

# Navigating the futures

UBS House View: **Further Ahead**

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## Chapter 1

# The shape of the world to come



The years ahead will bring significant change – that much is certain. The world population will grow, age, and urbanize. Global temperatures are forecast to continue rising. Commonplace resources and technologies will inevitably become obsolete, while others, as yet unimaginable, will emerge.

But the way in which the world economy will respond to these changes is far less evident. We do not know how the economy, and particularly the labor market, will adapt to the robotics and artificial intelligence revolution. It is unclear whether globalization will continue its recent retreat. An aging population will inevitably test

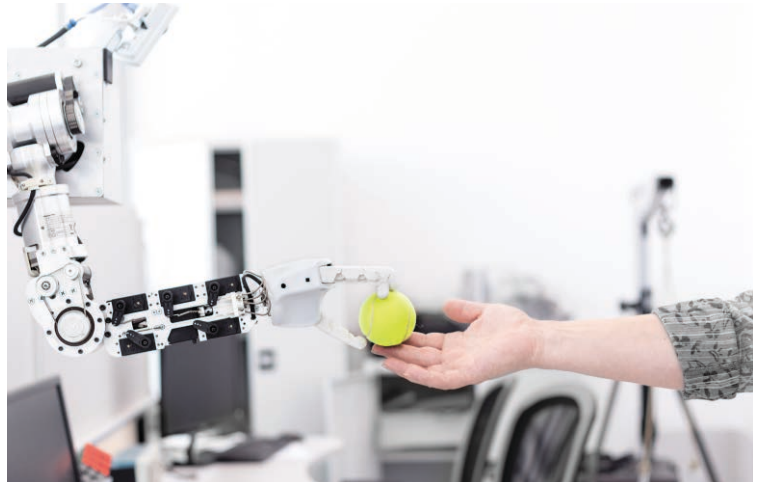
government policy and pension systems. In the absence of any hard evidence about the course these fundamental forces will take, the inputs for the contribution of labor, capital, and total factor productivity in classic economic models all become highly uncertain.

We tackle this challenge not by making single concrete predictions but instead by imagining futures: we have constructed four of them for the world economy in the years ahead. Each is affected by the aforementioned changes – demographics, climate change, and innovation – and by the economic cycle. But the response of populations, economies, and markets is different in each case.

In this chapter we assess: how we might arrive at each future, the likely shape of the economy, the risks involved, and the implications for investment portfolios.

# Will the 'bots take the jobs?

By now we're quite familiar with seeing robots on production lines. But what about in our offices or schools, or on our roads? The ability (or inability) of the employment market to respond to the challenges the technological revolution poses will have a major bearing on the direction the world, and its economy, takes.



## Outcome A

### The labor market adapts

Fears about technology replacing jobs are as old as technology itself. Ned Ludd and his fellow weavers weren't the first to voice them and they won't be the last. Yet the labor force has consistently adapted to innovation and new jobs, and entire industries have been created to replace those lost. One hundred years ago more than 60% of US workers labored on farms or toiled in industry. In large measure due to technology, now only around 20% are employed in agricultural and manufacturing, and the US has since created more than 100 million nonfarm jobs.

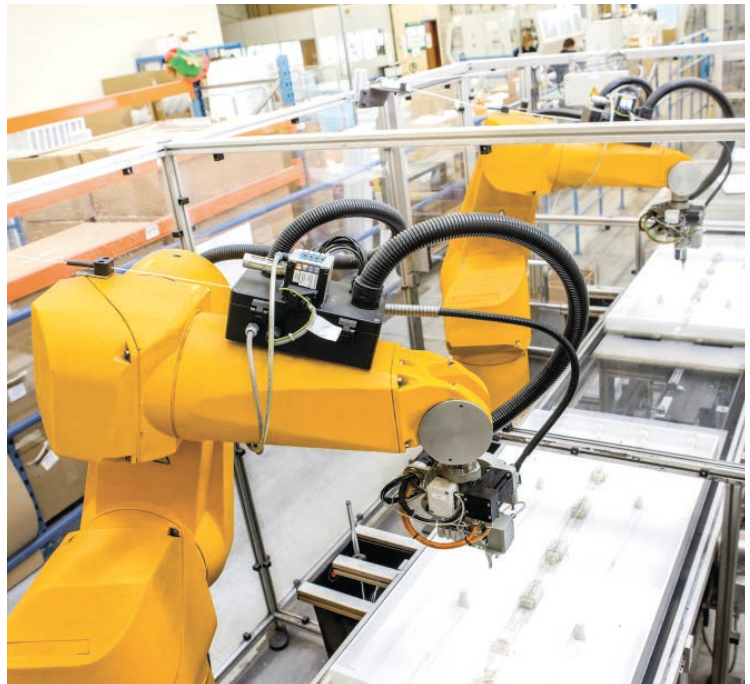
- Improvements in connectivity and the spread of the sharing economy lower entry-to-work barriers. People previously unable to hold full-time jobs due to physical constraints such as their location, a lack of mobility, or an inability to be present during standard office hours demanded by traditional employers will become more available to the labor market. Increased flexibility could lead to, among other things, a greater number and share of women entering the workforce.
- An aging population will create demand for dextrous and emotional jobs that robotic development has been slower to master than core cognitive tasks. IBM Watson can diagnose certain medical conditions more efficiently than a human doctor, but providing physical assistance and counseling to an elderly patient is likely to elude its ability for the foreseeable future. Adidas recently revealed that robots are currently incapable of threading a shoelace. Meanwhile, automation is relatively less advanced in creative than in routine tasks, and the economy will still need creative skills in areas such as management, marketing, design, and innovation.
- Consumers might also simply prefer “hand-made,” or perhaps “brainthought,” products, akin to current trends that favor artisanal beer, chocolate, and coffee. How quickly, if ever, consumers become comfortable riding in a car without a driver, being operated on by a computer-controlled robotic arm, or receiving financial or medical advice delivered by a smart speaker remains to be seen.



## Outcome B

### Robots disrupt jobs

- Developments in big data, machine learning, connectivity, and computing power now expose vast numbers of jobs, from operating vehicles to accounting, teaching, practicing medicine and law, and offering financial advice, to the risk of being automated out of existence. An Oxford University study suggests that 47% of job categories could be vulnerable to automation in the coming 20 years.
- Previous industrial revolutions harnessed energy to replace human muscle. Labor increasingly interacted with capital, with humans serving as the brain and machines as the brawn. Think farmers driving a tractor in wheat fields, autoworkers assembling a full-sized sedan on a production line, or PC-assisted office personnel preparing a PowerPoint presentation. But the artificial intelligence revolution threatens to effectively replace the human brain, too, potentially creating an economy where capital primarily substitutes for, not merely complements, labor.
- Funding lifelong education and retraining, taxing capital, enacting markedly higher minimum wages, or ensuring “basic incomes” could each ease the labor market’s transition to the new economy. But each is hard for governments to implement or fund when national debt is already high and when asset-light but intelligence-rich companies and individuals can cross borders with relative ease.
- Low-income countries risk becoming trapped as manufacturing and process-related work, traditionally outsourced, becomes automated instead. Meanwhile, in the absence of significant education and training efforts, middle-income countries and middle-skill workforces and individuals might be forced to take on less-skilled jobs, with dire consequences for GDP growth and personal income.



### Automation and robotics

Those looking to benefit from trends in innovation, regardless of their potential impact on the employment market, could invest directly in automation and robotics companies. From an investment perspective, smart automation, in our view, is likely to represent one of the fastest-growing segments of the industrial and IT sectors over the next decade. The smart automation market already exceeds USD 156bn, and we expect annual revenue growth to maintain a mid-to-high single-digit rate.

## Can globalization resume?

Openness to global trade in goods and services has fundamentally reshaped the international economy. In 1980 the world traded around 1.8bn tons of dry cargo. By 2010 that figure had risen more than threefold: to 5.6bn tons. Yet since the financial crisis, world trade as a share of GDP and cross-border capital flows has fallen, and recently “globalist” political viewpoints have lost traction with some electorates.



### Outcome A

#### Protectionism becomes the norm

- Through modern history, slower median income growth and greater income inequality have often led to the rise of protectionism and nationalism. In the absence of controls on migration or capital, governments cannot redistribute income as easily, and an aging population is likely to lead to continued slow median income growth.
- Exactly how much automation will affect the labor market remains to be seen. But it will have an impact. Politicians might be tempted to avoid the difficult task of engaging their constituents in a complex narrative on technology in favor of a simpler story that blames any disruption on global trade and/or migration.
- Global connectivity means that jobs are more portable, and “virtual immigration” might become more commonplace. This could contribute to scapegoating, with foreigners and outsourcing blamed for unemployment.
- Some of the risks discussed later, namely sovereign defaults and military conflict, could not only arise from nationalist/protectionist sentiments but also exacerbate them. A major military conflict would likely take a serious toll on global trade, with worldwide alliances becoming strained. Similarly, a large sovereign default could further balkanize capital flow as investors seek safety close to home.

**Outcome B**

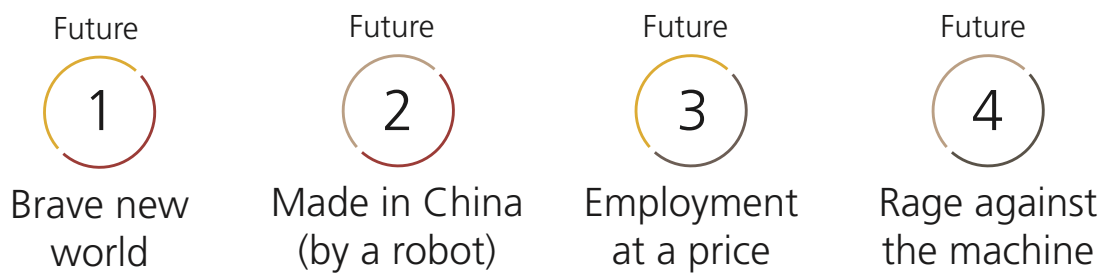
## Globalization stages a comeback

- Whether nationalist or protectionist movements are considered successful, both at home and abroad, will be a major theme of the next decade. There is evidence, for instance, that European populations turned more not less favorable toward the EU following the UK's Brexit vote. A perceived failure of protectionism or nationalism to deal with urgent concerns could hinder its spread and encourage electorates to become more accepting of globalist political viewpoints again.
- In recent elections, younger age groups have tended to espouse more benign attitudes toward globalism and migration than their elders. If a genuine generational shift in outlook is taking place (and younger people are not merely embracing views that will change in time), the inexorable forces of demographics could turn electorates more globalist in nature.
- Orthodox economic theory takes the view that globalization tends to increase overall wealth. Its failure to appeal to large parts of the populace could stem from poor political messaging about how wealth creation is distributed. While not easy, espousing international openness can be done, and has been done before. In the 1906 British election, the then-Liberal Party campaigned for free trade under the "big loaf" slogan, pointing to the widespread benefits that globalization brings, i.e. lower food prices through free trade.
- Major developments often occur in waves. After the major advances in globalization since the 1970s, many now feel as though the pendulum has swung too far, and politicians have proven successful in promising a return to the past. But should the ensuing policies prove ineffective, globalization could be ready for its next wave.

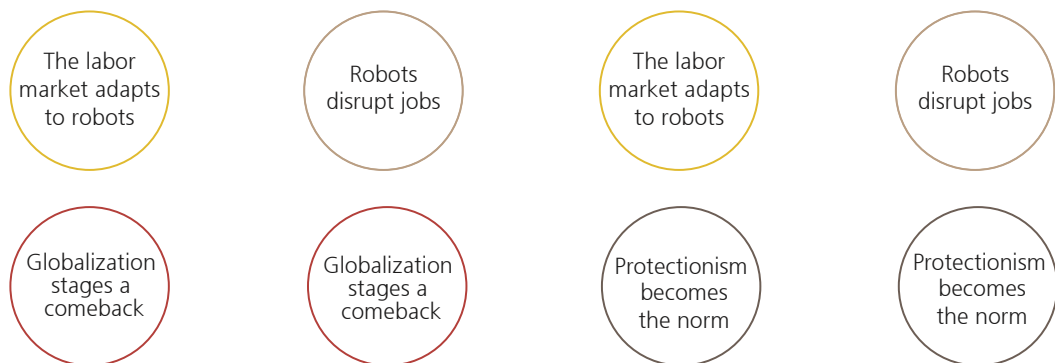


## Four futures overview

### Futures



### Outcomes



### Economics

<b>Growth</b>	↑ Higher	→ Low but stable	→ Moderate	↓ Weak
<b>Employment</b>	↑ Higher	↓ Down markedly	↑ High	↓ Lower
<b>Real Interest rates</b>	→ Moderately higher	→ Similar to today	↕ Varies	↓ Lower
<b>Government debt to GDP</b>	→ Moderately higher	↑ Higher	↕ Varies	↑ Higher

### Markets

<b>Returns</b>	↑ Positive overall	↑ Positive overall	↕ Mixed	↓ Weak overall
<b>Volatility</b>	→ Low and stable	→ Low but unstable	→ Low but unstable	↑ High and unstable
<b>Correlations</b>	↓ Low	↑ Higher	↑ Higher	↑ Higher



## Future 1

# Brave new world

Protectionist momentum wanes. The globalist consensus prevails, resulting in freer movement of capital and greater global trade. The job market adapts to the emergence of robotics, with new jobs and new types of work ensuring high employment.



## Economics

### ↑ Growth: Higher

Productivity climbs as the labor force learns to harness the power of artificial intelligence and robotics. Freer trade and markets lead to a more efficient allocation of resources and capital.

### ↑ Employment: Higher

Some jobs are lost to robotics, but the need for dextrous and emotional skills increases thanks to an aging population. Technological advances also help break down barriers to employment, the location and timing of work becomes less important, more women join the workforce, and both education and re-education are made simpler through common use of online and virtual training. Wages climb as technology boosts demand for workers.

### → Real interest rates: Moderately higher

Rising trend rates of economic growth increase real interest rates, but efficient capital allocation means this happens in a restrained manner, particularly in more indebted countries, whose governments could resort to financially repressive policies.

### → Government debt to GDP: Moderately higher

Although high employment, robust growth, and rising wages help governments manage their debt burden, the mobility of skilled workers and capital makes effective taxation difficult. Spending remains high to accommodate state pension and healthcare needs of an aging population.



## Markets

### ↑ Returns: Positive overall

Credit performs better than government bonds or equities. Corporate profitability is solid enough for companies to meet their credit obligations, but low employment rates lead to equity investor concern about the long-term outlook. Although rates stay low, rising government debt ratios increase uncertainty about the prospects for government bonds.

### → Volatility: Low and stable

Good corporate profitability keeps volatility generally below long-term averages. But sudden volatility spikes that accompany sovereign debt crises in countries unable to finance their rising debt load are a distinct possibility.

### ↓ Correlations: Low

Rising government debt-to-GDP ratios lift correlations above recent levels, as investors grow concerned about potential sovereign default and some central banks begin to buy government debt in an attempt to suppress yields.

## Risk – economic cycles

### Within this scenario, what is likely to be the main risk?

Although not unique to this scenario, recession is likely to prove the primary risk. Recessions have occurred in rich nations in every decade since the OECD started collecting data in the 1970s. As a result, it would be unusual if a recession didn't materialize at some point in the coming decade.

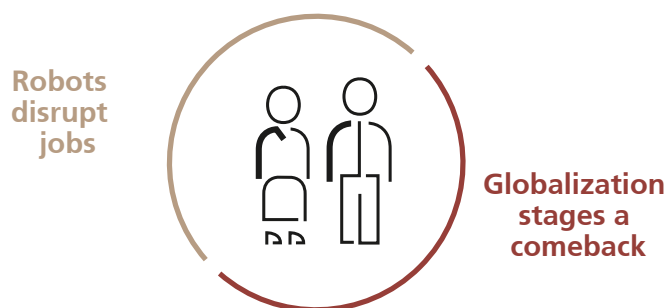
Recessions can be testing periods, with equity investors enduring swings in the value of their wealth. But they generally prove a good time for long-term investors to build up their

equity holdings. Since 1976, those buying the MSCI World Index of developed market stocks during a recessionary quarter earned an average return of 260% by holding them for a decade, compared to 195% for stocks purchased in any other quarter. And there were no recessionary quarters in which money placed in the markets would have generated a loss, provided it remained there for at least 10 years. The average return on global stocks during a recession is positive (+8.6%).

## Future 2

# Made in China (by a robot)

Most nations continue to vote for centrist and globalist political parties. Global trade expands and capital is relatively free to move across borders. However, the labor market fails to adapt to the robotics and artificial intelligence revolution, and unemployment rises.



## Economics

### ➔ Growth: Low but stable

Open trade and international capital markets help allocate resources efficiently. But lower employment reduces demand. Human capital is also increasingly degraded, diminishing the long-term outlook.

### ➔ Real interest rates: Similar to today

Growth is okay, but too low to push real rates meaningfully higher, and efficient capital allocation in globalized markets keeps real rates in check.

### ⬇️ Employment: Down markedly

Advances in robotics and artificial intelligence surpass expectations, driving an increasingly large wedge in the labor market between those able to exploit the advances of robotics and AI and those unable to adapt to them. Demand for highly skilled labor able to exploit and develop technology is high, but wages for low-skilled workers decline.

### ⬆️ Government debt to GDP: Higher

Low employment reduces income tax revenues while the cost of social welfare climbs to accommodate an aging population. Corporate tax revenues are unable to raise much revenue as governments struggle to find effective ways of taxing highly mobile companies in a global world.



## Markets

### ↑ **Returns: Positive overall**

Credit performs better than government bonds or equities. Corporate profitability is solid enough for companies to meet their credit obligations, but low employment rates lead to equity investor concern about the long-term outlook. Although rates stay low, rising government debt ratios increase uncertainty about the prospects for government bonds.

### ↑ **Correlations: Higher**

Rising government debt-to-GDP ratios lift correlations above recent levels, as investors grow concerned about potential sovereign default and some central banks begin to buy government debt in an attempt to suppress yields.

### → **Volatility: Low but unstable**

Good corporate profitability keeps volatility generally below long-term averages. But sudden volatility spikes that accompany sovereign debt crises in countries unable to finance their rising debt load are a distinct possibility.

## Risk – sovereign debt crisis

### **Within this scenario, what is likely to be the main risk?**

Government debt-to-GDP ratios are likely to rise in all four scenarios. Investors will need to be watchful of potential sovereign debt crises in each, but crises are most likely in this scenario. Debt rises due to higher unemployment, the greater spending needed to provide care and services for an aging population, and the difficulty of imposing effective taxes on global corporations. Meanwhile, globalized capital markets make it tougher for governments to engage in financial repression.

The 2011 Eurozone crisis demonstrated how local sovereign debt issues can quickly mutate into a global economic crisis. Drawdowns were sharp, particularly for investors holding high concentrations of stocks and bonds in the affected regions. But those able to maintain a well-diversified portfolio and remain invested were well rewarded over the long term. Policymakers worked to put a firewall around the affected countries and instill confidence in global markets.



## Future 3

# Employment at a price

Protectionism becomes a worldwide trend and globalist models begin to unravel. Immigration restrictions lead to labor shortages, and trade restrictions limit access to overseas markets. Corporations respond to the diminished trade by increasing the pace of innovation domestically.



## Economics

### ➔ Growth: Moderate

Barriers to the flow of capital and trade cause capital to be allocated less efficiently, weighing on long-term growth. But greater innovation in robotics and a focus on localized production techniques improve efficiency and have a countervailing positive impact.

### ⬆ Employment: High

A decline in immigration and an aging population cause developed market labor forces to shrink. Unions are able to demand higher wages. Previously discouraged workers respond to the increased availability of jobs that require uniquely human skills.

### ⬆ Real interest rates: Varies

In a de-globalized world, the real cost of capital rises since resources are allocated less efficiently. That said, central bank independence is under threat in highly indebted countries, as governments aim to monetize debt with investors captive in a world of restricted capital flow. Significantly higher inflation looms.

### ⬆ Government debt to GDP: Varies

Changes in debt-to-GDP ratios differ by country. Controls on the flow of labor and capital enable governments to tax skilled individuals and companies more effectively. But variable rates of innovation and the willingness of citizens to consume affect government budget results worldwide.



## Markets

### 📈 Returns: Mixed

A higher real cost of capital weakens overall financial market performance. Outcomes diverge across countries, however, so regional selection has a larger bearing on returns than asset class allocation.

### ➡ Volatility: Low but unstable

Divergent performance among countries dampens volatility for diversified investors, but those concentrated in individual countries suffer much greater uncertainty. As indebted countries aim to monetize debt, currency hedging becomes particularly important.

### ⬆ Correlations: Higher

The threat of higher inflation leads to rising correlations between bonds and equities, as expectations for inflation, and not growth, begin to drive financial markets.

## Inflation across the futures

Forces like technology and aging populations can affect relative price levels of goods. For example greater technological efficiency might deflate the prices of certain goods, or an aging population (or labor shortages) might make labor-intensive goods more expensive. But, in our view, the overall price level, i.e. the rate of inflation, is determined primarily by money supply relative to money demand.

Central banks therefore have a critical role in determining the rate of inflation across our scenarios. In most of them, central banks are able to maintain their independence and inflation targeting mandates, and as such we assume that overall inflation remains contained. This is different in *Employment at a price*, where central bank independence might come under pressure at the same time as other inflationary forces, like labor shortages, come to bear.

## Risk – structurally higher inflation

### Within this scenario, what is likely to be the main risk?

Central bank independence would come under threat as populist governments pressure their central banks not to increase rates in response to rising wages. Interest rates stay artificially low to help fund increased government spending.

Structurally higher inflation would likely hurt all financial assets in real terms, although nominal assets, such as cash and bonds, would likely underperform real assets like equities.

## Future 4

# Rage against the machine

Robotics and artificial intelligence precipitate major drops in employment. Populations seeking change turn to nationalist and protectionist politicians. Globalist models begin to unravel, and the flow of people, goods, and capital among countries shrinks.



## Economics

### ↓ Growth: Weak

Resources are allocated inefficiently due to higher barriers to goods, services, and capital crossing national borders. Declining labor force participation further reduces economic demand.

### ↓ Employment: Lower

Curbs on migration do little to reduce unemployment as unskilled work is displaced by robotics. A wedge is driven between those able to exploit technology and those unable to. Greater returns accrue to capital than labor.

### ↓ Real interest rates: Lower

Meager growth brings down real rates, and captive investor bases enable governments to push rates even lower to fund social policy.

### ↑ Government debt to GDP: Higher

To tackle inequality, counter structural unemployment, and fund aging populations, governments try to boost their revenue intake by raising taxes on income, consumption, and wealth. Although higher national taxes are relatively easy to implement in a de-globalized world, they remain inadequate due to rising spending and slow growth.



## Markets

### ⬇️ **Returns: Weak overall**

Corporate profitability suffers in a de-globalized world due to feeble economic growth. Government bonds should outperform credit and equities, as governments need not default in a world of limited capital flow, even if the currencies of indebted nations suffer.

### ⬆️ **Volatility: High and unstable**

Weak economic growth, social unrest, and rising government debt would pose continuous risks. Volatility is generally high, and is in danger of spiking in the event of geopolitical conflict.

### ⬆️ **Correlations: Higher**

As central banks intervene to try and stimulate growth, equities and bonds begin to move together in anticipation of further stimulus.

## Risk – military conflict

Military conflict is arguably a greater risk when global trade is in retreat. Capitalist peace theories suggest that countries integrated into global supply chains are heavily incentivized to avoid military conflict, given the crushing impact it could have on their local economies. In the absence of those supply chains, however, the risk of conflict rises.

Markets, thankfully, have not needed to contend with global conflict of late, so its potential impact cannot be ascertained from recent history. Should conflict occur, a flight to safety, i.e. to assets held in countries neutral in the conflict, is probable. A significant drop in equity prices, and in the bonds and currencies of the parties involved, is also likely. The risk of such conflict underscores the importance of diversification across regions.



## Chapter 2

# The shape of markets to come



The influence of technological advances such as robotics and artificial intelligence in all futures should help keep corporate profitability relatively high, even if overall growth is muted.

Before building an effective portfolio for the future, investors need to address some critical questions:

- Are returns likely to be high or low?
- How volatile might markets be?
- How effective will current strategies of reducing risk, like diversification, prove?

# Are we headed to a low-return world?

Financial market returns in recent times have been exceptional. The S&P 500, for example, has produced compound annual returns (CAGR) of more than 10% for 30 years. A portfolio of US 5–7 year government bonds has delivered just under 6% CAGR for 25 years, and high yield bonds more than 6% for 15 years. But while it might be wise for investors to trim their expectations, our scenario analysis suggests that equities and credit are still likely to outperform government bonds and cash.



## Bonds

Rising corporate profitability and a muted pace of defaults in three of our futures, *Brave new world*, *Made in China (by a robot)*, and *Employment at a price*, suggest that riskier credits should generate better returns over the long term than “safer” bonds.

Overall, however, bond returns are likely to significantly lag those of equities. Prospective bond returns depend primarily on the yield at which they are bought, regardless of the direction rates are moving in. Since 2012, when US 5-year yields hit a nadir, bonds of the same maturity have delivered annualized returns of just 1.5%. And today’s continued low yields suggest poor returns.

Gains in credit are also likely to be lower than historical norms, due to the low absolute yields.

Our annualized total return assumptions for bonds over the next 7+ years, in local currency, unless otherwise stated:

### Bonds

USD/GBP high grade bonds 5–7 years	USD 2.5% / GBP 0.9%
EUR/CHF high grade bonds 5–7 years	EUR –0.1% / CHF –0.2%
USD inflation linked bonds	2.2%
USD corporate investment grade bonds	3.1%
USD/EUR high yield bonds	USD 4.8% / EUR 2.7%
USD/EUR senior loans	USD 5.9% / EUR 4.6%
Emerging market bonds (USD)	3.8%

## Equities

We expect three of our scenarios to produce positive overall returns for equities. Only in scenario four, *Rage against the machine*, in which robotics devastate the job market and globalization ebbs further, would equities be in serious danger of generating weak returns over a prolonged period.

Valuations currently hover slightly above long-term averages, creating warranted anxiety. But corporate earnings growth chiefly determines returns in the long run. And if promising trends in robotics and automation, which feature in all our scenarios, persist, profitability can remain robust, even in a slow-growing economy.





A secondary but key factor in corporate profitability is openness to flows in global goods, services, and capital. Such flows enable multinational companies to connect to profitable opportunities in overseas markets, while also making national taxation more competitive.

Even in scenarios *Employment at a price*, and *Rage against the machine*, in which openness declines, equities need not perform poorly. The recent experience of the US, the UK, and Turkey shows that moves toward protectionism and/or nationalism do not necessarily cause local equity markets to fall, in local currency terms at least.

Our annualized total return assumptions for equities over the next 7+ years, in local currency, unless otherwise stated:

Equities	
US	7.0%
Emerging markets (USD)	8.8%
Eurozone	8.0%
UK	7.5%
Japan	6.5%
Switzerland	7.0%

### Return assumptions for our four futures

	Globalization spreads	Nationalism as a norm
Labor market adapts to robotics	 <b>Positive overall.</b> Solid returns for equities and credit, weak performance for government bonds.	 <b>Mixed.</b> Regional allocation to have a larger bearing on returns than asset allocation.
'Bots take the jobs	 <b>Positive overall.</b> Credit should outperform, equities mixed, government bonds underperform.	 <b>Weak overall.</b> Government bonds to outperform credit and equities unless inflation soars.

# Is a more volatile world looming?

We do not believe the world is destined to become more uncertain for investors than it has been in the past decade. And when it comes to volatility, at least, history is not a bad guide.

Asserting that “volatility is going to rise” is popular. Of course at some ill-defined point in the future it almost certainly will. The business cycle will go on, creating recessions and ushering in doubt. The credit cycle will cause periods of bubbly leveraging and painful deleveraging. Structurally higher inflation is a possibility, particularly if governments lean on central banks to solve debt problems. The Eurozone is prone to divergence and instability. And geopolitical tensions could rise if nationalism and protectionist sentiment spread.

But over the long term volatility tends to be low. And the cost of overestimating short-term risk can dwarf that of underestimating it. Holding excessive cash as a hedge against short-term volatility can weigh on portfolio values, ultimately jeopardizing long-term financial goals.

Rather than fret about sudden volatility spikes, investors, in our view, should instead look at volatility regimes – longer-term periods that serve as a “character assessment” of the financial market. Such regimes provide a better guide as to how investments should be allocated than looking at the threat of individual spikes.

## Regime change

In the recent past we have seen three such regimes: a low and stable one (2003 to 2006), a low and unstable one (of late), and a high and unstable one (1999–2002 and 2007–2011). And as we assess our future scenarios, we believe these periods should serve as a reasonable guide to them.



In our future *Brave new world* we expect volatility to remain low and stable thanks to high employment and growth and increased cooperation among nations. In common with the period between 2003 and 2006, investors could confidently take risk in equities without needing to diversify their portfolio as much.

In our futures where either robotics or protectionism causes some disruption, volatility would likely remain low, and growth and/or corporate profitability should be sufficient to keep markets calm most of the time. But the threat of inflation, sovereign default, or even geopolitical conflict would mean that sudden spikes in volatility could be expected frequently. The period since 2012 most resembles this kind of environment – investors can (and should) take risk to generate returns, but strategies, like diversification, can help here to keep portfolios on track.

Finally, in our future *Rage against the machine*, volatility would likely be both high and unstable. The financial crisis period between 2007 and 2011 has most in common with this. In such a scenario flexibility, but also discipline, is key. Investment logic during such periods dictates holding onto risky assets because their valuations are often lowest then, but instinct can trump logic and cause investors to sell them in a panic.



Overall, without knowing which future we might land in, we believe strategies that combine a long-term approach with risk taking, diversification, and flexibility stand the best chance of success, as they have in the past.

## Bonds

Our annualized volatility assumptions for bonds over the next 7+ years, in local currency, unless otherwise stated:

### Bonds

USD/GBP high grade bonds 5-7 years	USD 4.5% / GBP 4.8%
EUR/CHF high grade bonds 5-7 years	EUR 3.6% / CHF 3.6%
USD inflation linked bonds	5.0%
USD corporate investment grade bonds	4.2%
USD/EUR high yield bonds	USD 9.1% / EUR 8.5%
USD/EUR senior loans	USD 7.1% / EUR 7.0%
Emerging market bonds (USD)	9.3%

## Equities

Our annualized volatility assumptions for equities over the next 7+ years, in local currency, unless otherwise stated:

### Equities

US	15.4%
Emerging markets (USD)	24.0%
Eurozone	18.4%
UK	15.0%
Japan	19.9%
Switzerland	14.9%

### Volatility assumptions for our four futures

	Globalization spreads	Nationalism as a norm
Labor market adapts to robotics	➡ <b>Low and stable.</b> Volatility would continue to vary with the business cycle	➡ <b>Low but unstable.</b> Growth is moderate and markets could be placated by financial repression, but divergence among countries presents risks.
'Bots take the jobs	➡ <b>Low but unstable.</b> Higher government debt ratios present sovereign debt risks so volatility is unstable.	⬆ <b>High and unstable.</b> Weak economic growth, social unrest, and rising government debt would pose persistent risks.

# Will diversification work?

Correlations between bonds and equities could rise, requiring investors to consider new approaches to portfolio construction and diversification.

Portfolio diversification – holding a range of lowly correlated assets with the aim of reducing portfolio volatility without sacrificing return – is at the core of our investment approach. Combining lowly correlated assets maximizes the chances of investors achieving their long-term financial goals. But in certain environments, portfolio diversification can fail to have the desired effect. In recent years, bonds and equities have moved in tandem, for example in 2013. And bond-equity correlations were also persistently positive for a long period between 1962 and 1997.

So should investors expect diversification to work in the coming years and, if not, what should they do about it?

We believe that correlations will be primarily determined by: a) inflation uncertainty and b) central bank policy objectives.

In an ordinary, low-inflation environment, growth expectations chiefly determine short-term discount rates. Equities and bonds tend to move in opposite directions, as higher growth boosts stocks (on hopes of higher earnings) but depresses bonds (on fears of higher interest rates). But when investors anticipate inflation, discount rates instead tend to vary based on the inflation expectations. Stocks and bonds can move in lockstep then: both asset classes respond poorly to soaring prices.

Central bank policy has a similar effect: in an “ordinary” environment in which central banks focus primarily on managing inflation, bonds and equities tend to move in opposite directions. But if investors foresee central banks injecting liquidity to stimulate growth, the movements of equi-







ties and bonds, should growth slow, tend to mirror each other in anticipation of central bank asset purchases.

As we scan our scenarios, we see a risk of higher correlation in most of them. Rising debt-to-GDP ratios, and relatively low growth, in each suggests that central banks are likely to feel pressure to enact stimulus. And inflation is a particular threat in *Employment at a price*.

For now, because correlations remain negative, investors can benefit from holding a mix of stocks and bonds. But as we move toward our futures, alternative approaches to limiting portfolio volatility will likely be required. They could include holding a broader range of uncorrelated asset classes, such as hedge funds and impact investments, or using a factor-based approach to portfolio construction.

## Return assumptions for our four futures

	Globalization spreads	Nationalism as a norm
Labor market adapts to robotics	 <b>Low correlation.</b> Stable inflation and central bank environment. Diversification works.	 <b>Higher correlation.</b> Threat of inflation leads to higher correlation between equities and bonds.
'Bots take the jobs	 <b>Higher correlation.</b> Rising debt leads to fears of sovereign defaults and/or central bank intervention.	 <b>Higher correlation.</b> Central bank intervention to maintain low rates results in higher correlations.