of 60+ people will reach an estimated USD 15 trn. Clearly, aging will be a powerful societal and economic driver that will re-set consumer markets, as well as transform healthcare and property markets. Aging will also pose major funding challenges, bringing private funding products to a new level as government-funded old age programs will not be or insufficiently available.

Figure 1

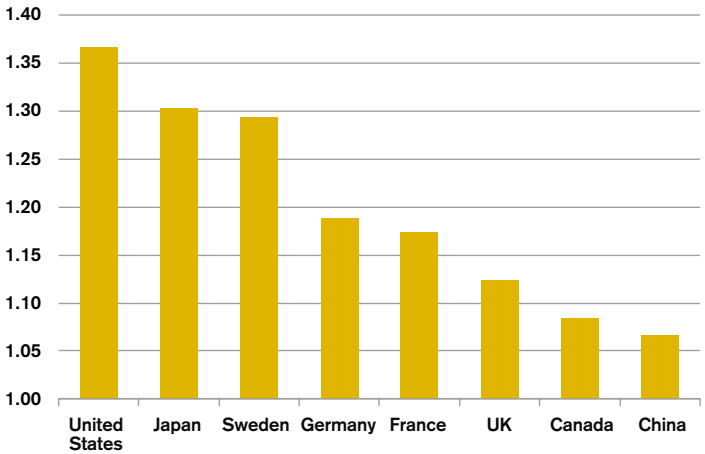
The speed of population aging in selected countries
The steeper the line, the more rapid the population aging



Source: United States Census Bureau – An Aging World: 2015, Credit Suisse

Figure 2

Consumption by seniors is significantly higher than for active population



● Per capita consumption of 65+ age relative to per capita consumption in the age group of 25-64

Source: National Transfer Accounts, August 2016 Data Sheet, Credit Suisse

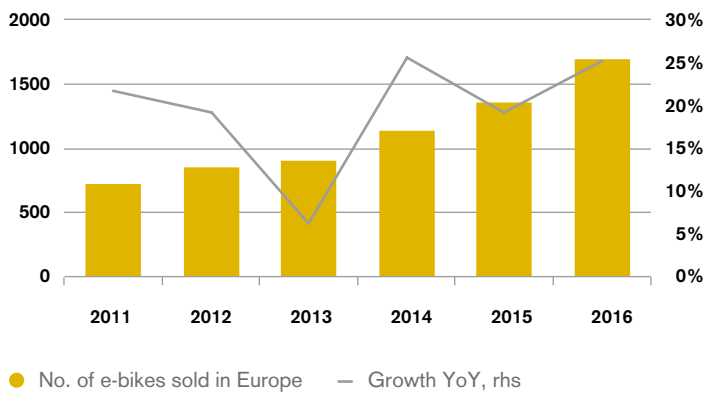
4.2 Senior lifestyle and consumption

Seniors are the fastest-growing consumer age group around the world. They have a rising share of income compared with other demographics and an increasingly high spending power, especially in the developed world. For example, in the USA, of those with annual earnings of above USD 200,000, 60% are baby boomers (aged 50+), and their average household wealth is over three times that of people in the age group of 25–50. Further, the baby boomers already represent around 50%–60% of developed market consumer spending.

Since older people have different needs, priorities and spending patterns compared to younger groups, the implications for manufacturers and retailers could be substantial. The inability of senior citizens to navigate large stores along with the difficulty in accessing products on shelves (either too high or too low) could mean that convenience in shopping holds more relevance. Although **online shopping** is gaining traction, this cohort is slower in adopting technology and prefers shopping in the **next-door smaller outlets,** which should benefit **food and drug retailers.** That said, using technology to improve quality of life and enable independent living is reflected in strong growth of **smart home devices and e-bike sales.**

Figure 3

Stronger demand for e-bikes reflects emergence of technology as well as uptick in demand from seniors
in 000's



Source: Zweirad-Industrie-Verband & CONEBI, Velosuisse, Credit Suisse

Investor takeaways see end of chapter.

For senior citizens, spending on apparel and restaurants slows down over time and a bigger share moves toward **leisure and tourism.** Particularly, **cruise liners** will benefit as over 66% of demand comes from older people. **Gaming and casino companies** also generate around 65% of their revenues from the 55+ cohort in the USA. Increasing emphasis on healthy living means stronger sales growth in **vitamins and dietary supplements:** Amazon's 50+ category is focused on this assortment. Further, the desire to look younger should drive higher spending on **personal care and beauty products** (especially anti-aging products). Lastly, vision impairment is common as people grow old, providing a huge opportunity for **prescription glasses** and **contact lens manufacturers.**

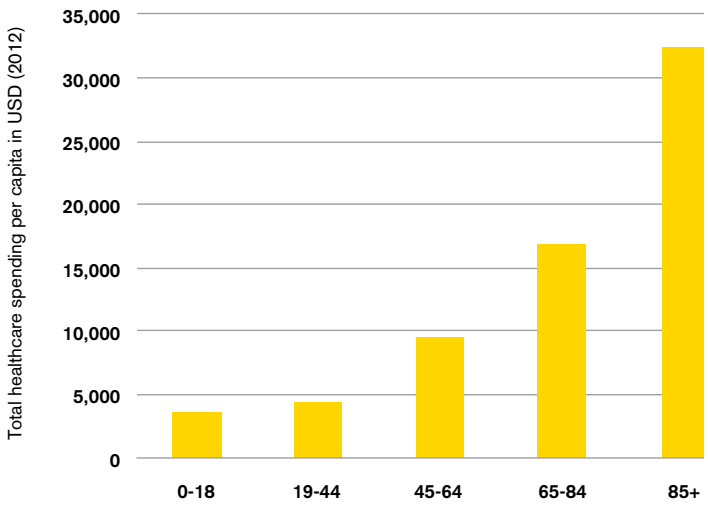
4.3 The healthcare boon

The other major beneficiary of aging population is the healthcare sector. Many ↗**chronic diseases** increase with age and hence a higher proportion of the elderly population is tied to a disproportionate rise in healthcare expenditure. Frequent comorbidities (concomitantly occurring diseases) among the elderly also compound the effect. The US Centers for Medicare and Medicaid Services estimates that the annual healthcare expenditure for a person in the 45–64 age group is slightly under USD 10,000. The same is almost 80% higher in the 65–84 band, while per-capita spends for people over 85 is over three times as high. This is likely to compound the effect of the unrelenting demographic shift on healthcare expenditures.

↗**Keywords** see end of chapter.

Figure 4

Healthcare spending per capita and age band



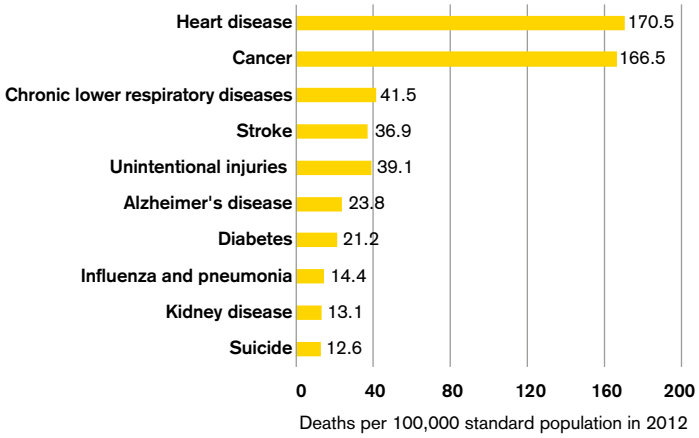
Source: Centers for Medicare and Medicaid Services, Credit Suisse

Some of the most common diseases affecting the elderly are arthritis, heart disease, cancer and Alzheimer's disease. The US Centers for Disease Control and Prevention (CDC) estimates that just under 50% of 65+ adults in the USA have been diagnosed with a form of arthritis. The chronic nature of the disease, which causes patients to stay on drugs for prolonged periods, leads to a significant market. Cumulative revenues of TNF-alpha inhibitors, which are predominantly used to treat arthritis, was USD 42 bn in 2016. However, with three prominent TNF-alpha inhibitors facing patent expiries and the emergence of attractive treatment options in other drug classes, the investment conclusion is not quite straightforward.

Somewhat less prevalent are heart disease and cancer, which are considered to be the leading causes of death in the elderly (see chart). Several heart diseases can be addressed appropriately either through drug therapy such as **lipid-lowering statins** or interventional means such as **heart valve replacement.** However, in the case of cancer, outcomes are often still poor despite recent scientific progress. Nevertheless, given the high unmet need in oncology, the attention the field gets in biopharma R&D budgets and the resultant rapid generation of incremental genomic and clinical data should lead to **oncology** being one of the most innovative fields going forward, in our view. Similarly, there is a high unmet need in Alzheimer's disease, which has a disappointing clinical research history. Given a relatively high prevalence of Alzheimer's, lack of effective treatment options and increasing understanding of **biotechnology,** we believe it will be an interesting field to follow over the longer term.

Figure 5

Age-adjusted death rates for 10 leading causes of death in 2012: United States



Source: Centers for Disease Control and Prevention, Credit Suisse

4.4 Real estate – Senior housing

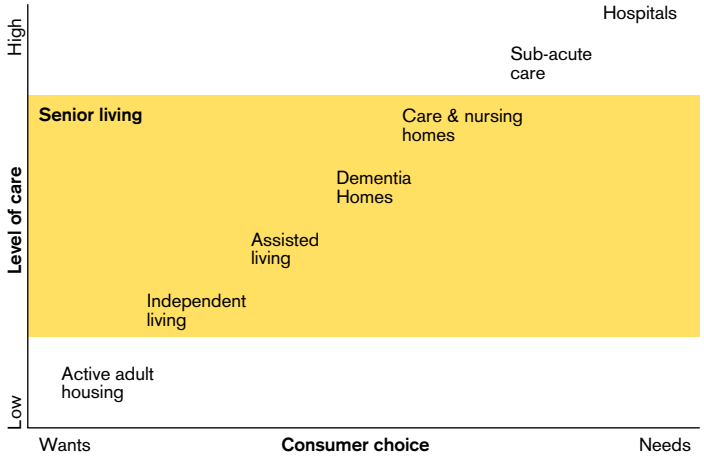
Trends showing growth of aging population and demand for appropriate housing for this cohort remain ambiguous. Although the elderly remain independent and healthier for longer, demand for customized senior housing is likely to increase significantly.

During active adult life, housing preferences are defined by choice and usually by a low level of care. Thus, households stay within their housing situation often for many years. With age, the needs and level of care can change rapidly along with demand for housing. Senior housing typically starts with **barrier-free apartments** that are **easily accessible by public transport and are close to medical care, dining, shopping and recreation facilities.** The support of social contacts within the community is important as well. **Supply of assisted living services** (e.g. ambulatory care, household assistance, emergency service) supports a household's independence and delays relocation to care facilities or nursing homes. **Senior housing** which is **close to care homes, hospitals or medical centers** can also generate considerable synergies. Furthermore, **senior living operators** increasingly run facilities that consist of multiple units and allow residents to "age in place." The higher life expectancy not only increases demand for such homes, it also shifts the disease pattern from physical weaknesses to dementia cases as the lifespan of the human brain is more frequently the limiting factor. Thus, it is likely that demand for **dementia facilities** will multiply in the future.

While governments will find it challenging to design innovative policies that guarantee housing for the elderly, it might present an attractive opportunity for investors. The private sector will play a vital role as rapid growth is likely to overstrain public sector finances in many countries. Economies of scale and optimization of processes in care, nursing and dementia homes are likely to open up promising investment opportunities. With increasing regulation and specific laws that are often highly heterogeneous across regions, non-experts in the field should prefer indirect **investment vehicles managed by specialized real estate investors or operators.** Another area with momentous growth potential covers **service providers for assisted living.** Such companies benefit from the desire of an increasing number of households to stay independent as long as possible as well as from rapidly increasing care costs that demand more efficient care systems. Services such as **ambulatory care, physiotherapy, household assistance and entertainment, as well as provision of automated safety equipment** are likely to face high demand in future. With many opportunities, product selection will be crucial for successful investments.

Figure 6

Structure of senior living and care facilities



Source: Credit Suisse

4.5 Senior funding

The aging population and rising longevity are likely to raise demand for **life insurance products.** We believe real gross premiums in life insurance should increase more in underpenetrated regions like Asia and, at a later stage, in Africa. Growth is likely to be driven by **life annuities,** which are the only permitted retirement payout option in some regions.

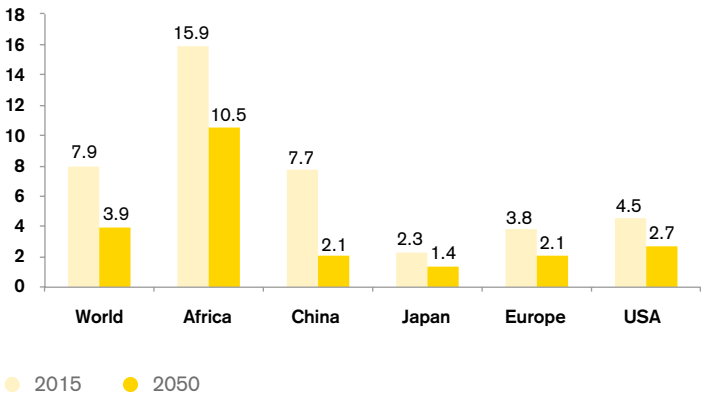
In countries where social security benefits are not sufficiently generous, longer life spans could increase demand for precautionary private savings and liquid assets to cover out-of-pocket health expenses in retirement age. Hence, we expect life insurers to increasingly expand toward so-called **unit-linked products** on the savings side and focus more on protection products, particularly **health insurance.**

In most developed countries, eligible individuals receive public pension benefits after reaching the retirement age. These schemes are administered by the government, which bears the associated cost and risk. Most schemes work on a pay-as-you-go basis, whereby employment-related contributions are used to fund current pensions. The aging population is likely to increase public pension expenditure and, combined with falling **dependency ratios,** exert pressure on government budgets. To sustain public pension systems, the retirement age could be raised, which will translate into more savings and increase demand for (capital-protected) financial products.

The aging population and low interest rates are putting pressure on retirement benefit levels and corporate pension funds. Hence, the transition from defined benefit (collective risk sharing) to defined contribution (individual risk bearing) plans will continue. This transition is already progressing well in the USA and UK, and we expect a growing market for bulk transactions, where insurance companies take on the pension plan management of large corporates.

Figure 7

Dependency ratio of workers (15–64) to retirees (65+)



Source: United Nations/Citibank, Credit Suisse

As reliance shifts from public and corporate pension plans, we expect households to increasingly save privately for retirement so that a part of future pension income comes from accumulated assets and savings. This will trigger a need for more sophisticated investment products to channel and convert those assets over an individual's lifetime. With the shift toward defined contribution plans, there will be opportunities for supplementary **advisory services in structuring of retirement plans/products and asset-liability management.**

Investor takeaways

The key beneficiaries of this fourth supertrend are, in our view:

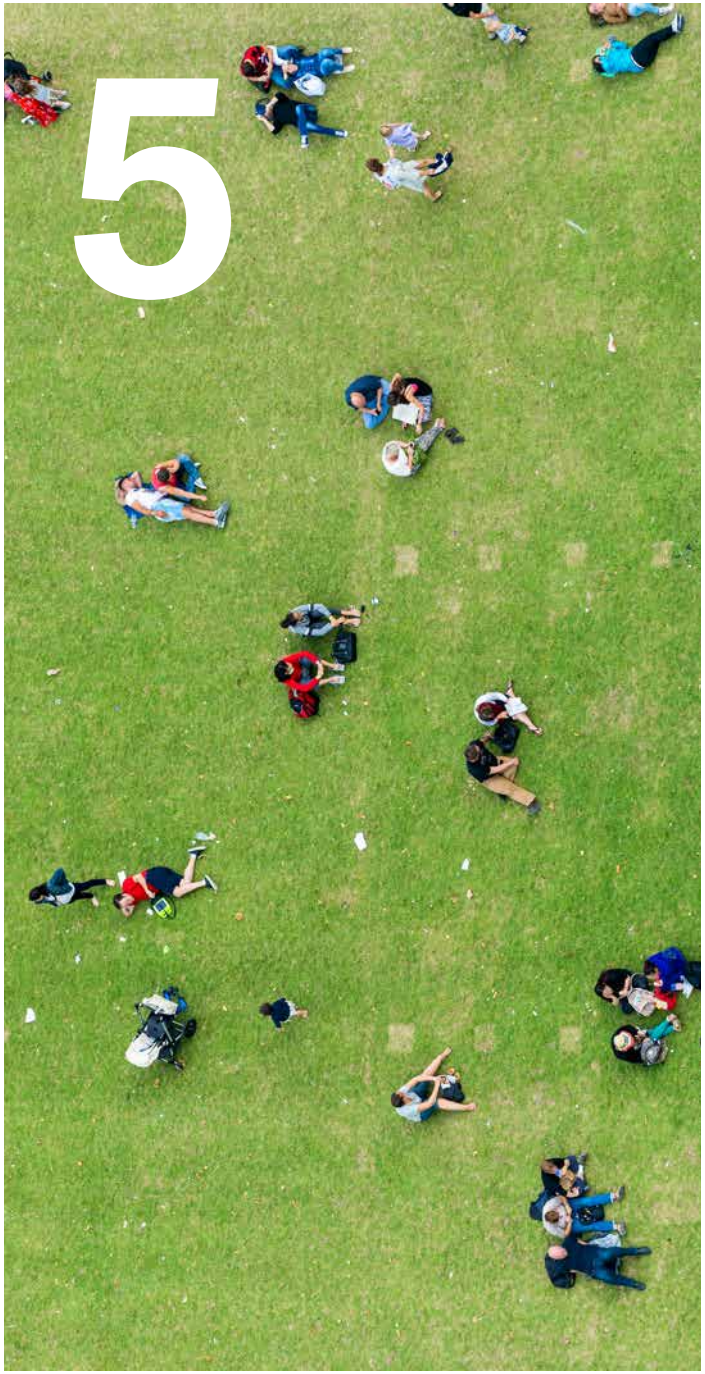
- online shopping facilities, food and drug retailers with smaller next-door outlets, smart home device producers, e-bikes, leisure and tourism companies, gaming and casino companies, vitamins and dietary supplement producers, personal care and beauty product providers, prescription glasses and contact lens manufacturers
- producers of lipid-lowering statins, heart valve replacement providers, oncology pharmaceuticals and biotechnology specialists
- assisted living services, senior housing operators, dementia facilities, ambulatory care and physiotherapy providers, household assistance and entertainment providers, automated safety equipment manufacturers
- Insurance companies offering life insurance products and life annuities

For more information, please contact your Credit Suisse advisor.

Chronic diseases such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes are by far the leading cause of mortality in the world, representing 60% of all deaths. This invisible epidemic is an under-appreciated cause of poverty and hinders the economic development of many countries. Contrary to common perception, 80% of chronic disease-related deaths occur in low and middle income countries.

Biotechnology is the manipulation of living organisms or their components to produce useful and usually commercial products, such as novel pharmaceuticals.

Dependency ratio:
A rough measure of the ratio of the working population (aged 20-64) to those in retirement (aged 65+).



Millennials' Values

50% of the world's population – we refer to them as Millennials – is under the age of 30, and the values of this generation are set to become the norm. As a connected and truly global generation, they feel collectively responsible, they care and show they do through their actions. Digital natives with a different mindset and priorities than previous generations, they also value a conscious but experience and fun-oriented lifestyle.

In short

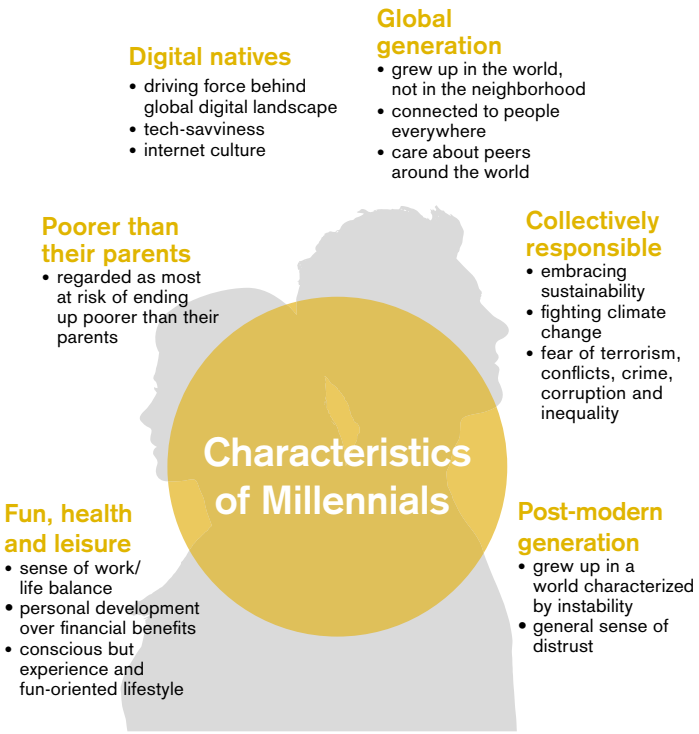
Millennials are one of the largest generations in history and soon coming to full maturity as investors. Sustainability, clean energy, impact investing matter to the Millennials and will gain in importance in the coming years. As digital natives, Millennials are disrupting the traditional models and redefining consumption, with Millennial brands emerging. Micro apartments are developing as an attractive type of housing for Millennials and investors.

5.1 Unique features of Millennials

Fifty percent of the world's population is under the age of 30, and the values of this generation are set to become the norm. The term "Millennials" (or "Generation Y") refers to those of 19-34 years of age, and "Generation Z" refers to those under the age of 19. We refer to them simply as "Millennials." A number of institutions have conducted research into this generation's behavioral tendencies. Millennials exhibit unique features (see Figure 1). Moreover, they are one of the largest generations in history. They are influential and soon coming to full maturity as investors. We at Credit Suisse are ready to meet their needs and investment interests with a focused Millennials' Values investment theme.

Figure 1

Characteristics of Millennials



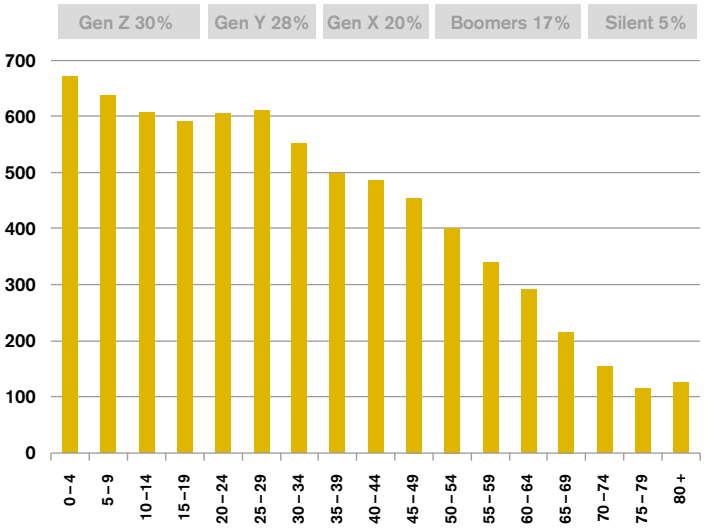
Source: Credit Suisse

5.2 Sustainable business and investments

Millennials are the most sustainability-conscious generation. Recent studies by Nielsen or Deloitte show that Millennials are willing to pay more for products and services seen as sustainable or coming from socially and environmentally responsible companies. As Millennials represent a rapidly growing consumer market, they influence companies' success by their choice of products. Moreover, when investing, they will focus on those **companies that live up to environmental, social and governance (ESG) standards.**

Figure 2

World population by age group in 2015
in mn



Source: United Nations (July 2015), Credit Suisse

Investor takeaways see end of chapter.

The **food and clothing industries** have repeatedly received bad publicity due to human rights violations and environmentally unfriendly production methods. Nowadays, the food and drinks industry is leading the way to help set standards for sustainable agriculture amid a growing need for more food to feed an ever-larger population and to face environmental challenges ranging from water scarcity to herbicide resistance. In the clothing industry, global brands have agreed to better monitor conditions at factories supplying their goods, but still more transparency is needed. The difficulty in monitoring the fashion industry is that it moves its supply chain to new locations on a regular basis and suppliers use unapproved outsourcing.

The auto industry has fully embraced the trend toward **electric vehicles (EV).** According to current expert estimates, EV penetration will rise to double-digit levels by the start of the next decade (from less than 1% in 2015). According to the second annual survey on EV from the Consumer Federation of America, 36% of participants are interested in purchasing an EV. Young adults (18-34 years old) show the greatest interest, and half of survey participants would consider buying such a car.

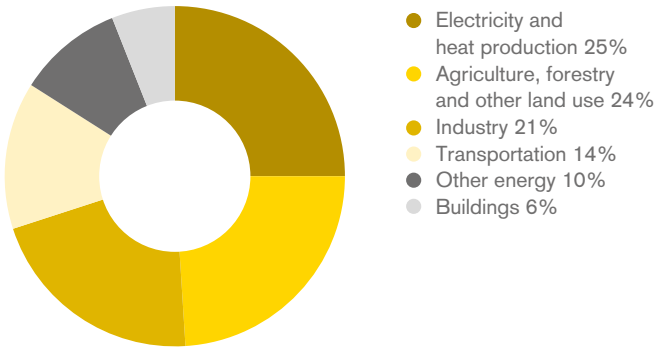
At Credit Suisse, we provide full transparency about the ESG scores of most companies we analyze. We use the internationally recognized provider of ESG ratings, MSCI ESG, to inform ourselves and our investors about the Environmental (Carbon Emissions, Energy Efficiency, Water Scarcity), Social (Human Rights, Labor Standards, Diversity) and Governance (Corporate Governance, Management Compensations, Corruption and Instability) qualities of the companies we invest in.

5.3 Clean energy

One of the Millennials' major concerns is climate change and global warming. The main drivers behind man-made global warming are greenhouse gas (GHG) emissions such as CO_2 emissions linked to the use of fossil fuels (e.g. coal, oil & gas) and from industrial processes. To slow or even reverse the trend of global warming, "clean tech" has emerged, e.g. renewable energy, electric vehicles or smart buildings and a focus on energy efficiency.

Figure 3

Global greenhouse gas emissions by sector



Source: IPCC (2014), Environmental Protection Agency, Credit Suisse

Millennials worry about the future of the environment and feel responsible for it. Thus, it is not a surprise that support for electric bill surcharges for developing renewable energy was highest among Millennials, according to a study conducted by Deloitte in the USA. In addition, as they are used to benefiting from the ↗ **sharing economy,** they also have the greatest interest in community solar power, for example. Renewable energy includes many different technologies: **bio energy, solar energy, geothermal energy, hydro power, ocean energy and wind energy.** According to the 2017 BP Energy Outlook, renewables (excluding hydro power) accounted for about 7% of global power generation in 2015, but should increase to almost 20% by 2035, representing 40% of the growth in power generation. The strong growth is mostly attributable to lower costs; while the pace of cost reduction slowed for solar, wind power costs are expected to fall materially, driven by the improving performance of wind turbines. However, wind energy is also controversial due to its impact on landscapes and bird wildlife.

Energy storage forms a key part of future energy systems with higher (and less predictable) renewable generation. There are different types of storage: solid-state batteries, flow batteries, flywheels, compressed air energy storage, thermal storage and pumped hydro power. We see a lot of opportunity in **solid-state batteries,** particularly for lithium-ion. Global energy storage capacity currently stands at about 2000 MW and is expected to grow to around 30,000 MW by 2020. Electric vehicles (EV) are another driver of battery demand. Based on the attractive outlook for batteries, plans are in place to build up to 12 new battery mega-factories in order to triple current battery manufacturing capacity by 2020.

↗ **Keywords** see end of chapter.

5.4 Social enterprise and impact investments

Millennials are willing to support enterprises that generate a positive social and/or environmental impact in addition to financial returns. Impact investing is about investing capital in such companies, which in most cases belong to the private sphere. We find such social enterprises in areas with pressing social challenges, such as education, housing, access to finance, agriculture and nature conservation. Students, micro entrepreneurs and small farmers are the end beneficiaries of these enterprises. Many surveys confirm that Millennials are interested in impact investing. Others decide to pursue careers in social entrepreneurship, working with a foundation or a social investment fund.

At Credit Suisse, we have long-standing expertise in ↗ **Microfinance** and have established partnerships with recognized leaders in this field. Providing access to capital for micro-entrepreneurs is at the heart of Credit Suisse's Entrepreneur-driven culture and history. We are proud of the contributions we make in connecting the bottom with the top of the wealth pyramid. Our **extended impact investment solutions** provide many different ways to combine investments with a broader impact.

In the coming decades, baby boomers will transfer trillions of assets to their Millennial heirs, and given Millennials' tendency to social engagement, impact investing is expected to grow in scale. It will become a powerful engine of global economic, social, and environmental uplift. For it to develop successfully, though, micro entrepreneurs need to keep identifying opportunities to build companies that use impact capital.

5.5 Digital natives expect a "fingertip" experience

Gen Y and Z have been brought up in an era driven by technological advancement. They are tech savvy, they have access to instant information and they are connected. They realize that it gives them the power to change and impact the world: the world is at their fingertips.

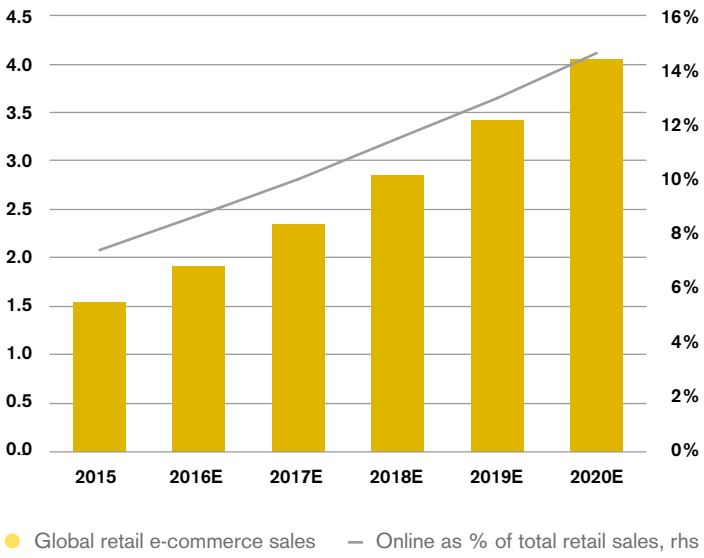
When it comes to consumption, Millennials favor technology brands.

- Millennials live with social media. They communicate through instant messages and internet reviews. **Social media sites** have billions of users. Over the past five years, social media marketing has become incredibly important for businesses to connect with their audience and establish brand awareness.

- Millennials have grown up with instant access to information. They now expect the same for goods. They browse the internet almost every day to look for items to buy. **E-commerce** has advanced strongly, and this year it is likely to capture a 10% share globally from traditional retail. Nearly all retail categories are affected. Traditional retailers have been forced to react and also offer e-commerce as well as reshape store portfolios and compete with the likes of Amazon, for which top-line growth matters more than profit margin: it is an intensely competitive environment that is driving many companies out of business. For e-commerce, key factors for success include having a social media presence, strong content and convenience by way of an attractive shipping, delivery and return policy. The restaurant industry is now also evolving, introducing ordering systems, as customers no longer want to queue to pick up foods or drinks.

Figure 4

Rising impact of online shopping on retail sales
in USD bn



Source: emarketer, Credit Suisse/IDC

5.6 Fun, health and leisure lifestyle and consumer brands

Millennials are price sensitive as most graduated during the financial crisis and have fewer resources than previous generations. As a result, they continue to live with their parents in order to have more money at their disposal, spending their money with a focus on satisfying desires and lifestyle choices. Living experiences, rather than consuming or accumulating goods, helps them connect better with their friends, communities and people around the world.

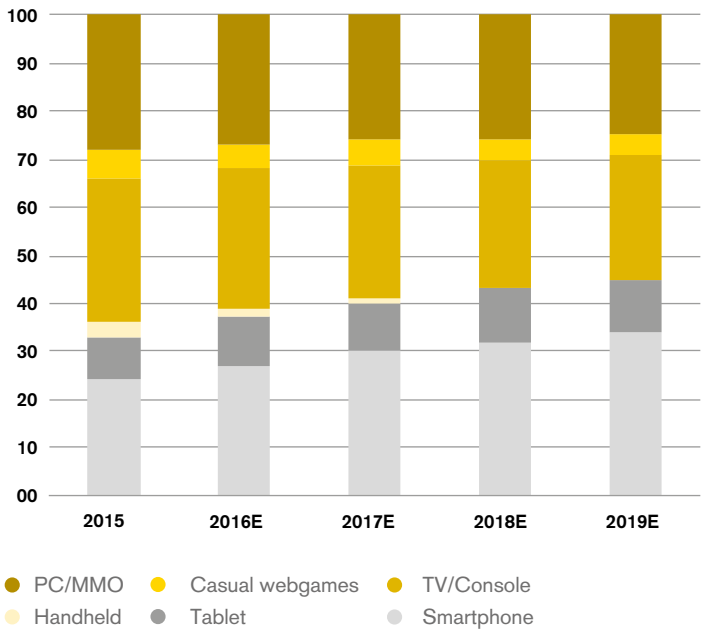
Eating smart is a lifestyle choice for Millennials. While they still prefer cheaper food and want it to be convenient, they are also willing to pay for fresh and healthy food and to go to great lengths for the food experience. Veganism is very popular among young people: social media has played a major part in this, promoting vegan food as healthy but also respectful of the environment and animals. **Specialty sellers (selling organic, ethnic, fresh, vegan products)** have benefited from this trend, yet traditional retailers have been fighting back, giving more shelf space to these types of food. Branded processed food manufacturers and beer companies are losing market share and **smaller brands** are emerging. In response, large companies have started buying such smaller brands.

Millennials are an active generation and value experiences. Their drive for adventure and excitement pushes them toward new forms of fitness. Boot camps and marathons are in fashion and smartphone fitness apps are taking over the market as Millennials take their desire to be social to the world of fitness. Thus, **sporting goods retailers, sports brands and makers of devices that monitor progress during workouts** and allow Millennials to share their progress with friends stand to benefit. **Low cost fitness centers** are also on the rise.

Millennials value fun more than older generations do. **Interactive gaming via mobile devices,** for instance, is the fastest growing games market and has tripled in size in the past 10 years. Mobile gaming now has a market value of USD 36.9 bn, according to ↗ **Newzoo** Research in 2016, surpassing the digital console market. Social media is also a great source of enjoyment for Millennials as they search for fun and variation in the workplace.

Figure 5

Global gaming market increasingly dominated by mobile devices
%



Source: Newzoo, Credit Suisse

More generally, the brands that are gaining ground with Millennials are the ones that create a way for them to be an active participant in their brand story. Not surprisingly, **brands that represent clothing, technology, retail and a number of consumable products** are among Millennials' favorite brands.

5.7 Millennial housing

Millennials are living with their parents significantly longer than Generation X did before them. The reasons for this include longer education times, increasing education costs, high real estate prices and today's lifestyle of traveling all over the world. Thus, Millennials were underrepresented on the housing market for a long time. But as they grow older, they have started becoming more and more important for housing demand.

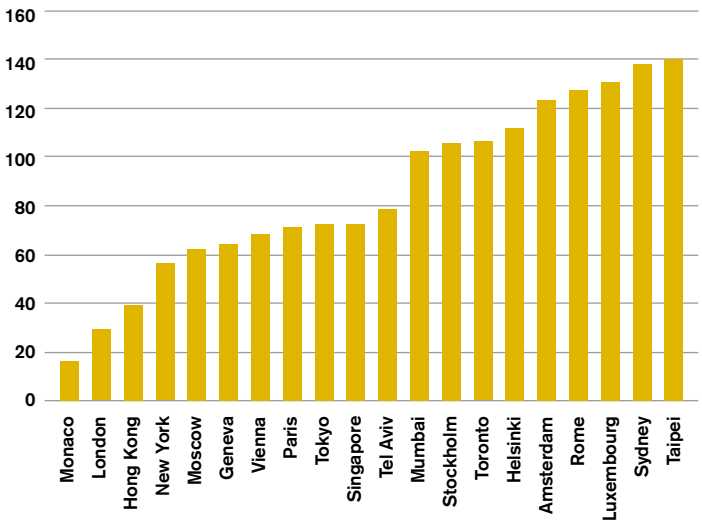
Millennials' housing needs differ from those of former generations. Alternative housing forms such as single living reflect Millennials' needs and values and are becoming more widespread. Single living is, in many cases, no longer a temporary phase between leaving home and starting a family. Rather, it is a conscious choice in an increasingly individualized society. The individualized and mobile society is leaving its mark on relationships as well. Many people who are in a relationship, even in long term-relationships, do not live together with their partner, preferring instead to stay in a single apartment.

The rise in single-person households, combined with high population density and high living costs in the urban centers, is shifting housing demand to smaller dwellings. Space-saving technological developments (digitalization, sharing economy) and a growing range of home-delivered services (cleaning, catering etc.) have boosted the acceptance of smaller properties. **Micro apartments with a size of 20 to 30 square meters** help combat the space problem by enhancing space efficiency. Successful concepts expand **limited private space with the provision of communal areas such as roof terraces, communal kitchens, play areas and laundry rooms.**

Micro apartments are an attractive type of housing for investors in urban areas with high rental prices and a lack of available living space.

Figure 6

Expensive cities shift the focus of housing demand to smaller apartments
Square meters of property for USD 1 m



Source: Global Property Guide, Credit Suisse

Investor takeaways

The key beneficiaries of this fifth supertrend are, in our view:

- top ESG-rated companies by sectors, electric vehicle manufacturers, renewable energy providers, energy storage providers in particular solid-state battery manufacturers
- microfinance and impact investments
- Millennial brands, social media sites, Millennial e-commerce leaders, specialty sellers of organic, ethnic, fresh and vegan food, smaller food and beverage brands, sporting goods retailers and manufacturers, makers of devices that monitor workout progress, low-cost fitness centers, interactive gaming via mobile devices
- property developers with a focus on micro apartments with communal areas

To learn more about these, please contact your Credit Suisse advisor.

Sharing economy is an umbrella term with a range of meanings, often used to describe economic and social activity involving online transactions. The term is now sometimes used in a broader sense to describe any sales transactions that are done via online market places, even ones that are business-to-business rather than peer-to-peer.

Microfinance is a source of financial services for entrepreneurs and small businesses lacking access to banking and related services.

Newzoo is a leading provider of market intelligence covering the global games and app data, market sizing and forecasting and custom research.

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