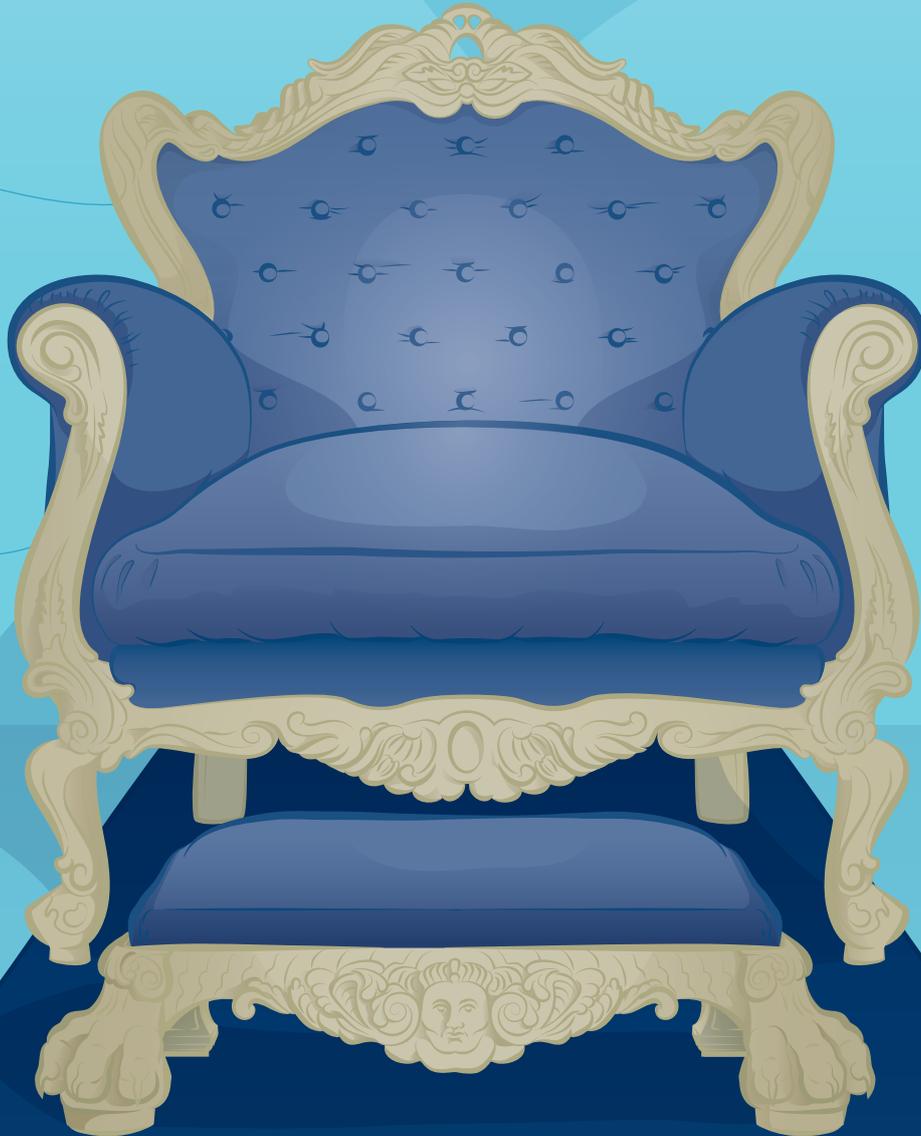


telescope Investment magazine
N° 8 12/2023



Workforce shortage

The impact of demographic change will become acute during the current decade.



Where are the workers?

2 | The growing shortage of labour has been ignored for too long. We are now seeing the consequences as more and more companies find it hard to attract the human resources they need. Job seekers are at an advantage.

Consequences of the labour shortage

8 | Demographic change affects not only companies but also governments and the financial markets.

“Biggest problems will come in the next ten years.”

16 | The labour shortfall has not been treated with sufficient urgency, says Swiss demographics expert Manuel Buchmann. In this interview he also emphasises the special problems of finding replacements for baby boomers in artisan jobs.

Japan leads the trend

18 | Japan's population is shrinking - with seismic results. Lessons here for other industrialised countries.

Investment ideas: demographic winners

20 | The shifting population structure offers opportunities for well-placed companies. We list twelve likely winners.

My best and worst investments

14 | How soul musician Jan SEVEN Dettwyler started his career and why he regards loyalty as the best investment

Workshop report

7 | The Solow growth model

The object

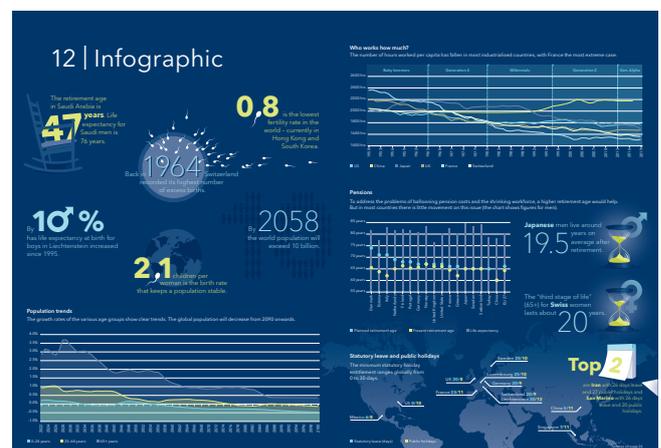
11 | Busy co-worker: Unimate, the first industrial robot

A different view

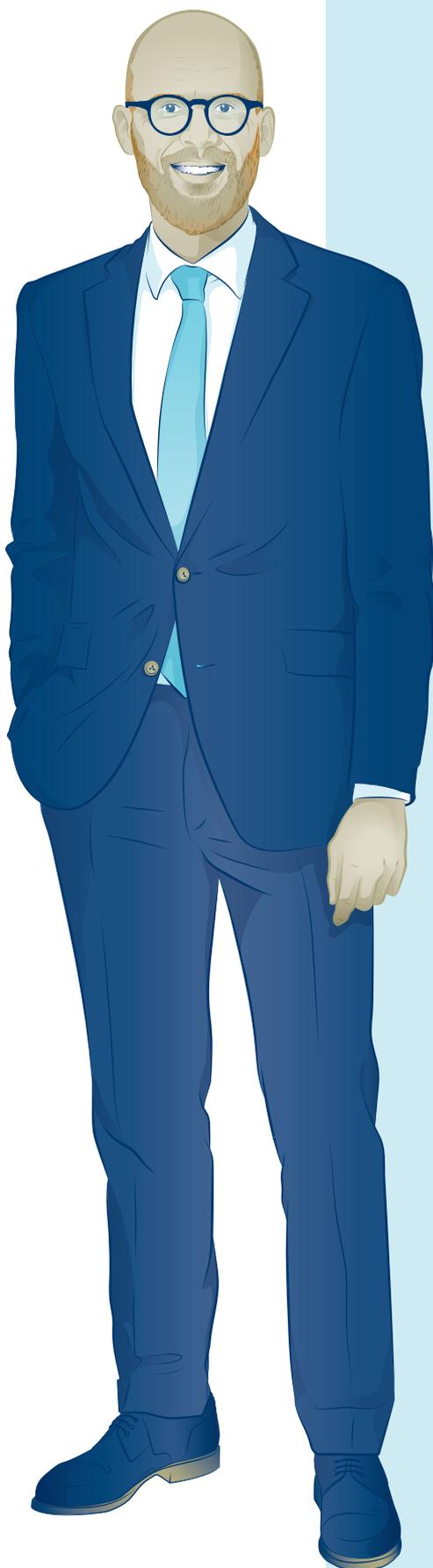
22 | Generation Z is more determined to get the work-life balance right

Investment outlook

23 | Bonds have the edge



Job seeks man, woman or machine



Dear Reader

All the signs are that the labour shortage in the industrialised nations will intensify dramatically in the current decade. Population statistics clearly show which way the demographic wind is blowing. We know, for example, that in Switzerland more people will go into retirement in 2029 than ever before, while the number of new entrants to the workforce will decline.

Adapting to slow and insidious changes is always difficult. But as the workforce gap left by the greying population widens, the need to take action becomes ever more urgent. Governments, companies and, yes, investors (→ page 8) cannot afford to sit on their hands. The implications are simply too serious.

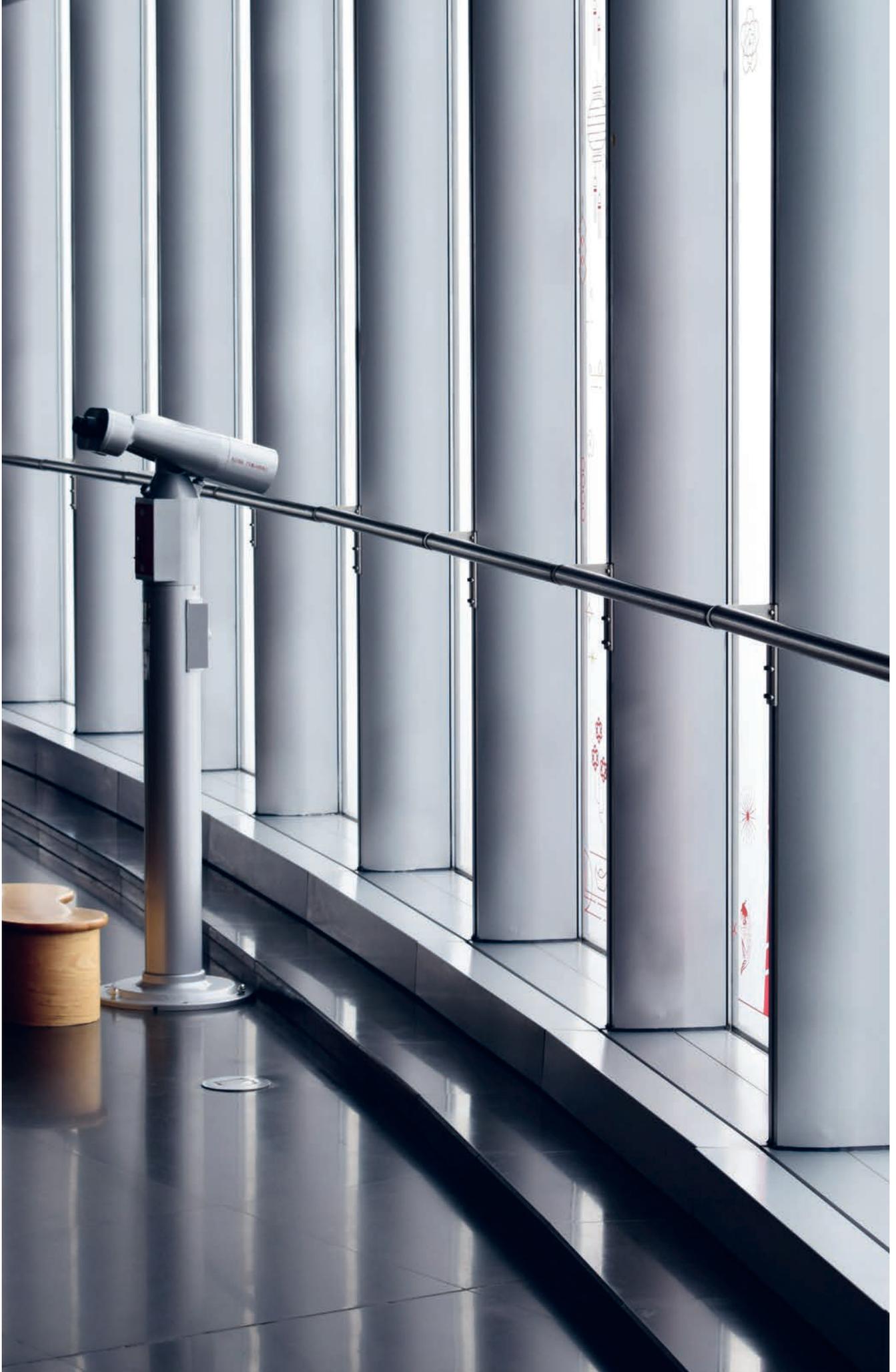
The labour shortage forces companies to rethink their growth plans and ask themselves how quickly they should invest in automation and/or artificial intelligence in order to make up for the shortfall in human resources. Governments, for their part, will be confronted with reduced tax income and an explosion of health and pension costs. One reaction is to clamp down on pension payments, as has been done in Japan, where population challenges are extreme (→ page 18). Demographic change can have unexpected consequences. A recent study notes that the increased use of adult nappies in Japan is putting a strain on the refuse system.

In this issue of Telescope we look at various aspects of the labour shortage. As always, we also provide some lighter reading. This includes an article about Swiss singer and songwriter Jan SEVEN dettwyler (→ page 14) and a description of Unimate, the first ever industrial robot (→ page 11). And we take a look at the evolving work ethic of Generation Z (→ page 22).

I wish you a varied and interesting read!

A stylized, handwritten signature in black ink, appearing to read 'Felix Brill'.

Dr Felix Brill
Chief Investment Officer VP Bank



Where are the workers?

Shortages of skilled labour have become a widespread problem, driven by demographic developments and social change. We examine five aspects.

Felix Brill

Zurich's public transport operator VBZ is cutting its services and putting up fares. The new timetable that comes into effect in December tells us that all tram lines and some buses will run only every 15 minutes after 8.30 pm instead of every 10 minutes. The revamped schedules will stay in effect for at least the next twelve months. This is not a reaction to reduced demand. The reason is plain and simple: a shortage of workers. A lack of drivers has already necessitated temporary suspensions of an entire tram line in recent years. VBZ is now drawing the obvious conclusion.

News items of this sort have abounded recently. Sometimes it's cuts in public transport. Sometimes it's pictures of long queues at airport security, for example in Amsterdam or Hamburg. Or temporary ward closures in hospitals due to a lack of nursing staff. Reports of labour shortages have become a frequent item in mainstream news media.

The diminishing supply of labour is nothing new and actually no cause for surprise. What is new is the sense of urgency, especially against the background of still elevated inflation rates. For too long, concerns about the worker shortfall resulting from demographic change were mainly confined to the corporate and economic policy-making community. Now, however, this issue is also colouring monetary policy and the behaviour of the financial markets. People worry that a prolonged shortage of skilled talent could trigger a wage-price spiral, resulting in a structurally higher rate of inflation.

In this issue of Telescope we therefore take a deeper look at this phenomenon. At the outset we identify five

aspects that all point in the same direction: working age people who want a job can look forward to better times ahead.

1. The working population is shrinking

As life expectancy rises, the average age of the population increases. Take a look at Liechtenstein, for example. Since 1995 life expectancy at birth in the principality has climbed by 8 years for men and 5.4 years for women. That might not sound much, but it means that men are living 10% longer.

At the same time, women are having fewer babies. The fertility rate, i.e. the average number of children born to a woman over her lifetime, was 5.3 globally in 1963 (World Bank figure). By 2021 it had sunk to 2.3. Hong Kong has the lowest rate at 0.8, and in China the one child policy is still having an effect, with the average woman in China producing 1.2 children. This is a long-term trend - the Covid pandemic had little effect on these numbers (→ chart on page 4).

In societies with low infant and child mortality a fertility rate of 2.1 is regarded as critical. If fewer than 2.1 children per woman are born, the population (without immigration) will show a long-term decline. At some point the number of young people coming into the labour market will therefore be less than the number of elderly going into retirement. Among the major industrialised countries, Japan is the clearest example of this trend (→ page 18). But it is not alone. In 2022, 46 countries experienced a contraction of the 15-64 year old segment of their

population. In 33 other countries this cohort grew by less than 0.5% (only +0.1% in the US). According to population projections calculated by the United Nations, this trend will intensify in the years ahead and spread to more countries. In China, the number of people aged between 15 and 64 will shrink by more than 200 million by 2050.

Such developments have a negative effect on economic growth potential. A smaller working age population means that fewer goods and services are produced. Productivity gains can cushion this effect to some extent, but they cannot neutralise it over the long term. Estimates for China on the basis of the Solow model clearly show this (→ Workshop report on page 7).

This demographic shift also raises questions about social cohesion. A shrinking working age population will have to support more very young people and above all a growing number of seniors. That has implications for individuals and also for the state. Less growth and a smaller workforce will curtail tax income, while the greying population will require higher public spending (→ page 10: implications for governments).

2. People working less

A smaller working age population means that fewer people are in a job. Added to that, people are now working less on average than 20 to 30 years ago. This is the case in many countries. The chart on page 13 shows just a few examples. Annual work hours per person in the US fell from over 2,000 at the start of the 1950s to 1,765 in 2019. The trend was even sharper in France: from 2,350 hours to 1,500 hours – a drop of 35%.

The reasons are varied: a shorter working week (down to as little as 35 hours), more paid holiday, more part-time working or generally more flexible working hours. Data from the US and France underline the fact that the trend did not start with the Covid pandemic. But longer holidays and a shorter working week do not come about

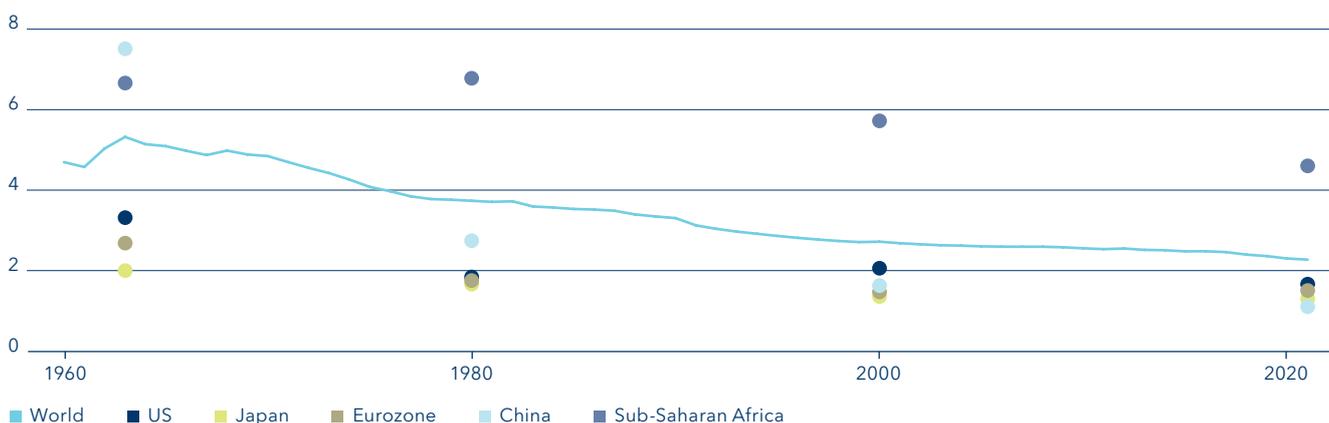
// Employees have profited less than companies from prosperity gains in recent decades. //

by chance. Trade union negotiations and government legislation play a big part. All in all, these trends reflect social developments and changed attitudes. Growing prosperity creates greater freedom to choose between work and leisure.

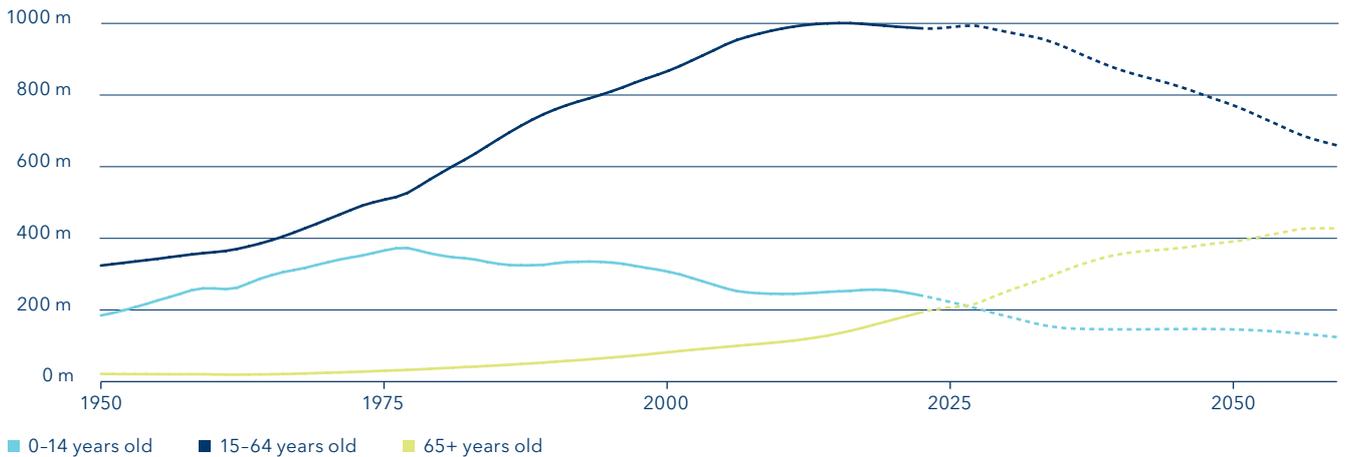
3. Labour has lost out to capital

Increased prosperity does not benefit everyone to the same extent. Some profit more, some less, some not at all. Individual cases stray far from the average. But that should not stop us analysing the aggregate data. One fact immediately stands out: in recent decades companies and capital providers have benefited more from prosperity gains than the working population. That can be seen clearly in the Penn World Table. In the US for example, labour compensation as a percentage of nominal GDP amounted to almost 64% in 2000 but fell to less than 60% in 2019. This 4 percentage point drop might seem small at first glance, but it translates into

Fertility rates have been falling for decades



Population developments and projections in China by age group



big differences in economic benefit. US GDP climbed by almost 50% in real terms during this period, with shareholders and other providers of corporate capital raising their returns by two-thirds, while employee compensation went up by only about 40% (→ page 8, impact on the financial markets).

Wage trends illustrate this story. Real wages in the US rose on average by a paltry 0.8% a year between 2000 and 2019, and the corresponding figure for the Eurozone was less than 0.4%. Covid relief payments in the US and similar hand-outs in other countries had short-term success in warding off a more serious economic downturn in 2020 and 2021 and boosting household savings. It was these actions that sparked the acceleration of inflation in recent years, though they simultaneously helped to alleviate its impact. In real terms, i.e. after adjustment for inflation, wages in the US have fallen by 2.3% p.a. over the last two years and by over 4% p.a. in the Eurozone.

Here we see the weak point in wage negotiations. They are mostly geared to the current inflation rate rather than projections for the future. If inflation then accelerates further, employees suffer a real-term wage cut. Switzerland's experience underlines this. The major Swiss bank UBS recently published its annual wage survey. Wages across all sectors are set to rise by an average of 1.9% in 2024. That is almost exactly the rate of inflation at the time of the survey.

4. More anecdotal evidence for the shortage of skilled labour

The diminishing supply of labour has long been a headache for companies. The Global Talent Shortage Survey published by the internationally active staffing services company ManpowerGroup underscores this trend. In this

year's survey, 77% of the 39,000 companies questioned said they had difficulty filling roles. That is the highest figure in 17 years and twice as high as in the period 2013 to 2015 (→ chart on page 6). A closer examination of the results, moreover, shows that this is a worldwide phenomenon. In the latest survey the percentage of affected companies ranges from 64% in Colombia to 90% in Taiwan. Germany, at 86%, is above the international average, as is China with 81%. Transfers of jobs to other countries only help if the destination country has a less acute talent shortage. So European companies should no longer be looking to China as an outsourcing option, at least not from this angle. The small differences from sector to sector are a further indication that talent shortages are a general phenomenon. The percentage of companies with recruitment problems ranges from 73% in the financial services industry to 79% for communications services.

It is interesting to see how companies plan to overcome the talent shortage. 57% of them say that they intend to offer more flexibility in working hours and location (including remote working). 33% are planning pay increases, while 26% will offer joining bonuses. A third of the companies surveyed are considering recruiting older staff. Businesses are not only keenly feeling the trends we have described but are also increasingly willing to do something about them.

5. Companies hoarding workers

Another reaction to the labour shortage can be observed in the US, where companies are trying to hold onto their employees as long as possible, even if their order books are shrinking. This behaviour is exactly the opposite of the "hire and fire" paradigm. The recruitment rate has fallen sharply in recent months and is now below its

pre-Covid level. Even so, applications for unemployment benefit are still at a historical low.

It is too early to say whether this is only a blip or whether companies have embarked on a strategic revision of their employment policies. The fact is that many companies have not yet been tested by genuine stress. How long will they be able they stick to their new approach if business deteriorates further? The US labour market, which has been relatively robust so far this year, could suddenly flip. It is like a rubber band: if you stretch it too far, it will eventually snap. At present the stretching continues. If the break does come, the shock will probably be felt not just in one company but in many simultaneously.

Better times ahead for the working age population

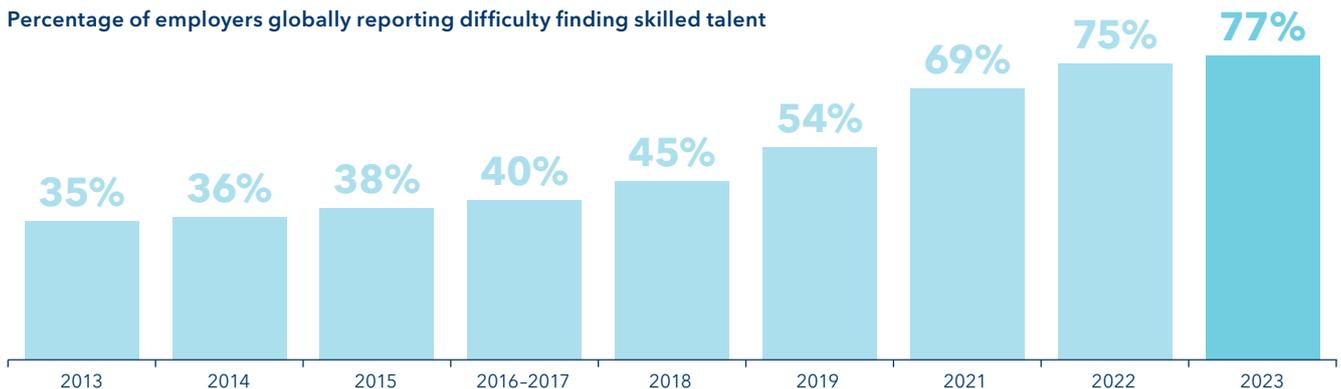
Overall, the picture is clear: something is happening that will be difficult to stop and cannot be quickly modified. The workforce will continue to shrink in the years ahead. This will put working age people into a stronger bargaining position. Companies will try hard to position themselves as attractive employers. They can do this in various ways: offering flexible working conditions, granting attractive pay or giving employees a stronger sense of purpose in their work.

If firms take the higher-pay route, inflation will remain an issue for a longer time. The pernicious wage-price spiral could make a comeback. The recent fall in inflation would turn out to be merely a breathing space before the next wave. We pointed to this danger in the last issue of Telescope (→ www.vpbank.com/telescope).

// Companies will try hard to position themselves as attractive employers. //

Finally, there is the possibility of help from artificial intelligence (AI). We can only guess what AI will be capable of in ten or twenty years from now. Only time will tell whether overall economic productivity will really grow as steeply as many people are now proclaiming. But the empirical evidence from the Solow model is clear: the contribution of productivity to the trend growth rate tends towards one percentage point. None of the technological innovations of recent decades have changed that, not even the internet. Conclusion: many trends are now converging, but they all essentially relate to the fact that working age people are in increasingly short supply.

Percentage of employers globally reporting difficulty finding skilled talent



The Solow growth model

Felix Brill

All models are wrong, some are useful. This statement by British statistician George Box underlines the fact that scientific models are always a simplification and thus offer only an incomplete representation of reality. Nevertheless, they can help us clarify causes and effects.

One very popular model is the Solow model originated by the US economist and Nobel laureate Robert M. Solow in 1956. It explains long-term economic growth by looking at three factors: capital, labour and technological progress (productivity). The model makes good sense intuitively. Let us imagine, for example, that it has snowed overnight and the snow makes it hard for us to get out of our house in the morning. What should we do? We could clear the snow with our hands. That is labour. Or we could use a shovel. That is an item of capital that helps us in our work.

But the job would be much simpler and quicker if we had a snow plough – the result of technological progress.

With a snow plough at our disposal we have more time to be productive. That results in growth.

To achieve an optimal result, these three factors must work together. One shovel for ten people is obviously not optimal, but it's better than ten shovels for one person. On the other hand, one person with a snow plough can replace ten people with ten shovels and thereby increase productivity.

The economy is obviously more complex than this. Even so, the Solow model, by concentrating on just three factors, makes an important contribution to our understanding of long-term economic growth. It not only helps explain the past but is also an aid to predicting the future. And its predictions are less error prone than normal macroeconomic forecasts. That is because structural conditions in an economy change only slowly and show similar patterns across various economies at a given stage of development. If an economy is at an early stage, any new investment

can lead to a significant improvement in productivity. For many years this was what drove growth in the Chinese economy (→ chart below).

As this process continues, however, there is a growing need to replace previously installed plant and machinery as it ages. Such replacement investment generates less productivity improvement than the original investment did. The latest snow plough model will be more efficient than the old one, but the improvement will not be as great as the switch from shovel to plough. China's slower growth rate in recent years has more to do with this than with any short-term problems of supply and demand in the economy.

The Solow model also clarifies the depressing effect on labour input as a result of the contraction of the working age population in the present decade. Box was right: the model simplifies reality drastically, but its results are nevertheless useful.

The Solow model signals lower growth rates for China



Economic fall-out from the labour shortage

The pace of demographic change is accelerating. We examine the consequences for the financial markets, companies and governments.

Impact on financial markets

Headwind

Bernd Hartmann

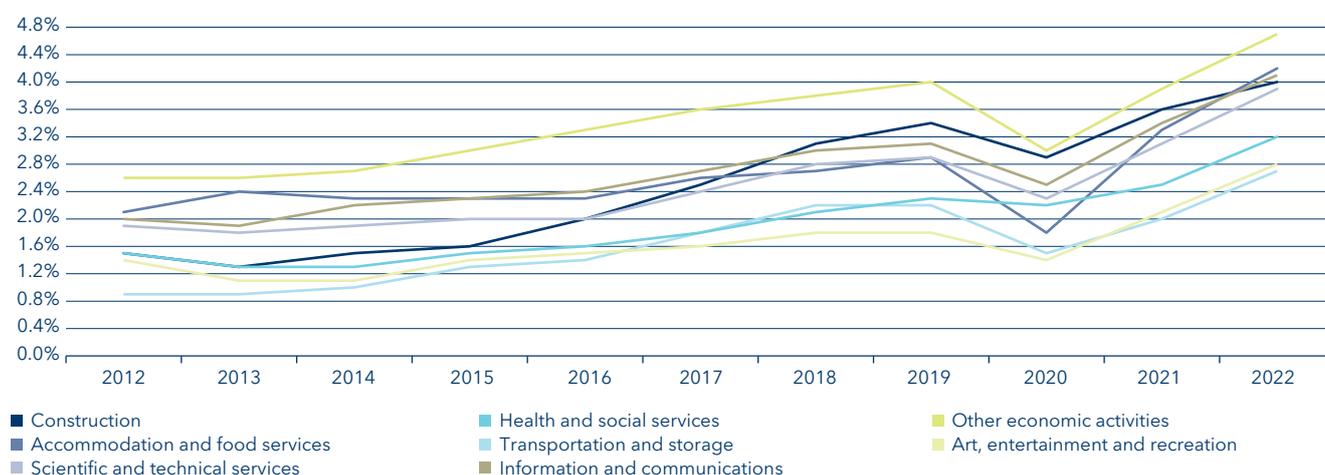
In a world in which labour is increasingly in short supply, employees might be able to get a bigger share of the financial benefits of productivity gains – something that trade unions have been unable to achieve for their members in recent years. It was not always like that. In the post-war years up to the 1980s, productivity improvements benefited employees more than employers. US statistics show that from 1953 to 1987 wages rose by almost 8% a year on average, which was 1.3 percentage points higher than the growth of corporate profits. But then the trend flipped. Over the last 35 years wages have been outstripped by corporate profits. While the annual growth rate of corporate profits stayed virtually unchanged at 6.9%, wage growth decelerated to just below 5.2% p.a.

The main factor behind this change in pricing power was globalisation. The globalisation trend has speeded

up since the 1980s, as evidenced by the growing volume of world trade. Employees' negotiating position has been weakened not so much by the emergence of new markets but rather by the huge volume of cheap labour flooding the global economy. These days, however, the political and economic consequences of globalisation are increasingly being viewed with more critical eyes (→ Telescope No. 5). This is partly because major emerging economies like China are now experiencing the same demographic and social challenges as the industrialised world. A globally diminishing supply of human resources means that companies will have to fight harder to attract personnel. Added to that, the recent jump in the cost of living has boosted trade union membership. Thus the negotiating pendulum could well swing back in favour of employees. Company profit margins are therefore in danger of being squeezed.

The trend towards widening profit margins since the 1980s, coupled with more efficient management of capital, was a major factor in the huge improvement of listed companies' profitability. Investors reacted by pushing up share prices and thereby magnifying

European Union: job vacancy rates indicate continuing labour shortage (vacancies as % of all jobs per sector)



company valuations. But profit trends now look like becoming a downside factor. How strong this headwind will be is still unclear.

Companies are not defenceless. They can react to these trends by further **improving their productivity**, for example, which means getting more value out of labour and other inputs. This is nothing new. Companies have scaled down their dependence on human resources substantially in recent decades. The scope for doing this in the labour-intensive services sector used to be limited. Now, however, artificial intelligence (AI) provides a technology that could raise productivity across a broad spectrum of activities, not only in manufacturing but also in office jobs.

The labour shortage is only one aspect of demographic change. An ageing society results in changing patterns of consumption, and investors too are likely to modify their behaviour. Overall, the corporate environment will become more challenging, but change will be gradual, leaving time to adjust. Although some companies stand to benefit (→ page 20), the general trend will be towards **lower equity returns**. Over the long term, equity markets move in sync with profits.

The consequences for the bond market are less clear cut. Research shows that demographic changes during recent decades have been an important factor in the decline of real yields, which are an indicator of the preservation of purchasing power. Age-related differences in saving behaviour mean that countries with a larger proportion of older people tend to have a **lower real interest rate** than those with a younger population. But as the baby boomers go into retirement, a larger part of the population will be liquidating their assets while the proportion of savers declines. The resultant erosion of accumulated savings would then militate against falling interest rates. All in all, changes in the bond markets will also be a gradual process, with structural changes being overlaid by short-term market fluctuations.

Impact on companies

Strategies for closing the gap

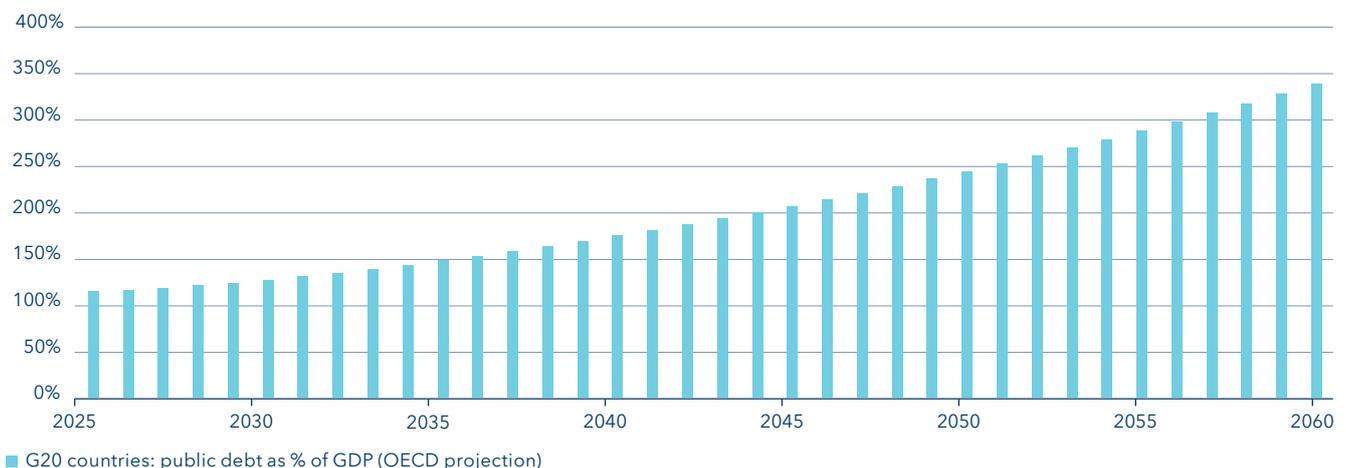
Marcello Musio

Companies are not defenceless in the face of the changing labour market environment, though in many sectors their ability to respond effectively depends on flexible and innovative government action and an open global economy. Internationally active companies, for example, can establish operating facilities in countries where labour is abundant, such as India or some African countries. UNO figures show that India's working-age population is growing by 840,000 persons per month; in Nigeria the figure is 250,000.

The labour shortfall in the industrialised world can be partly offset by immigration. Even so, companies are already finding it difficult to recruit the skilled talent that they need (→ chart on page 8). This situation will become more acute in the current decade (→ page 16), though the effects will vary from sector to sector. Germany's healthcare sector, for example, where 41% of employees in 2020 were over the age of 50, is harder hit than the IT sector, where the corresponding figure was less than 22%. In general, though, companies must reckon with a smaller and older workforce.

These problems have been known for some time. It is therefore disconcerting that many companies still see the challenge primarily as a recruitment issue and have failed to devise a corporate and human resources strategy that takes account of the demographic time-bomb. Many companies still fail to see **the need to develop a corporate culture** in which different generations can work productively and efficiently alongside and with each other. Cooperation between young and old needs to be systematically encouraged and the negative image associated with older employees consigned to the

Public sector finances under strain



dustbin. That should start at the training stage, so that younger employees can learn to value their elders' experience and knowhow.

If companies are going to hold on to their older employees and continue to benefit from the pool of experience that they offer, there are various steps that need to be taken. These include workplace health promotion, flexible working hours, and age-based part-time working (work-life balance). Key positions in the company that are occupied by older employees need to be identified so that an efficient transfer of knowhow can be organised. At the same time, middle-aged employees must be assured that they have attractive prospects in the company. Otherwise there is a danger that they will lose interest or switch to another employer. Thus **employee retention** will become increasingly important.

As labour becomes scarcer and the world of work is transformed by automation and AI, companies need to provide **continuous further training** to keep their employees' skills abreast of developments. Also important are measures to help employees strike a balance between their professional and family life, such as flexible hours, home office and access to childcare facilities. The changing age and gender structure of the workforce puts a premium on diversity management. Targeted measures to enhance the company's attractiveness (employer branding) can give the company an advantage in recruitment and employee retention. Unless this is done, the most sophisticated growth plans may come to nothing.

Implications for governments

Rising debt

Thomas Gitzel

A lack of human resources inevitably has a negative effect on the services sector and industrial production. At the macroeconomic level this is reflected in **lower growth potential**, with results that can be very serious. Estimates by the IMF suggest that by 2050 annual GDP growth in the industrialised countries will be trimmed by 0.5 percentage points on average. This effect will be felt most keenly by countries with a high proportion of older people. Prime examples are Japan (→ page 18) and also Germany. The IMF estimates that the rapid greying of Japan's population will knock 0.8 percentage points off the country's annual GDP growth.

Thus government finances are a major victim of demographic change. A lower growth trend means less tax income, while a larger proportion of elderly people in

// Governments face growing mountains of debt and eroding credit ratings. //

the population pushes up health costs. It is calculated that public spending on health and long-term care in the OECD countries is set to climb by a probable 2.2 percentage points of GDP by the year 2060. In most OECD countries at least half of the increase in long-term government spending will be due to higher outlays on pensions and health. Government income would have to rise significantly (in the OECD by an average of 8 percentage points of GDP by 2060) merely in order to stabilise public debt ratios close to their present levels (→ chart on page 9). In several eastern European countries the necessary increase in government income would exceed 12 percentage points of GDP. Against a background of declining economic growth potential, that is a tall order.

In the absence of major productivity improvements, a **rise in public sector debt** is therefore virtually a foregone conclusion. The OECD has calculated the trajectory of government debt in the G20 countries until 2060 on the assumption of no change in the status quo. The results are alarming. Under the impact of demographic costs (pensions and healthcare), debt as a proportion of GDP would rise threefold. That would seriously erode the **credit quality** of many countries. Back in 2005 the rating agency S&P simulated the impact of higher demographic costs on credit quality and concluded that in the "foreseeable future" the ratings of Germany, France, the UK and the US would fall into the speculative range, i.e. below BBB-. In fact, though, the rating agencies are reacting less forcefully to higher structural deficits in the major industrialised countries than the economics would warrant. The expected impact of demographic change on public finances highlights this. Without significant productivity gains, countries are threatened not only by a loss of prosperity but also by a growing mountain of debt and diminishing creditworthiness.

The first industrial robot

Christina Strutz

Reliable co-worker on the assembly line.

It all started with a patent taken out in 1954 for a robotic arm. Its movements were limited, but it was able to store digital commands and carry them out step by step. The inventor was George Devol. Two years later, together with Joseph Engelberger, he set up a company called Unimation – short for Universal Automation – and built Unimate, the first industrial robot.

It was an era when people believed in a brave new world of progress. Work was starting on America's National Highway System, and the US economy was close to full employment. Throughout the industrialised world the middle classes were gradually able to afford cars and houses of their own. As affluence grew, high demand spurred changing patterns of industrial production. Unimate made its debut at exactly the right time.

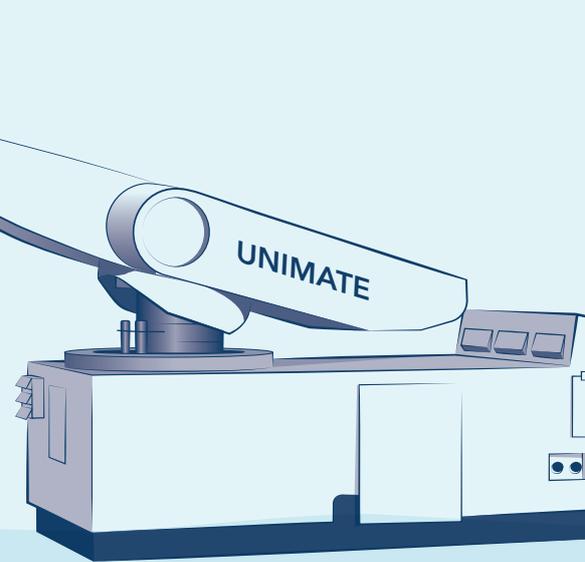
In 1960, after several years of further development, the Unimate prototype was ready for launch. Its design was based on needs identified in 31 US automobile factories, including Ford and General Motors (GM). The Unimate was equipped with a mechanical arm that could carry out five movements and a grabber that enabled it to move objects to precisely programmed locations.

To publicise the invention and raise the necessary development capital,

the originators wowed television audiences by getting Unimate to perform tricks like knocking a golf ball into a cup, pouring a beer and waving an orchestra conductor's baton. The breakthrough came when GM ordered 66 Unimates for its factories. The robot made its industrial debut in a GM factory in Ternstedt, New Jersey. Its job was to take hot metal castings out of a die casting machine, let them cool down and then move them to a press. The robots worked at very high temperatures for two shifts a day for the equivalent of 50 person-years. By freeing human beings from dangerous and repetitive tasks, Unimate made many work processes more efficient and safer. From there on robotics developed at breakneck speed.

The late 1960s saw the advent of Shakey, a robot developed at Stanford University. Shakey was able to make decisions by itself, but, as the name suggests, it was less impressive as a mover. However, it was mobile and was equipped with sensors and cameras that enabled it to gather information about its surroundings and avoid obstacles. It converted commands into actions and thus had a sort of intelligence. It is therefore no exaggeration to say that Shakey was a precursor of AI-driven robots. Adaptations of the Shakey technology are still in use.

Further developments led to more sophisticated commercial robots that came onto the market in the 1970s, developed by firms still active



in this field, notably KUKA, Asea (ABB), Fanuc and Yaskawa. According to the International Federation of Robotics, over 550,000 industrial robots are now installed every year worldwide. While the grandchildren and great grandchildren of Unimate and Shakey are employed mainly in industry, humanoid robots are increasingly finding a role in other areas as well: nursing, commerce and even gastronomy. The technology developed by the company Agility Robotics, for example, can be applied in a whole variety of areas, including logistics, delivery, inspection of industrial plant and even as first responders in catastrophe situations.

Unimate and its inventors have a firm place in the history of robotics. Devol's pioneering achievements gained him admission to the Hall of Fame of Inventors, while Engelberger is now known as the father of robotics. Unimate itself has found a home in the Smithsonian National Museum of American History.

Multiple demographic challenges

The retirement age in Saudi Arabia is **47 years**. Life expectancy for Saudi men is 76 years.

0.8 is the lowest fertility rate in the world - currently in Hong Kong and South Korea.

Back in **1964** Switzerland recorded its highest number of excess births.

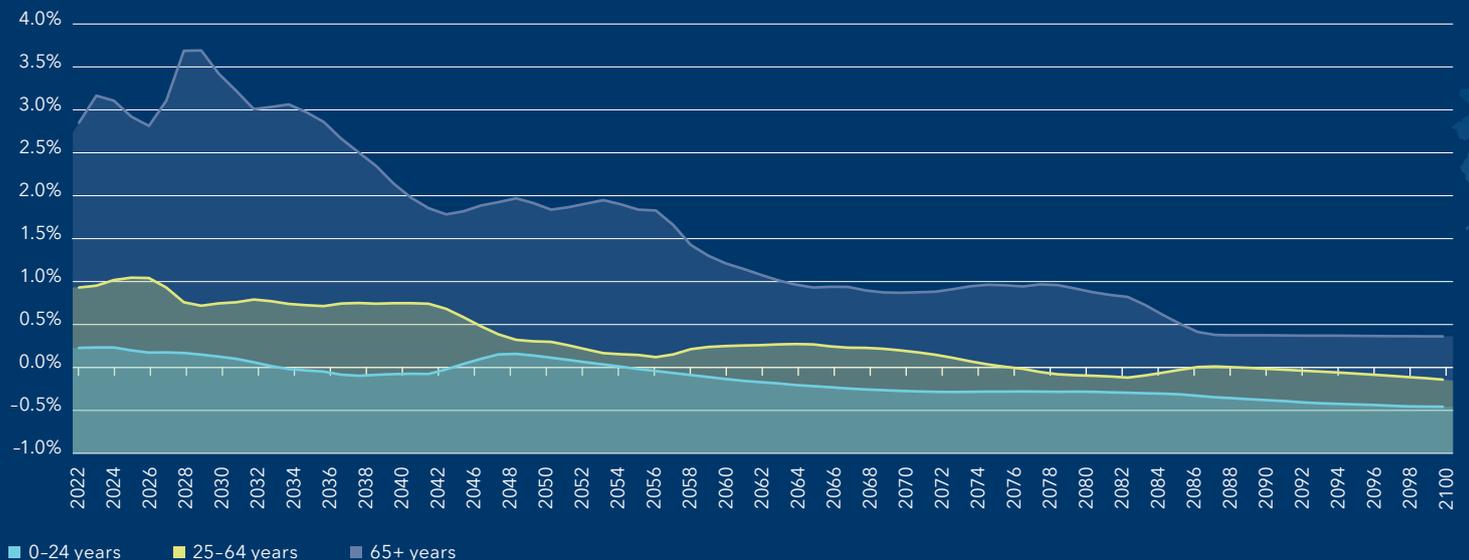
By **10%** has life expectancy at birth for boys in Liechtenstein increased since 1995.

By **2058** the world population will exceed 10 billion.

2.1 children per woman is the birth rate that keeps a population stable.

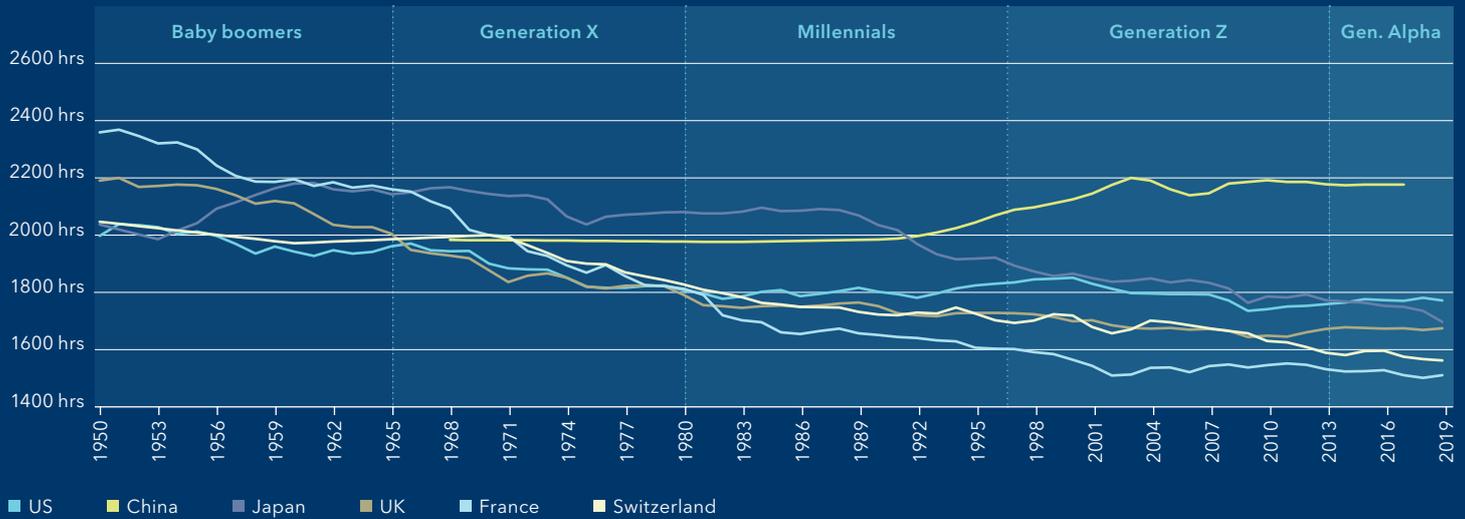
Population trends

The growth rates of the various age groups show clear trends. The global population will decrease from 2090 onwards.



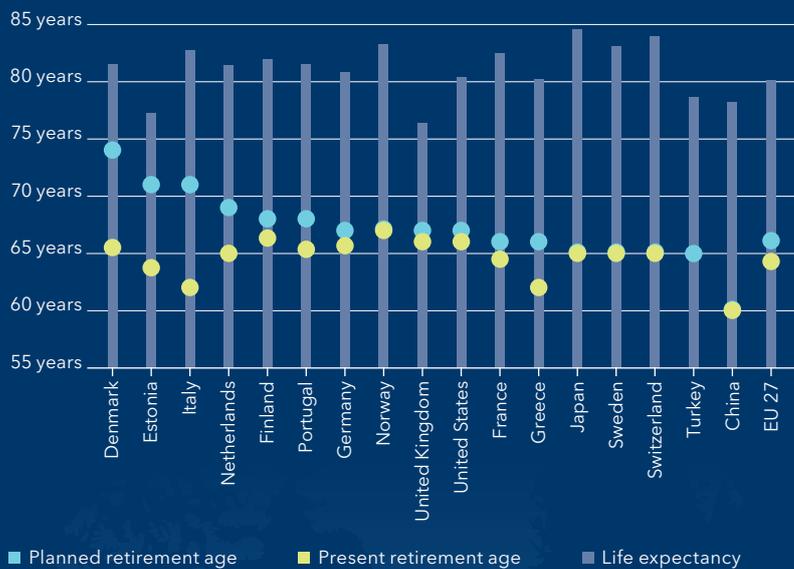
Who works how much?

The number of hours worked per capita has fallen in most industrialised countries, with France the most extreme case.



Pensions

To address the problems of ballooning pension costs and the shrinking workforce, a higher retirement age would help. But in most countries there is little movement on this issue (the chart shows figures for men).



Japanese men live around **19.5** years on average after retirement.



The "third stage of life" (65+) for **Swiss** women lasts about **20** years.



Statutory leave and public holidays

The minimum statutory holiday entitlement ranges globally from 0 to 30 days.



Top 2

are **Iran** with 26 days leave and 27 public holidays and **San Marino** with 26 days leave and 20 public holidays.

His soul music flies high with "99 balloons"

Swiss musician jan SEVEN dettwyler sees life as a learning adventure. This helps explain his latest metamorphosis.

Clifford Padevit



// When I heard Michael Jackson's 'Off the Wall', I just had to find out where this music came from. // jan SEVEN dettwyler

"Let me introduce myself - after 21 years." So starts the social media message that he recently posted on his 45th birthday. He has an important announcement to make: a name change. From now on he is "jan SEVEN dettwyler". The new name combines his music with his personal identity. He sets out to be an accessible human being as well as a musician. The name says it.

He began his music industry career as a juvenile impresario in the rural municipality of Wohlen in Switzerland. "When I was 13 or 14 years old I started to organise parties and concerts. I was creating events that I myself wanted to attend," he says. If he'd grown up in a city, he would not have had to be so enterprising. At the age of 17 he rented an office, put a computer on the desk and set out to make a go of it as a musical entrepreneur. Three years later he founded the company Redkey, which is now the business heart of the "jan SEVEN dettwyler" brand.

This meant he was already an experienced promoter and manager before his career as a musician took off. "I already knew what was needed to stage a concert: the staff, the power sources, the cables etc. That gave me a head start over others who

wanted to bring their music to the public.

His life has been bathed in music from the very start: his mother a pianist, his father a singer. He started on the violin, then switched to percussion - like his elder brother, who has long stood at his side musically. These days he calls himself a "singer and passable percussionist".

It was his brother who introduced him to the music of Michael Jackson. "The album 'Off the Wall' was a game changer for me. I just had to find out where this music came from, what its secret was. The search led to Stevie Wonder and Sly & The Family Stone. A whole new world was opening up for me, and I understood how Jackson's album came about." After that he discovered Prince and decided to devote himself to soul. Inspired by Prince's song "7", Jan took the stage name Seven.

Seven issued his first studio album at the age of 23. Soon after that he was performing as the opener in Swiss concerts by Destiny's Child and Lionel Richie. His discography now comprises 13 studio albums and 4 live albums. Following several hits, he topped the Swiss album chart in 2017.

He has now composed around 400 songs, most of them accompanied by guitar or piano. For his interpretation of German singer Nena's "99 balloons", which he sang on the TV show "Sing My Song" in 2016, he used his son's toy piano. This performance was a milestone in his musical career, though he did not realise it at the time.

"For me, music is a learning adventure. If something new comes along, I have to give it a try." "99 balloons" was the first time he sang soul in German. "It was fun," he says, even though it was something he had previously flatly refused to do. After that he wrestled for two years with the challenge of writing his own songs in German. It was like discovering a new language, and now he has German as a second voice in his musical toolbox. His subsequent appearances as a TV presenter have also combined the musician Seven with the person Jan.

On the 20th anniversary of his stage debut he declared that he hadn't achieved anything yet. This was not a coy understatement but rather the utterance of a restless musician who would rather meet new challenges than rest on his laurels. He will soon be launching a new album, his first as jan SEVEN dettwyler.



My best investment

"Loyalty"

"I'm very loyal to my crew, and that helps explain why we are so durable. I ask a lot of every one of them, but I always show my appreciation. The result is long-term team play. We celebrate our successes together, and together we are better able to get through difficult times. My best investment is loyalty to my band, my team and my partners."



My worst investment

"Trying to solve problems alone"

"When something doesn't go according to plan, I get really unhappy. I risk a lot because I don't ask people for help. I don't put enough trust in other people and therefore try to solve problems alone. Because I don't want to bother people, I miss out on the help they could provide. That is certainly my biggest fault."

“The biggest problems will come in the next ten years.”

The baby boomer generation is heading for retirement. This has major implications for the labour market, including in Switzerland. Demographics expert Manuel Buchmann worries that it might already be too late for effective countermeasures.

Interview: Clifford Padevit

Dr Buchmann, is the labour shortage a market failure or a political failure?

Neither and both. The shortage of labour stems from demographic developments. But that means it should not have come as a surprise. In that sense, the market and politicians have both failed.

Why is that so?

The problem was not fully appreciated early enough, so the action came too late. The importance of demographics is still not universally recognised. People tend to think that everything will get back to normal after one or two years. But if we look at the numbers and the forecasts (which are fairly certain), we see that the labour shortfall will be with us for a long time to come.

What levers are available to governments for tackling the problem?

Very few. Long-term measures are the most feasible, for example raising the pension age. That could make a difference, even in the short term. But it's not the only solution. Affordable child care would also be a help. It would make it easier for mothers to take a job or work longer hours. Over the longer term it could also motivate them to have more children.

You haven't mentioned immigration. Isn't that another area where governments can exert control?

Yes. But there is little Switzerland can do about migration from the European Union. Bilateral treaties between Switzerland and the EU tie the government's hands. The situation is different regarding immigration from non-EU countries. But it's a tricky subject. Successful integration of immigrants is a key challenge that has to be tackled successfully for the welfare of the economy and society at large.

Is globalisation a good way of offsetting the shortage of labour?

In theory globalisation could help rectify imbalances. In Africa, for example, there is a surplus of labour and a shortage of capital, whereas in Europe the opposite is the case. Globalisation could have an equilibrating effect. That could happen through migration or by Europe investing more abroad or shifting production to foreign countries.

How can companies equip themselves to deal with the worker shortfall?

The key point is retention. Our researches repeatedly underline this. Many companies focus too much on recruitment and do not sufficiently nurture their existing workforce. The numbers show this. The bulk of a business's employee replacement needs come not as a result of retirement but from employees leaving for other jobs. Companies should invest more in retaining the staff they have.

If a company loses a lot of employees, are its growth plans disrupted?

That is the logical consequence and shows that labour shortages need to be tackled at the strategic level and not simply as a matter for the human resources department. It makes no sense, for example, to invest in a new location if the necessary personnel cannot be found. A slower rate of growth might have to be accepted.

Are there sectors that are hit especially hard?

The health care sector is especially exposed. It suffers from a shortage of qualified staff and also from a relatively high rate of attrition. At the same time, demographic change is pushing up the need for healthcare. Throughout the economy there is also a strong demand for IT specialists. And I am particularly worried about the artisan sector, where the situation is also threatening.

Why?

There are a lot of baby boomers in the artisan sector, many of whom have done a traditional craft apprenticeship. But such apprenticeships are now much less popular. Young people prefer office jobs. When the baby boomers go into retirement and there are not enough new people to replace them, we'll all feel the impact. If your lavatory is blocked you might find yourself having to wait a week or two before someone comes to deal with it. Housebuilding and house renovation will take longer.

Demographic change has an impact on consumer demand. How can businesses respond to this?

That's an interesting question. I often mention the example of Japan, where more nappies are now sold for adults than for children. This shows how businesses need to rethink their strategies. A research project in which I'm involved is taking a closer look at this issue. Which age groups consume what and how? We want to trace a direct connection to the impact on individual companies. Ultimately we should be able to formulate a demographic effect on equity prices.

What does the labour shortfall mean for the economy as a whole?

The implications for the economy are just the same as for a company that can't attract enough labour and is therefore unable to grow as fast as it hoped. The situation in the economy as a whole is the opposite of what we saw in the 1980s, when baby boomers flooded the market. Now the wind is blowing the other way.

What does that mean for innovation?

The numbers are pretty clear. The young are the most innovative age group. Most patents and academic papers come from people between 30 and 40 years old. If the average age in an economy rises, that presents problems for innovation.

Are automation and artificial intelligence able to make up part of the labour shortage?

Certainly. But their usefulness varies from sector to sector. Some sectors and functions offer many opportunities in this respect. I see potential in the construction industry, for example. There will always be a need for road builders, but in future one worker might be able to control three machines or robots that do the work of five people. That would mean improved productivity. Human beings will still be needed in the medium term, I'm sure. What the long term will look like I can't say.

Will the measures you have mentioned be enough now that baby boomers are heading for retirement?

The biggest problems will come in the next ten years. Retirements in Switzerland will peak in 2029. Even if retirement numbers fall somewhat after that, the situation in the labour market will remain tighter than at present.

To make matters worse, events are accelerating all the time. During the coming decade it will be difficult to counter the shortages with measures such as digitalisation.

You are co-author of a study on the impact of demographics on the financial markets. What is the conclusion?

We see a number of trends. Demographics alone do not determine individual share prices or interest rates. But changing trends can be identified. Factors that were previously helpful can become headwinds. In the case of interest rates the situation is complex. Over the last 20 years it was obvious that demographics were exerting a downward pull on interest rates. The outlook for the coming two decades is not so clear. Personally I believe that the demographic impact will be upwards. In other words, interest rates are more likely to rise.

And equities?

Baby boomers' provisions for old age pushed up demand for equities, either directly or indirectly via pension funds. When they retire they start to consume their assets and shift into less risky investments. This is happening throughout the developed world more or less simultaneously. Thus demographic change may have a negative overall effect on equity prices. That does not mean that the market will collapse, but it could result in lower returns in the long term.

Profile



Dr Manuel Buchmann has been engaged in research on labour shortages and demographic change since 2014. For his doctoral thesis at the University of Basle he developed a general equilibrium model for analysing the effects of demographic change on the Swiss labour market. Now 34 years old, Dr Buchmann is an author and project leader at Demografik, an independent demographic consultancy based in Basle, Switzerland.

Note: The opinions expressed in this interview may differ from those of VP Bank.

Japan leads the trend

Japan's population is shrinking – with seismic results. Lessons here for other developed countries.

Thomas Gitzel

It would be quite wrong to regard changes in the size and makeup of a country's population as a necessarily slow process. The rapidity with which developments can occur is illustrated dramatically by Japan, which stands at the forefront of the global demographic revolution. Japan's population, currently around 127 million, will shrink by over a quarter during the coming 40 years. The drop is equivalent to the population of Malaysia or Peru. The number of Japan's inhabitants fell by 801,000 in 2022 alone.

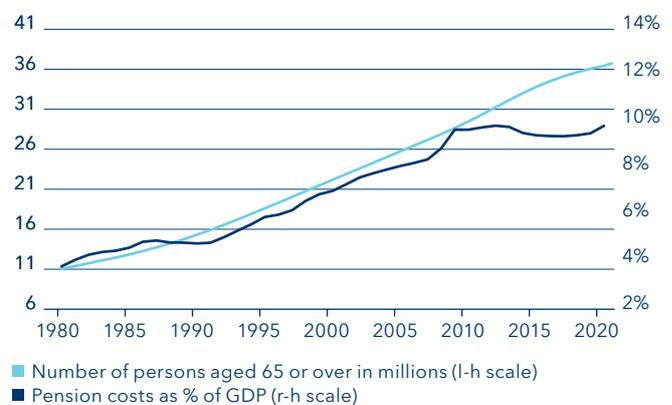
The dwindling population is not a new phenomenon. Japan's population has been in decline for 14 years. Moreover, during the last 70 years (i.e. within a human lifetime), the country's average life expectancy has risen by 35 years and now stands at 88 years for women and 81 years for men. There are only two territories in the world where people live longer: Hong Kong and Macau (both special administrative regions of China). Since 1974 Japan's birth rate has been below the replacement level of 2.1 per woman. The latest figure is 1.26, one of the lowest rates in the world. Demographically, Japan is therefore an extreme case. This makes it an obvious target of research, including by the International Monetary Fund (IMF), which has made the country the subject of numerous ongoing studies.

Widespread old age poverty

So how does Japan cope with these challenges? The simple answer is: in some respects well, in others not so well. Although retirement numbers have been high for many years, Japan has recently been able to keep its spending on old age pensions constant as a proportion of GDP. After rising from 4% to almost 10% of GDP in the 1990s and early 2000s, pension spending as a percentage of GDP has since stayed relatively constant (→ chart).

But what looks good from the government's side is not so good for the aged. Pensions in Japan are relatively low, amounting to 37% of final net earnings at retirement. This is one of the lowest rates in the industrialised world. And it explains why poverty among over 65 year olds, at

Japan's pension costs have stabilised despite the continuing rise in the number of retirees



20%, is much higher than the OECD average of 13.5% (based on sources up to and including 2020). It therefore comes as no surprise that many pensioners in Japan find it necessary to go on working well beyond the official retirement age of 65. Surveys show that about one in four pensioners works to supplement their income. Alongside relatively low pensions, Japan's strong work ethic is also a factor here. Older people want to be useful members of society, and Japan's high life expectancy means that staying active for longer is a possibility.

Robots help

But the enormous increase in life expectancy and the low birth rate create big gaps in the labour market. The working population is simply not large enough. One way of dealing with this problem is to use robots. Japan embraced the robot trend early on. At first robots were used mainly in industry, but they have increasingly found a place in everyday life as well. There are robot waiters in restaurants, robot cleaners in offices and homes, and self-driving wheelchairs at Tokyo's Haneda airport. The list goes on and on. Computer-guided helpmates are a fact of life in Japanese society.

// Pensions are low compared with final pre-retirement income. //

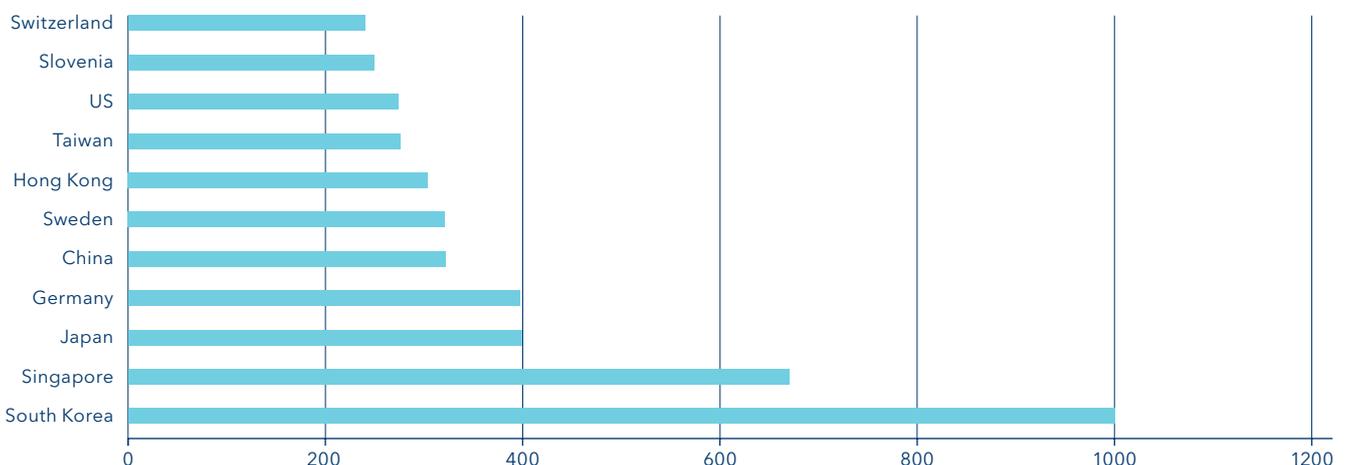
Tech-driven prosperity

According to OECD statistics, Japan ranks 23rd out of 36 countries in terms of productivity. Thus technology has not yet had a positive impact on economic efficiency. This phenomenon is not peculiar to Japan. Many countries are in the same boat. Low productivity does not, however, have a simple relation to prosperity. Japan's low but positive growth rate combined with a shrinking population means that real-term per capita income has actually risen (in local currency) by almost 10% since 2010. That puts Japan on a par with countries like France or Canada. The bottom line is that technology, especially robotics, enables a country to achieve growing prosperity despite a falling population.

In Japan we see the whole spectrum of effects resulting from demographic change. Japan's experience shows that a shrinking population does not necessarily mean less prosperity provided that technology is properly applied. But problems do arise from the wide discrepancy between wage income and pensions. The result is widespread old age poverty. There are lessons here for industrialised nations that are set to follow in Japan's demographic footsteps in the years ahead.

Whereas technological innovations in Europe are often greeted with a degree of scepticism, the Japanese are less hesitant. This attitude chimes with traditional religious beliefs. The shinto religion teaches that all things have a spiritual essence. Robots are no exception. Thus there is little resistance to the use of robots that simulate human behaviour. Japan has one of the highest concentrations of robots in the world, mainly because of their deployment in industry (→ chart below). But the profusion of robots has not outweighed the negative effects of population decline. With the exception of 2021, when figures were distorted by the Covid pandemic, Japan's economic growth has not exceeded 2% p.a. since 2013. Growth potential has shrunk as the number of new entrants to the labour force has declined,

Number of installed industrial robots per 10,000 employees



Demographic winners

Like any change, a shift in population structure offers opportunities for investors. We have picked the best 12 companies from our equity recommendations for this theme.

Jérôme Mäser

#Consumption #Health #Emerging markets #Artificial intelligence #Productivity #Digital

- Baby boomers in the industrialised nations are reaching retirement age, the population's average age is rising.
- New needs and consumption trends.
- Attractive demographics in emerging markets, production being outsourced to these countries.

- Artificial intelligence (AI) enhances productivity and counteracts shortages of specialist staff.
- US investment bank Goldman Sachs estimates that AI could replace 300 million jobs.
- The focus is on jobs involving simple repetitive tasks.

Essity is a hygiene and health company that markets a broad range of incontinence products under the brand name TENA. Digital aids such as the SmartCare Change Indicator for adult incontinence products are very useful for carers. Essity also markets compression products for the treatment of venous and lymphatic diseases.

Medtronic medical technology solutions are used in the treatment of almost 40 diseases. Cardiac pacemakers are the company's best known product. Medtronic is well-placed to benefit from the increase in chronic diseases in industrialised nations' ageing populations and from rapid growth in the emerging economies. As a large part of the company's production is located in emerging markets (e.g. Mexico, Malaysia and China), operations are less likely to be compromised by a shortage of skilled labour.

Telekom Indonesia is the biggest telecoms supplier in Indonesia, providing landline and mobile telephone solutions for about 70 million customers. The population of Indonesia will grow by 58 million (20%) by 2050, indicating further strong growth of the company's customer base and no shortage of staff.

Microsoft is recognised as the world's leading provider of software, hardware and computer services. The company's AI solutions, such as Azure Cognitive Services, support companies by providing AI-controlled chatbots for customer support. This allows more customers to be served with fewer employees.

Swiss Re is the world's biggest reinsurer in terms of premium income. Its AI-driven Rapid Damage Assessment (RDA) system enables thousands of individual policies to be scrutinised rapidly when a disaster occurs, so that resources can be allocated at an early stage and claims met quickly. The system uses hazard models, customer portfolios and aerial photographs to assess the losses involved.

Takeda Pharmaceutical is devoted to the treatment of rare and complicated illnesses. AI helps reduce development costs and speed up the diagnosis of uncommon diseases. The acquisition of Nimbus Therapeutics means that Takeda now also owns the rights to one of the first AI-based medical products on the market.

Name	Sector	Country	Currency
Essity	Consumer staples	Sweden	SEK
Medtronic	Health care	Ireland	USD
Telekom Indonesia	Communication services	Indonesia	IDR

Name	Sector	Country	Currency
Microsoft	Technology	US	USD
Swiss Re	Insurance	Switzerland	CHF
Takeda	Health care	Japan	JPY

#Automation #Robotics #Industry

- In combination with robots, AI can enhance industrial productivity.
- Robots can reliably perform dirty, monotonous and dangerous jobs.
- More complex tasks for robots are also in prospect.

ABB is a leading provider of robotics and automated machinery. There will be especially strong demand for robots in countries that want to repatriate important production processes. Robots can either take over dangerous tasks completely or work collaboratively with humans as “cobots”.

Kion is the largest supplier of warehouse automation systems. Its products include materials handling and sorting equipment, driverless transport systems and light- and voice-controlled order processing solutions. These systems enable companies to handle warehouse operations faster and with fewer employees.

Volvo autonomous transport solutions are already in operation in quarries and mines. Products also include industrial materials transport for use in ports and logistics centres and for long-distance movement on motorways. Volvo now operates in partnership with DHL and Uber Freight. Autonomous vehicles are not subject to obligatory rest periods and can therefore work more efficiently, more safely and faster.

Name	Sector	Country	Currency
ABB	Industrials	Switzerland	CHF
Kion	Industrials	Germany	EUR
Volvo	Industrials	Sweden	SEK

#Education #Reskilling #Work satisfaction

- Companies must offer a good work environment in order to attract and retain staff.
- AI and robots change the working world – some jobs disappear, others are created.
- Reskilling and upskilling are important for ensuring that employees have the appropriate knowledge and knowhow.

AcadeMedia is the biggest private education provider in northern Europe. Besides day nurseries and schools it also operates adult education facilities. Every year, over 100,000 adults in Sweden attend these facilities, which thrive on retraining demand and shortages of skilled labour.

LVMH, a leading luxury goods group, is intent on preserving the rare and valuable skills that underpin the high quality of its products. To this end, LVMH has launched an initiative to ensure the survival of the craft professions on which its products depend, e.g. by promoting skills transfer from older employees to the next generation.

Visa is a network provider of payment systems for private customers and provides further training for its employees at its own Visa University. 89% of its workforce have completed at least one training programme. Thanks to the care that the company takes in nurturing its employees, workplace satisfaction at Visa is very high. 91% of staff are proud to work at Visa and would recommend the company as an employer.

Name	Sector	Country	Currency
AcadeMedia	Consumer discretionary	Sweden	SEK
LVMH	Consumer discretionary	France	EUR
Visa	Financials	US	USD

Gen Z points the way

The first digital generation is wired differently. Employers have to adjust to this. And fast.

Clifford Padevit

Do you know what an internet café was? If so, you don't belong to Generation Z. This demographic cohort - usually known as "Gen Z" - is generally defined as consisting of people born between 1997 and 2012. So its members are now between 11 and 26 years old. It is the generation for which fax, email and SMS are less of a defining presence than WhatsApp, Instagram and TikTok. Gen Zers are "digital natives". They cannot conceive of a world without smartphones.

Gen Z is now coming into the labour market, but its members can be an awkward presence. At job interviews they are liable to ask how many days a week they can work from home and what sort of part time arrangements are on offer. It is the work-life balance that interests them. If the answers don't fit, they take their application elsewhere. Anecdotes about such behaviour abound. Members of older generations whose attitudes were shaped by a more competitive labour market can find this baffling. They grew up believing that the key to success was hard work

Different mindset

These new arrivals in the workforce see the world differently. Their media consumption, for example, sets them apart from older generations. A 2022 study by Germany's television and radio registration authorities showed that the most important sources of information for people under the age of 30 are social media. Their consumption is dominated by online portals, blogs, Wikipedia and streamed TV channels. They put together their own array of information sources and decide for themselves what is important.

The same can be seen in Gen Zers' attitude to work. They pick and choose, which is easier now that job vacancies are on the rise, i.e. labour is in shorter supply (→ chart on page 8). In Switzerland this year 12,000 apprenticeship places were still unfilled when the apprenticeship year started in August. In this situation it is employees who call the shots. They may also be driven by fear of missing out, or "fear of a better option", as psychologist and author Rüdiger Maas of Germany's Institute for Generation Research puts it. Gen Z jobseekers want the best possible package, and if they don't like what is on offer they look

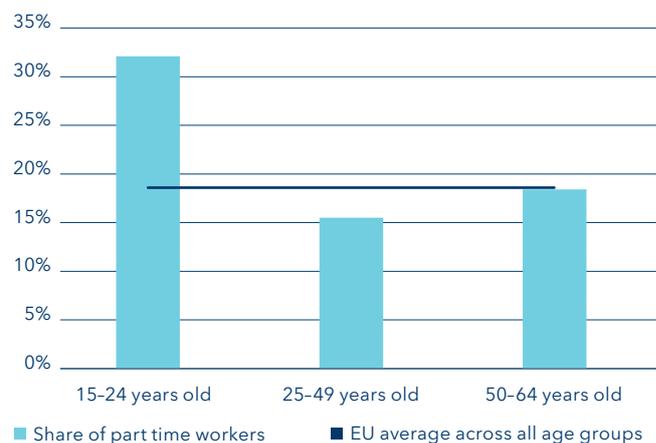
elsewhere. In 2022 the "Workmonitor" of the human resources company Randstad showed that almost two-thirds of young employees - people under the age of 34 - would leave their job if it stopped them enjoying life.

More consistent

We all ask ourselves about the value that work has in our lives. Perhaps Gen Z is simply being more consistent and determined by insisting on a good work-life balance, whereas earlier generations merely talked about it. In fact, though, the wind has been blowing Gen Z's way for some time. Average working hours in the industrialised world have been falling since the 1960s. And if we look at behaviour across the whole working population we find that arrangements like those demanded by Gen Z are already widespread. Working from home is here to stay for people doing office jobs, enabling employees to achieve a better balance between work and family life. The demand for part time employment is likewise not a new Gen Z phenomenon, though the proportion of part timers in the EU is admittedly largest (30%) among under 24s (→ chart).

Employers will gain nothing by clinging to the past. Worldwide, one in three employees will belong to Gen Z by 2025. Companies that want to win them over must learn to understand them.

EU: part time working by age group (% , 2021)



Bond markets offer better opportunities for now

Bernd Hartmann

Recession in the US, yes or no? This question has resonated continuously in 2023 and looks like being a factor again in 2024. Even so, the story over the past year has been one of resilience.

The financial markets have repeatedly been put under stress. The current interest rate cycle is unusual. Central banks initiated a worldwide upward push on interest rates in 2021 in response to accelerating inflation. The resultant upswing in interest rates turned out to be the steepest in 40 years. Rising yields result in book losses on bond portfolios, so some market players were wrong-footed, notably regional banks in the US. In Switzerland the resultant stress in the financial system led to the forced takeover of Credit Suisse by UBS. However, unlike what happened in 2008, a full-fledged banking crisis has so far been averted.

No premium on equities

Developments in the real economy have done their bit. Forward indicators, mostly based on survey data, suggested that a recession was looming. But actual economic data, notably in the US, turned out to be much better than forecast. Many investors concluded that recession had been averted, not merely postponed. Thus negatively inclined investors were positively surprised and gradually recovered their appetite for risk.

However, the receding fear of recession sparked a rise in bond yields, while the hype around

// We start with an unchanged cautious equity positioning. //

artificial intelligence contributed to a bullish mood on the equity markets. Equity prices and bond yields climbed simultaneously, but when the yield on 10-year US Treasuries hit 5% the equity markets came under pressure. Similarly to what had happened a year before, higher bond yields triggered losses on numerous equity and bond markets.

The picture as we move into 2024 is one of higher bond yields and elevated equity valuations. Normally equities should generate higher returns in the long term because they involve higher risks. But that is not happening at present in the world's leading financial market, the US, where the valuation advantage is clearly with bonds. In the homeland of the "Magnificent Seven" top tech companies, the equity market currently offers no risk premium at all vis-à-vis government debt securities. This has implications for other parts of the world, even if equities there are less expensive. Europe, for example, and the emerging markets led by China are grappling with

challenges of their own. Low equity valuation levels in these markets are failing to attract new investors. In our view, the overall portfolio outlook for the start of the new year mirrors the situation in the US: higher potential in the bond sector. We are therefore starting with an unchanged cautious positioning in equities.

Turning point for yields

The picture is likely to change in the course of the year. We believe that key interest rates have reached their peak for the current cycle. That spells a turning point on the bond markets. At the same time the long-delayed recession will put a brake on the economy and reduce inflationary pressures. A downturn should mean lower yields.

The bond market trend will set the course for equities. A pause in central bank action and the prospect of tentative interest rate cuts in the second half of the year will give equities a psychological boost. Initially, however, there is still too much optimism about. Analysts are predicting double-digit profit growth in 2024, even though many companies are talking down the outlook.

If expectations change, the balance of attractiveness could shift in the direction of risk, i.e. towards equities. And if signals start to flash that economic weakness is going to be overcome, investors can expect to be better rewarded than in 2023. Until that happens, the bond markets offer interesting opportunities.

PUBLISHED BY

CIO Office · VP Bank Ltd
Aeulestrasse 6 · 9490 Vaduz
T +423 235 61 73 · F +423 235 76 21
cio-office@vpbank.com

Editorial staff

Dr Felix Brill, Chief Investment Officer
Felipe Gomez de Luis, Head of Group Communications & Marketing
Dr Thomas Gitzel, Chief Economist
Bernd Hartmann, Head of CIO Office
Jérôme Mäser, Equity Analyst
Marcello Musio, Head of Group Equity & Bond Selection
Christina Strutz, Investment Communication Manager
Clifford Padevit, Head of Investment Communication (Lead Editor)

Design and illustrations

Katja Schädler, Senior Visual Designer

Translation

Paul Courtney

Publication frequency

Semi-annual

Editorial deadline

16 November 2023

Sources for charts

Page 4: World Bank, VP Bank
Page 5: United Nations, VP Bank
Page 6: 2023 Global Talent Shortage, ManpowerGroup
Page 7: Penn World Table, United Nations, VP Bank
Page 8: Employment and Social Developments in Europe, European Commission
Page 9: OECD, VP Bank
Pages 12 and 13: Infographic
• VP Bank and Liechtenstein National Administration
• Pew Research Center
• United Nations, World Population Prospects (2022) via World in Data
• Penn World Table
• OECD
• Swiss Federal Statistical Office
• World Bank
• European Union
• Resume.io
Page 18: OECD, LSEG, VP Bank
Page 19: International Federation of Robotics (IFR), VP Bank
Page 22: European Centre for the Development of Vocational Training (Cedefop)

Photos

Page 2: Unsplash, Matthew Waring
Pages 14 and 17: pictures provided

Print

BVD Druck+Verlag AG, Schaan



Important legal information

This document was produced by VP Bank Ltd and distributed by the companies of VP Bank Group. This document does not constitute an offer or an invitation to buy or sell financial instruments. The recommendations, assessments and statements it contains represent the personal opinions of the VP Bank Ltd analyst concerned as at the publication date stated in the document and may be changed at any time without advance notice. This document is based on information derived from sources that are believed to be reliable. Although the utmost care has been taken in producing this document and the assessments it contains, no warranty or guarantee can be given that its contents are entirely accurate and complete. In particular, the information in this document may not include all relevant information regarding the financial instruments referred to herein or their issuers. Additional important information on the risks associated with the financial instruments described in this document, on the characteristics of VP Bank Group, on the treatment of conflicts of interest in connection with these financial instruments and on the distribution of this document can be found at https://www.vpbank.com/en/legal_notice.

You choose the **right ingredients** day-to-day. What's the situation with your **portfolio**?

In everyday life, you know exactly what ingredients you need to prepare a delicious meal. But how are things looking with your portfolio? Does it contain the right ingredients to achieve your financial goals? Our portfolio check helps you take your portfolio to the next level! www.vpbank.com/portfoliocheck



