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Eye of the Tiger

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Contents

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Eye of the Tiger

We have been suggesting since the onset of the pandemic that we are experiencing a macro 'regime change,' driven this cycle by a variety of unique supply side shocks, including a more challenging market for attracting and retaining workers. Generational demographics, less cross-border mobility, and rapid technological change represent structural forces in the developed markets that, we believe, will make labor the 'eye of the tiger' for governments, employers, and investors for the foreseeable future. If we are right, it should necessitate enhanced spending on worker retraining, while process automation will continue to gain in importance. However, the greatest opportunity is likely for employers to find new ways to align their interests with those of their workers – creating potential for employees to become more engaged across multiple aspects of their jobs. In addition, greater access to and investment in childcare and elder care will be needed for working parents and primary caregivers. At the same time, employers should adapt positions to be more attractive for workers aged 55 or older, while investing more deliberately around training for younger workers. No doubt, the aforementioned convergence of factors will drive significant macroeconomic and societal challenges. However, tremendous opportunity for greater prosperity lies within those challenges.

Without labor nothing prospers.

—**Sophocles,** ancient Greek tragedian

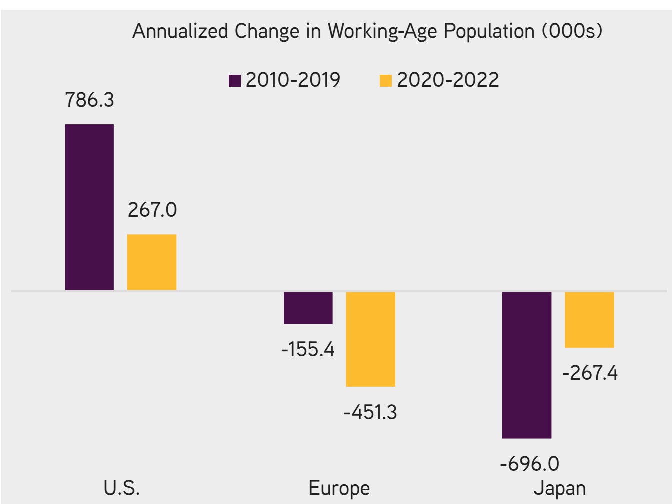
As part of explaining our regime change thesis this economic cycle, we published a detailed note last year outlining our thoughts on how the ongoing tightness in the labor market was not an aberration, but instead the beginning of an important trend (see *Labor in Transition*). In particular, our research uncovered several important shifts in the large labor markets, including (among others) COVID 'absences', weakening immigration, a dearth of worker retraining, and a rash of early retirements. All of this was also occurring against the backdrop of a structural acceleration in baby boomer retirements.

We posited then that persistent structural tightness in the labor market would likely lead to some combination of higher wages as well as worker shortages across multiple industries on a sustained basis, and that as a result, corporate margins and growth rates were at risk of being adversely affected. This scenario of ongoing sticky worker costs and worker shortages has played out faster and more furiously than many were expecting over the last 12 months — and to the surprise of many global CEOs and investors. It has also been a conundrum for central bankers, and especially for the Federal Reserve. Indeed, despite the Fed raising rates at a record clip over the last 10 months, the employment to population ratio has actually *increased*.

So, while we do acknowledge that there are likely to be cyclical challenges to the labor market at some point this cycle (for example, we forecast that the full-year average U.S. unemployment rate ticks up to a peak of around 4.5% in the mild recession scenario we model as a base case, vs. 3.6% in 2022), we continue to think – even as we move past the most acute phase of the current labor shortage – that there is a high likelihood that *structural* factors will put

Exhibit 1

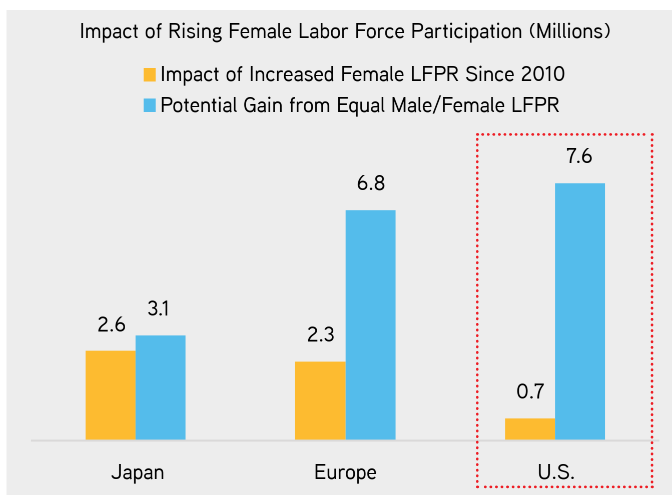
Demographics Are Turning Into a Serious Headwind Across Developed Markets



Europe and Japan latest data available. Working age is 16-64 in the U.S. and 15-64 in Europe and Japan. Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Eurostat, Ministry of Internal Affairs and Communications.

Exhibit 2

Improvement in Female Labor Force Participation Could Meaningfully Increase the Size of the Global Workforce



Europe and Japan latest data available. Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Eurostat, Ministry of Internal Affairs and Communications.

downward pressure on unemployment levels as well as inspire more upward pressure on wages through the course of the normal business cycle. See below for more detail, but in our view, these structural factors include:

Demographic Headwinds: In most of the developed world, as well as in China, demographics are not keeping pace with the demand for workers. In the U.S., for example, roughly as many people are aging out of their working years (16-64) as are entering them, while the working-age populations of Europe and Japan have started to shrink.[1] One can see this in *Exhibit 1*. While its urban population is still growing, China's total working-age population actually contracted by about three million people last year. Meanwhile, in the United States the stock of available workers in the workforce since COVID increased by only one million people, while overall demand (employment + job openings) is now about seven million jobs higher. This mismatch between available workers and demand for labor in the U.S. is one of the key reasons the unemployment rate is now so low, despite the aggressive Fed tightening cycle.

Low Rates of Participation: Higher labor force participation typically can help offset stagnating population growth. However, the participation rate in the United States has declined, from a peak of 67.1% in 2000 to just 62.2% (*Exhibit 16*). Meanwhile, although Europe and Japan have managed to increase labor force participation rates (LFPR) in recent years by about 50 basis points and 230 basis points, respectively, they will need to do more going forward in order to offset the effects of an aging population (think of the ongoing battle to raise the retirement age in France from 62 to 64). One can see this in *Exhibit 18*, which shows that participation rates in absolute terms are actually quite low, especially in Europe (which has a participation rate of just 6.1% for those over 65).

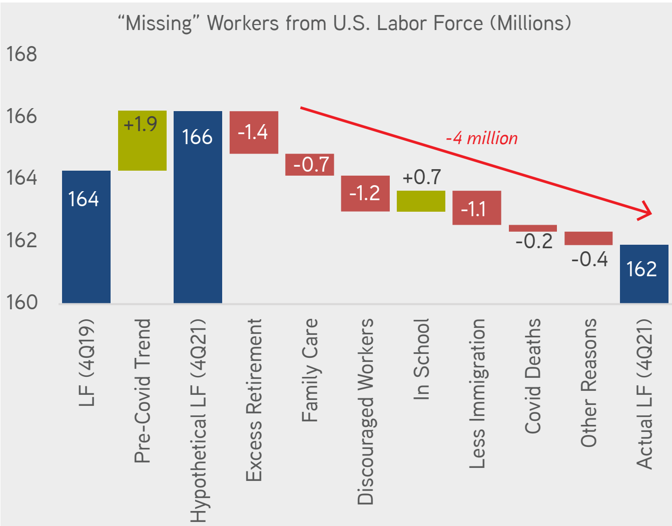
A Smaller Tailwind from Globalization: As my colleague Vance Serchuk often reminds us, we are transitioning from an era of 'benign globalization' (where economics drove geopolitics) to one of 'great power competition' (where geopolitics often constrain economic considerations). All else equal, this new era will require more local workers in developed markets, armed with the requisite skills, to generate the same level of output, as the logic of 'competitive advantage' and greater global trade is replaced by one of 'security', trading within like-minded blocs and greater domestic production. Moreover, slowing population growth and rising wages in developing markets have meaningfully changed the calculus of offshoring manufacturing, making for a less attractive labor-cost arbitrage. Just consider that the ratio of China manufacturing wages to U.S. wages has fallen to just 4:1 today from about 40:1 in the 1990s *(Exhibit 19)*.

A Pull-Back in Immigration: In 2020-2021, U.S. immigration fell to about 50% of the 2000-2019 average (i.e., to 620,000 from 1.3 million), which we think translates in aggregate to roughly 1.1 million 'missing' workers. Meanwhile, Europe and Japan saw similar decreases during COVID, with immigration falling to about 70% and 60%, respectively, of pre-COVID levels. While immigration flows showed signs of recovering in late 2021-2022, we think that most developed markets will need to focus on increasing immigration – particularly skilled immigration – in order to keep their economies in equilibrium going forward. Unfortunately, this need is occurring at a time of intensifying geopolitical tensions as well as more political division within democratic systems. For example, stagnating immigration rates have now emerged as a structural concern for the United States, especially in light of our expectation for the births/deaths ratio to turn negative in coming years. At the same time, we think that given Japan's domestic politics, current levels of immigration are not high enough to offset the impact of an aging population, despite immigration reforms gaining traction over the last ten years. A similar story is playing out in Europe too.

1 Note: Our analysis does not include the wave of Ukrainian immigrants displaced because of the Russian invasion.

Exhibit 3

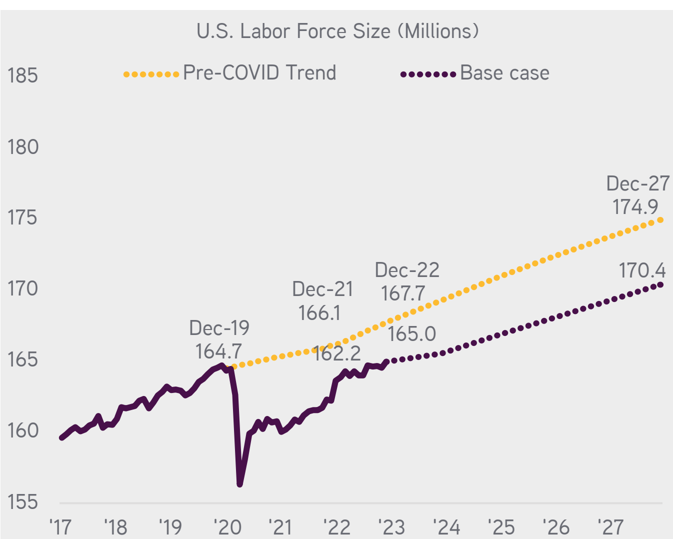
In the U.S., Low Immigration and Low Participation Led to a Four Million Worker Shortfall in 2021



Data as at January 10, 2023. Source: U.S. Census Bureau, Haver Analytics, Federal Reserve Bank of Atlanta, KKR Global Macro & Asset Allocation analysis.

Exhibit 4

While Some Recovery in Immigration Has Helped Narrow the Gap, Lower Participation Will Be a Continuing Drag on Workforce Growth



Data as at January 10, 2023. Source: U.S. Census Bureau, Haver Analytics, KKR Global Macro & Asset Allocation analysis.

COVID Policy Responses, Especially in the U.S.: In hindsight, the U.S. decision not to more consistently align financial support with employment during the pandemic (as in Germany, for example) was probably misguided. All told, U.S. unemployment surged by +920 basis points from trough to peak during COVID. By contrast, Europe's unemployment ticked up by just +110 basis points and Japan's by just +80 basis points *(Exhibit 22)*. Our work suggests that the U.S. decision to shed workers rather than cut hours (tying relief to companies who maintained their workforces) during the early days of the pandemic may have led to some 1.2 million people permanently leaving the workforce after their initial dislocation. All told, the 'hangover' effect from COVID has contributed to a 110 basis point drop in U.S. participation from 2019 levels (*Exhibit 18*). Meanwhile, on a quarterly basis, participation has *increased* by +60 basis points in Japan and +30 basis points in Europe since the onset of COVID.

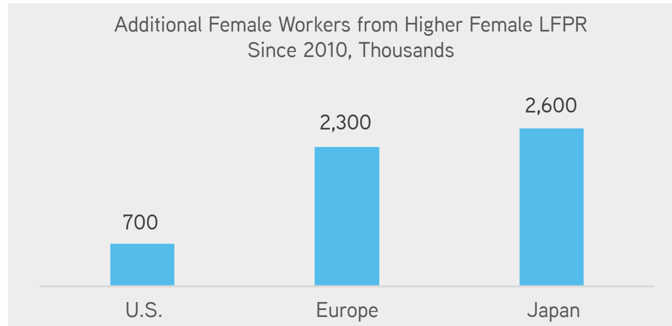
So, where does the structural change in the labor market take us in 2023 and beyond? Looking ahead, we believe that cyclical inflation has peaked and is now in the process of cooling. However, our belief in a 'higher resting heart rate' for inflation remains intact, driven by our views about labor costs, the inflationary nature of the energy transition, and the adverse impact of geopolitics on supply chains/cost inputs. Of these three influences, we think that that labor could represent the 'eye of the tiger' in this new global macroeconomic environment we envision. Specifically, it means that governments, corporations, and employees will all need to work together to address labor issues. So, as we peer around the corner today on what tomorrow might require, we think that governments and businesses around the globe will need to focus on the following key trends to navigate the confines of a structurally tighter labor market.

Of these three influences, we think that that labor could represent the 'eye of the tiger' in this new global macroeconomic environment we envision.

ACTION ITEM #1: Empower more women to join the workforce. As it becomes harder for most economies to find new workers, we see more room to 'narrow the gap' between male and female labor force participation through continued investment in childcare, eldercare, and family planning. To be sure, a lot of progress has been made on this front over the past fifty years; in fact, the majority of parents and caregivers now work full-time in the developed markets we studied. Nonetheless, the reality remains that a disproportionate number of women remain out of the workforce due to family obligations. Importantly, experiences from both Japan and Europe show that improvements in labor market equality can occur with more flexibility in work-life balance and investment in family care. For example, changes around Prime Minister Abe's 'womenomics' policy may have added upwards of 2.6 million female workers to Japan's economy of 70 million workers between 2010 and 2022 (*Exhibit 5*). Meanwhile, policy changes around family leave and childcare have helped add about 2.3 million women to Europe's workforce of almost 170 million workers, we believe. By contrast, tepid gains in female labor force participation have only added around 700,000 workers to the U.S. economy over this same period, against a total workforce of about 165 million. We think the cost of childcare in the U.S., which is approximately four times higher than the OECD average (*Exhibit 6*), is currently a major headwind that will likely require a major overhaul. Overall on a global basis, though, we think that structural factors continue to impair female labor force participation in virtually *all* of the developed markets we studied. Indeed, were we to see more dramatic progress in *bolstering female worker participation rates in developed markets to be more on par with their male counterparts, it could add upwards of 7.6 million workers to the U.S. workforce, 6.8 million to the European workforce, and 3.1 million to the Japanese workforce.* Against this backdrop, our strong belief is that much more can be done by both the private and public sectors to improve the situation across the U.S., Europe, and Japan.

Exhibit 5

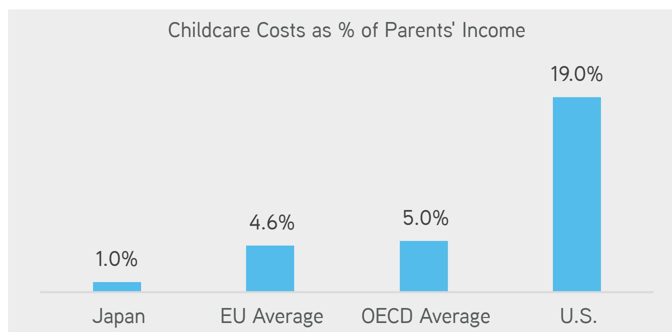
Japan and Europe Have Both Added Over 2 Million Female Workers to Their Workforces Since 2010, Dwarfing the U.S.



Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

Exhibit 6

We Believe That the U.S. Needs Far More Investment in Childcare Relative to Its Global Peers



Data based on the 67%ile of household income, as calculated by OECD. Data as at December 31, 2022. Source: OECD, KKR Global Macro & Asset Allocation analysis.

Our work shows that worker shortages have historically led to rising wages and greater automation.

Exhibit 7

In Recent Years, the U.S. Has Been Able to Grow Its Workforce Because of a Major Demographic Tailwind. However, This Benefit Is Now Poised to Reverse. Meanwhile, Europe and Japan Have Offset Significant Demographic Headwinds by Improving Participation Rates

Contributions to Workforce Growth (Millions)			
	U.S.	Europe	Japan
4Q10 Workforce	**153.7**	**157.9**	**65.7**
Demographics	**9.6**	**-3.2**	**-3.2**
Change in Participation	**1.4**	**12.7**	**6.8**
Change in Prime-Age Male Participation	-0.6	-0.1	0.0
Change in Prime-Age Female Participation	0.7	2.3	2.6
Change in 55-64 Participation	0.1	8.6	1.8
Change in 65+ Participation	1.2	1.8	2.4
4Q22 Workforce	**164.7**	**167.3**	**69.4**

Europe data based on the 'Euro-Area 19' subset of E.U. members. 4Q22 uses latest data available in Japan and Europe. Data as at January 10, 2023. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

Key Issues Affecting the Labor Market	Implications
1. **Demographic Headwinds**	More demand for and a greater reliance on automation and efficiency enhancing tools
2. **Lower Rates of Participation**	More public and private support for women who wish to join the workforce as well as better representation of workers 55-65+
3. **Reversal of Globalization**	Rethinking of supply chains; more focus on worker retraining and upskilling
4. **Pull-Back in Immigration**	Improve procedures around visa issuance, and continue to emphasize attracting global talent
5. **After-Effects from COVID Layoffs**	Better alignment of management and labor through the business cycle; move from transactional boom/ bust employment to a more ongoing relationship based model

ACTION ITEM #2: Encourage more 65+ workers to join the workforce. As we show in *Exhibit 32*, just 6.1% of Europe's 65+ population is currently participating in the labor force, despite this cohort accounting for fully a quarter of the adult population. However, it is not just Europe that is 'missing' older workers. In each of the developed markets we analyzed, less than than 30% of workers over 65 are currently working or looking for work. This is occurring at a time when both men and women are living much longer than they did in the past. As such, we feel strongly that, as populations age, it will become even more critical to bring these older workers back to contribute to the economy. To date, Japan has had the most success in boosting participation for the 65+ demographic, through a combination of worker training, better placement, and government incentives. Collectively, these policies have attracted an additional 2.4 million workers into a workforce of approximately 70 million people. We think there is room for the U.S., and especially Europe, to follow suit, both in terms of government and corporate policy as well as investment in all forms of productivity tools, given that older-worker labor force participation rates in the U.S. and Europe lag those in Japan by about 6.4 and 19.5 percentage points, respectively. Important industries that need to address this headwind include manufacturing, long-haul trucking, and many parts of healthcare, especially healthcare services.

ACTION ITEM #3: Worker retraining. Going forward, we think that many countries will need to invest much more aggressively in worker retraining in order to raise worker productivity and boost overall employment, particularly as technological change accelerates amidst an aging workforce. We think employers will need to consider the workforce as a longer-term relationship, not just a transaction driven solely by economic ups and downs. Employers should also invest behind skills training that builds upon existing talents and is more responsive to actual business demands. The opportunity set is particularly large in the U.S., which actually ranks just above Mexico in its public investment in worker retraining and invests just 1/10th to 1/20th the share of GDP that many of its European peers do *(Exhibit 36)*. Partly as a result, today in the United States some 11 million jobs remained unfilled, while most U.S. employers report a shortage of skilled labor (*Exhibit 9*). At the same time, in the latest data from the end of 2021,

Exhibit 8

Older-Worker Participation Matters a Lot More in a World Where 20-30% of the Population Is Aged 65+

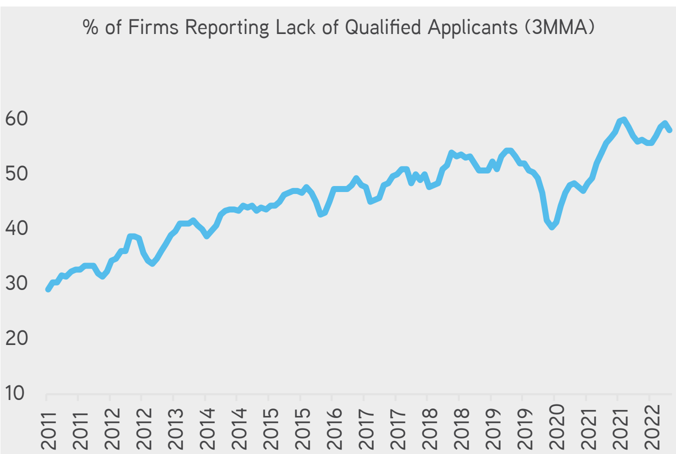
	United States		Europe		Japan	
	Millions	%	Millions	%	Millions	%
Total Population	264.8	100%	289.5	100%	110.4	100%
Working-Age Population (15/16-64)	207.2	78%	217.4	75%	74.1	67%
Prime-Age Population (25-54)	127.2	48%	132.6	46%	46.9	42%
Prime-Age Men (25-54)	63.2	24%	66.2	23%	23.8	22%
Prime-Age Women (25-54)	64.1	24%	66.4	23%	23.1	21%
55-64 Population	41.9	16%	48.6	17%	15.6	14%
65+ Population	57.5	22%	72.2	25%	36.3	33%

Working age population in the U.S. is 16-64 while Japan and Europe are 15-64. Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

5-6 million workers were outside of the workforce because they could not find employment. These data points support our strong view that both the public and private sectors need to do more to narrow the persistent skill mismatches between the pool of potential workers and the stock of open jobs.

Exhibit 9

The U.S. Worker Shortage Is Particularly Severe for Skilled Positions

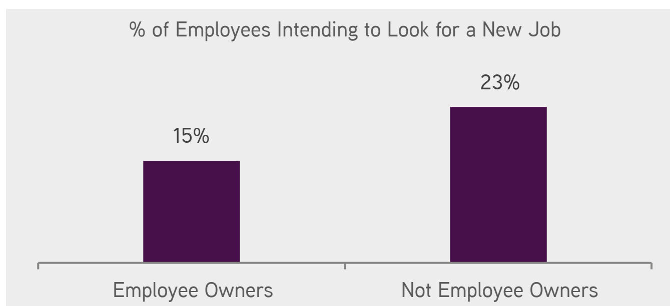


Data as at November 30, 2022. Source: NFIB.

ACTION ITEM #4: Better alignment of management and labor. As workers become scarcer, and competition for employees increases, companies will need to adapt new strategies around talent retention. In both Japan and Europe, a mix of formal and informal labor market structures and job retention schemes have helped promote longer worker tenures than in the United States. Going forward, we see opportunities for managers globally to do more to align their employees' incentives with their own, including by embracing employee ownership. One can see an example of this in *Exhibit 10*. KKR's own experience suggests that employee ownership builds stronger companies, drives greater financial inclusion, and promotes employee loyalty.

Exhibit 10

Employee Ownership Can Improve Retention by Better Alignment of Labor and Management



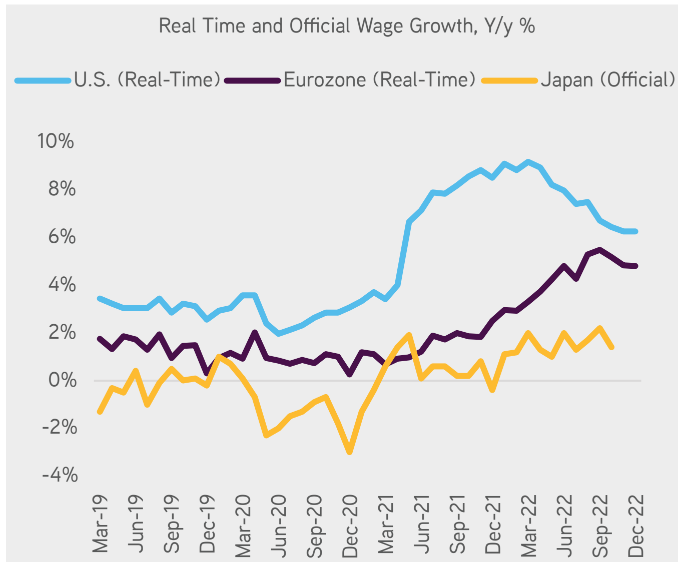
Data is an average of 2002-2014. Data as at December 31, 2014. Source: Upjohn Institute.

ACTION ITEM #5: Increase the focus on automation. Our work shows that worker shortages have historically led to rising wages and greater automation. One can see this in *Exhibit 38*. In our humble opinion, automation will need to be a significant area of focus across a wide variety of industries across a variety of different economies, including Japan, Europe, China, and the United States. To date, the most advanced efforts have been heavily concentrated in the manufacturing industry, which in the United States accounts for less than 10% of total employment but nearly 90% of all robot installations. However, the playbook is starting to shift, as an aging population makes it harder to fill junior roles in service industries. We have already seen robots cleaning floors at Heathrow and clearing dishes in Japan and think this trend will accelerate as automation increases in fields like retail, leisure and hospitality, and healthcare. Automation and productivity have already emerged as mega-themes, in our view, and as a result, they now actually account for about 20-25% of our deal teams' new investment activity in PE since the pandemic.

Looking at the big picture, following the Global Financial Crisis (GFC), there was a decade of high unemployment and 'too many workers' across many of the larger developed economies (*Exhibits 12* and *13)*. We think that COVID helped reverse this trend, marking the beginning of a period of low global unemployment and 'too many jobs'. If we are right, then this new backdrop likely means that central banks will need to maintain tighter policy, all else being equal, to contain inflationary pressures in the labor market. In the U.S., for example, we expect unemployment to average just over four percent this cycle, down from 6.2% over 2010-2019. Accordingly, we think that the long-term neutral policy rate for the Fed to meet its employment and inflation mandates is now in the *low three percent range*. At the same time, however, we expect that real rates will remain lower this cycle than many of the prior ones we have studied, in part because of the demographic impact of an aging society (*Exhibit 26*). A similar framework, albeit from lower bases and accounting for central banks' different reaction functions, can likely be applied to both Europe and Japan, we believe.

Exhibit 11

Global Wage Growth to Remain Robust, Although We Think It Will Fall From Currently Unsustainable Levels



Real-Time equates to private market data. Data as at January 18, 2023. Source: Indeed, Japan Statistics Bureau.

If we are right, then this new backdrop likely means that central banks will need to maintain tighter policy, all else being equal, to contain inflationary pressures in the labor market.

So, our bottom line is that governments and companies will all need to develop new approaches to solving the labor conundrum. For employers, the current backdrop requires creating better incentives for employees to come to work – and to stay at work. It also necessitates creating greater alignment where corporate profits and individual successes are more closely united than in the past. At the same time, government policies, particularly around worker retraining, inclusion, and flexibility, will all become differentiator issues that dictate which countries and companies achieve their potential growth aspirations. Finally, we believe that the global economy is at the beginning of a massive capex cycle when it comes to automation and productivity tools, which will be needed to generate the same level of GDP from a smaller workforce. So, the road ahead will be quite different than what we saw during the period of rapid globalization. However, for those who are willing to think differently and engage with labor, we think the path forward could be quite compelling.

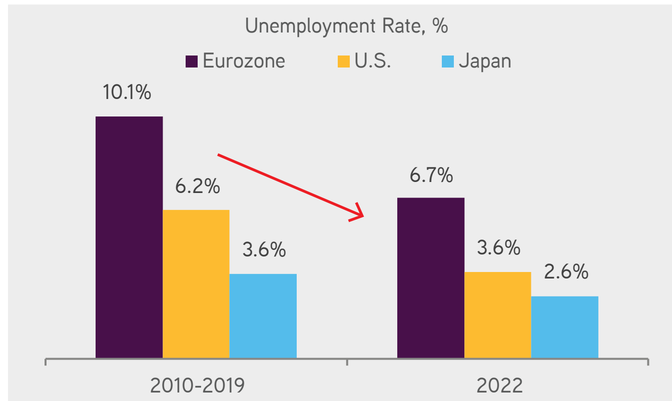
Section I: Key Labor Market Trends

Post the GFC, the primary problem facing most major economies was too-high unemployment and too-low inflation. In the U.S., for example, unemployment from 2010-2019 averaged fully 6.2%, while inflation hovered below the Fed's two percent target, averaging just 1.8%. Fast forward to today, and the script has been flipped – inflation surged to 8.0% in 2022, while unemployment averaged just 3.6%. A similar dynamic has unfolded in other major economies including Europe and Japan, as one can see in *Exhibits 12* and *13*. Said differently, COVID catalyzed a shift away from 'too many workers' to a world of 'too many jobs'.

Said differently, COVID catalyzed a shift away from 'too many workers' to a world of 'too many jobs'.

Exhibit 12

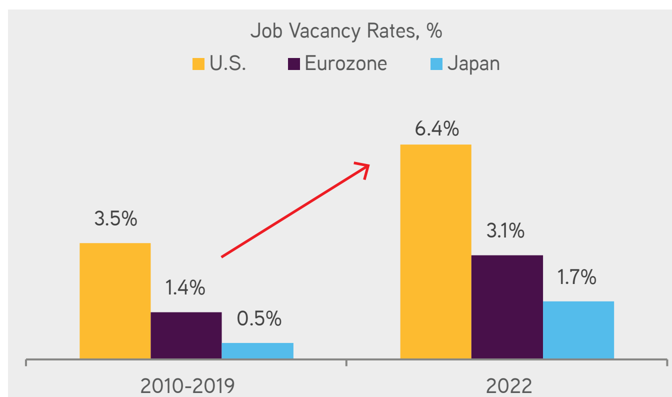
The Most Significant Economic Challenge in Developed Markets Has Gone from 'Too Many Workers'...



Europe data based on the 'Euro-Area 19' subset of E.U. members. Data as at January 10th, 2023. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

Exhibit 13

...To 'Too Many Jobs'



Europe data based on the 'Euro-Area 19' subset of E.U. members. Data as at January 10th, 2023. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

Still, unemployment is typically a lagging indicator for the economic cycle. So, in light of aggressive hiking by central banks, a surge in layoffs across Financials and Tech, and inflation coming off the boil, we have been asked more than a few times whether we can expect at some point this cycle to return to the 'old' regime of a looser labor market. From our perch, the answer is no. Key to our thinking is that, even as the pandemic's effects fade, a combination of factors including challenging demographics and declining participation rates will keep labor markets tighter this cycle than many investors expect. To be sure, we have probably passed the most 'acute' phase of the current labor shortage, as evidenced in cooling wage growth. However, we strongly believe that COVID merely exposed long-dormant fault-lines in the structure of the global labor market, which will continue to be active for some time to come.

There are several important inputs to our labor thesis. They are as follows:

Demographic Headwinds. As we mentioned earlier, we believe that developed markets are facing a *structural* demographic slowdown as their populations age, a problem that predates the pandemic. All told, the number of working-aged individuals has stopped growing in wealthy countries, and in some cases, it has started to contract. **For instance, over the last three years in the U.S., about as many people aged out of their working years (16-64) as entered them.** Demographic headwinds are actually *worse* in markets like Japan or Europe, which have lost 270,000 and 450,000 working-age adults per year, respectively, over the same period (*Exhibit 1*). Meanwhile, the National Bureau of Statistics of China 2021 Census indicates that urban population growth has fallen to about 12 million people per year, compared to an average of 24 million per year over the 2010-2019 period. Said differently, the flow of new urban workers, a key economic ingredient to China's GDP growth, has slowed sharply as the country's population has contracted. As this dynamic plays out over time, we think it will be harder for western firms to simply rely on cheaper foreign manufacturing to offset a worsening labor crunch at home.

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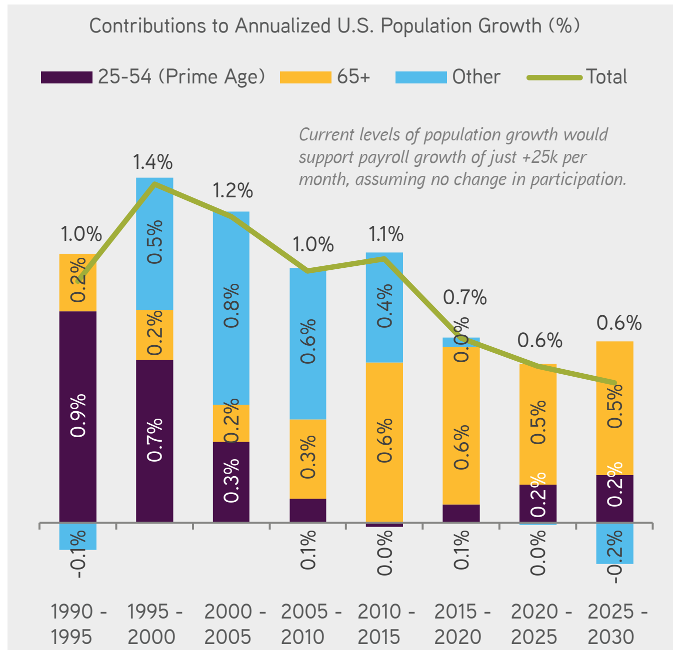
Exhibit 14

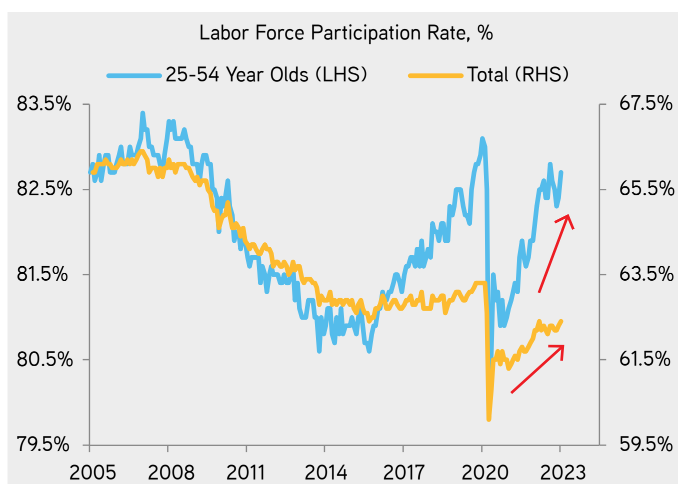
U.S. Population Growth Has Slowed Down, Particularly for the Prime Working Age Cohort…



Data as at January 10, 2023. Source: U.S. Bureau of Labor Statistics, Congressional Budget Office, U.S. Census Bureau, KKR Global Macro & Asset Allocation analysis.

Exhibit 15

…Which Means Almost All Prime Age Workers Are Already Working



Data as at February 3, 2023. Source: U.S. Bureau of Labor Statistics, Haver Analytics.

Low Rates of Participation Among Women and Older Workers. In the past many major economies have been able to offset slowing demographic growth by raising participation rates. However, there are now several structural factors at work which are stifling overall labor force participation. For starters, ongoing family care responsibilities are still keeping too many parents and primary caregivers out of the workforce. Indeed, in many instances the care of one's family still falls predominantly on prime-age women. As a result, prime age women are about nine times as likely as prime-age men to be out of the labor force due to family obligations in the U.S. and about ten times as likely in Europe.

Against this backdrop, current labor force participation rates for women in their prime working years (25-54) typically lag those for prime-age men by around 10% or more. One can see this in *Exhibit 16*. In absolute terms, the numbers are quite staggering. All told, we estimate that the gap between male and female LFPRs accounts for about 3.1 million 'missing' workers in Japan, compared to 6.8 million in Europe and fully 7.6 million in the U.S.

The good news is that, in several instances that we studied, social programs are beginning to reduce the burden of family care on working-age women. In Japan, for example, corporations have been working hard to structurally bring more females into the workforce since the launch in 2012 of Prime Minister Abe's 'Womenomics' strategy to attract women workers, narrow the pay gap and stimulate growth. As one can see in *Exhibit 7*, the resulting growth in female labor force participation has made a big difference. In fact, whereas the U.S. had a higher participation rate for women than Europe or Japan in 2000, this situation has now reversed. Indeed, our estimates suggest that just between 2010 and 2022 increasing prime-age female labor force participation has added about 2.6 million workers to Japan's economy, in an economy with 70 million workers, and about 2.3 million to Europe's workforce of about 170 million workers. By contrast, tepid gains in female labor force participation have only added about 700,000 workers to the U.S. economy over this same period, against a total workforce of about 165 million.

Another big issue is that people still tend to retire at the same age they did in past decades, despite the fact that they are living much longer lives. For example, although 33% of Japan's adult population is over 65, these workers comprise just 13% of the workforce. The divergence is even more striking in the U.S. (22% vs. 7%) and Europe (25% vs. 3%). The Japanese government has had relative success in bringing older workers back to the workforce, with government policies, programs and incentives intended to keep older members of society engaged in the workforce for longer, and corporate programs designed to retrain and retain older workers. Partly as a result, from 2010 through the present, the participation rate for workers aged 65 and up in Japan has increased from 19.9% to fully 25.6%. Meanwhile, in the U.S., participation remains at 19.2%, slightly up from 17.4% in 2010 but down from 26.5% in 1950. Europe's equivalent stands at a dismal 6.1% in 2022, up from 3.7%.in 2010. One can see these estimates in *Exhibit 16*. So, in our view, there is a huge opportunity for other countries to draft off the policies, procedures, and incentives that Japan has implemented. Just consider that, by achieving Japan's labor force participation rate for older workers, the U.S. could add some 3.7 million workers to its economy, while Europe could add fully 14.2 million.

Our bottom line is that more countries will need to address structural issues to broaden participation rates by both sex *and* age to keep their economies in equilibrium, especially as demographics mature further. The reality is that getting more prime-age men into the workforce will be quite hard, given that most are already working. Our research shows that 88.6% of prime-age men are working in the U.S., along with 91.6% in Europe and 95.5% in Japan. So, more investment in attracting greater numbers of women into the workforce, alongside the incentivizing and training of older workers to offset skills mismatches, will likely have to be the two important paths to increasing participation rates.

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Exhibit 16

Prime-Age Female Labor Force Participation Remains a Headwind, Especially in the United States

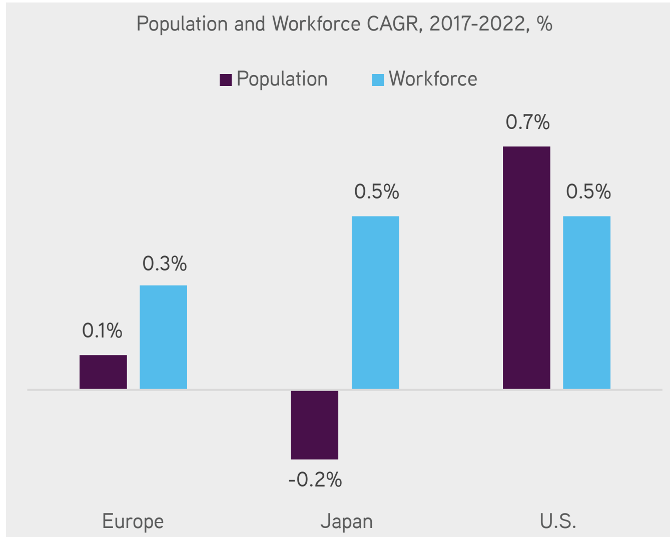
Labor Force Participation Rate (%)	2000	2010	2020	2022	Change Since 2000
U.S.					
Prime-Age (25-54) Male	91.6%	89.3%	87.9%	88.6%	-3.1%
Prime-Age (25-54) Female	76.7%	75.2%	75.1%	76.4%	-0.3%
Older Workers (65+)	12.9%	17.4%	19.4%	19.2%	6.4%
Total (All Ages)	67.1%	64.7%	61.8%	62.2%	-4.8%
Europe					
Prime-Age (25-54) Male	92.9%	91.7%	89.8%	91.6%	-1.3%
Prime-Age (25-54) Female	71.3%	77.9%	79.2%	81.4%	10.1%
Older Workers (65+)	3.0%	3.7%	5.6%	6.1%	3.1%
Total (All Ages)	55.1%	56.9%	56.3%	57.5%	2.4%
Japan					
Prime-Age (25-54) Male	97.2%	96.2%	95.5%	95.5%	-1.7%
Prime-Age (25-54) Female	66.5%	71.5%	80.0%	81.8%	15.3%
Older Workers (65+)	22.6%	19.9%	25.5%	25.6%	3.0%
Total (All Ages)	62.5%	59.6%	62%	62.5%	0.1%

Europe data based on the 'Euro-Area 19' subset of E.U. members. 4Q22 uses latest data available in Japan and Europe. Data as at January 10, 2023. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

Indeed, were we to see more dramatic progress in bolstering female worker participation rates in developed markets to be more on par with those of their male counterparts, it could add upwards of 7.6 million workers to the U.S. workforce, 6.8 million to the European workforce, and 3.1 million to the Japanese workforce.

Exhibit 17

Despite Stagnating Population Growth, Europe and Japan Continue to Bring New Workers Into the Workforce



Europe data based on the 'Euro-Area 19' subset of E.U. members. Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

Exhibit 18

Europe and Japan Actually Increased Labor Force Participation Rates During COVID-19

Labor Force Participation Rate, %	U.S.	Japan	Eurozone
Q4-2017	62.7%	60.6%	57.3%
Q4-2018	62.9%	61.8%	57.3%
Q4-2019	63.3%	62.3%	57.3%
Q4-2020	61.6%	62.2%	56.7%
Q4-2021	61.9%	61.9%	57.1%
Q4-2022	62.2%	62.9%	57.6%
Change since 2017	-0.5%	+2.3%	+0.5%

4Q22 uses latest data available in Japan and Europe. Europe data based on the 'Euro-Area 19' subset of E.U. members. Data as at January 10, 2023. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

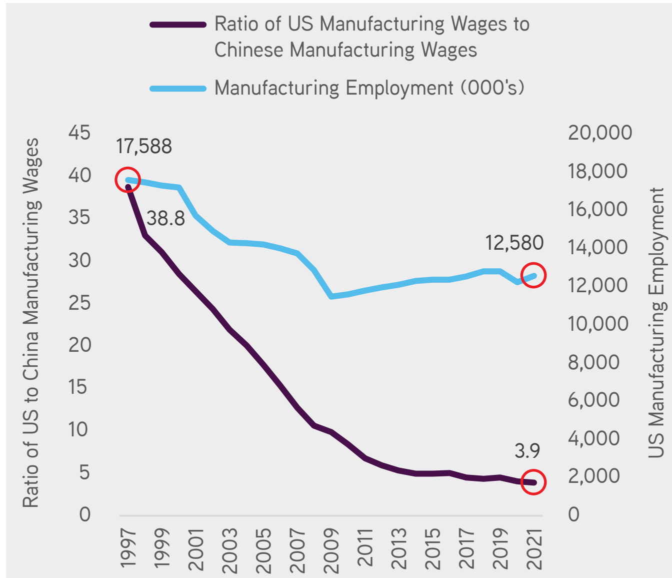
A Smaller Tailwind from Globalization. Importantly, the demographic and participation headwinds mentioned above come at a time when the wage gap with China has shrunk considerably, meaning that workers in developed markets are now more sought after relative to their global peers. Remember that, since China's entry into the WTO in 2001 until very recently, globalization and access to outsourced cheap labor has been distinctly deflationary for wages.

However, the wage gap has narrowed massively of late. In 1997, manufacturing wages in the U.S. were nearly 40 times that of China, and as recently as 2001, that ratio was still at a very high 26.4x. By 2021, however, the difference had fallen to just 3.9x, meaning that the labor arbitrage offered by China is now significantly less attractive. One can see this in *Exhibit 19*. Simply stated, the economics of globalization are much less appealing now than they were over the last thirty years.

However, it is not just the economics of relative value within the global labor market that have changed. As noted earlier, we are transitioning from an age of 'benign globalization' to one of 'great power competition', in which the logic of 'competitive advantage' and greater global trade is replaced by one of 'security', including more trade within like-minded blocs and greater domestic production. At a policy level, that means we are likely to see more industrial policy intended to build national providers of critical services. Moreover, we believe that more private firms are considering shifting supply chain tactics to embrace more of a 'China + 1' strategy. For example, a recent survey by the U.S.-China Business Council found that a majority of U.S. firms have considered increased domestic sourcing/production in response to recent supply chain challenges. The upshot of all of these changes, we believe, will be that the world will need more skilled workers in more places to produce the same amount of output (think the U.S. reshoring more of its chip making, or data localization laws requiring more IT professionals to be based in local European markets). As such, our baseline is that the end of globalization will present a major tailwind to labor demand in developed markets.

Exhibit 19

Since the Wage Gap With China Has Shrunk Considerably, U.S. Workers Are Now More Sought After

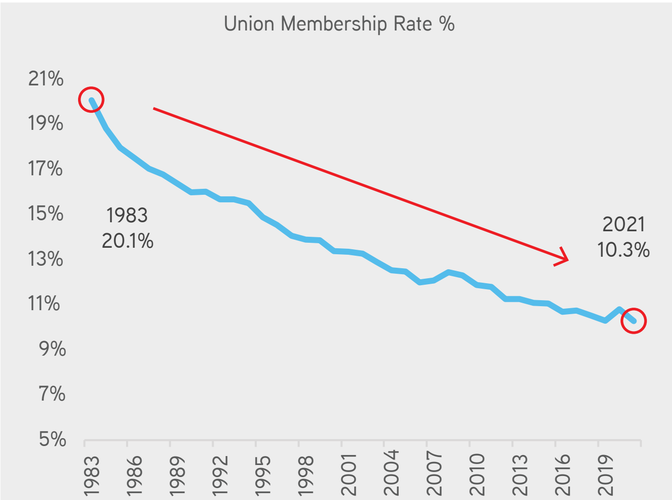


Data as at December 31, 2021. Source: U.S. Bureau of Labor Statistics, Federal Reserve Bank of St Louis, University of California, Davis, Brooking Institute https://www.brookings.edu/blog/up-front/2020/01/14/automation-and-labor-market-institutions/, Haver Analytics.

However, it is not just the economics of relative value within the global labor market that have changed. As noted earlier, we are transitioning from an age of 'benign globalization' to one of 'great power competition', in which the logic of 'competitive advantage' and greater global trade is replaced by one of 'security', including more trade within like-minded blocs and greater domestic production.

Exhibit 20

Union Membership in the U.S. Has Been Falling for Decades, Reaching a Record Low of 10.3% in 2019



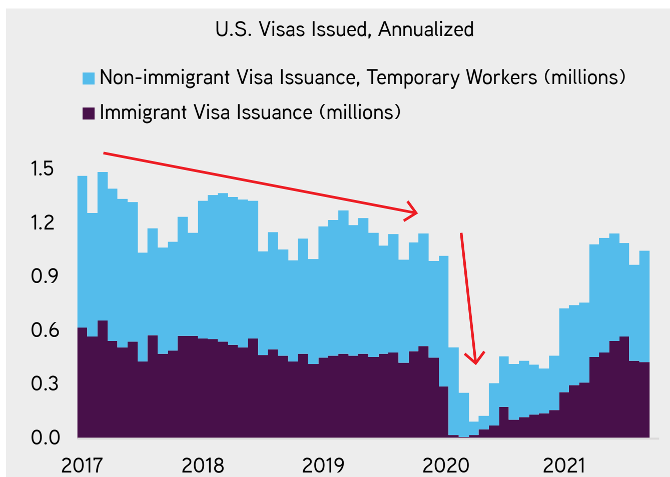
Data as at December 31, 2021. Source: U.S. Bureau of Labor Statistics, Federal Reserve Bank of St Louis, University of California, Davis, Brooking Institute https://www.brookings.edu/blog/up-front/2020/01/14/automation-and-labor-market-institutions/, Haver Analytics.

A Pull-Back in Immigration. As we describe above, demographics are becoming more challenging in most developed markets, as people live longer and have fewer children. Indeed, the 'natural' population growth rate (i.e., births minus deaths) has turned negative in Japan and in Europe, and will likely turn negative in the U.S. in the next couple of decades. One key counterbalance to slowing population growth is greater immigration. Unfortunately, most countries experienced a sharp pullback in immigration during the COVID-19 pandemic. For instance, over 2020-2021, net immigration to the U.S. slowed by roughly 50% versus 2010-2019 levels *(Exhibit 21)*, which we think will translate into about 1.1 million 'missing' workers on a go-forward basis. Meanwhile, immigration slowed similarly in Europe and Japan in 2020, by about 30% and 40%, respectively. Looking forward, we see some positive signs that immigration flows have started to recover from pandemic lows, including the fact that U.S. and European visa immigration issuance in recent years were both above 2019 levels. More recently, the invasion of Ukraine by Russia mightily increased immigration to Europe, Germany in particular.

Nonetheless, from a bigger picture perspective, our view is that immigration is becoming a less reliable source of population growth in many countries than in the past. Key to our thinking is that the rise of populism and nationalism (think Brexit as an example) has made it harder for the U.S. and Europe to secure the immigration growth they need to maintain economic growth. Indeed, even prior to COVID, annual net immigration to the U.S. was only half of what would be required to maintain 1990s - early 2000s levels of population growth. Meanwhile, in light of the country's challenging demographic outlook, immigration in Japan remains too low and while Japan is continuing to address the issue and making headway, we are unsure if they will be able to truly 'move the needle' on the demographic front. Importantly, in light of persistent skill gaps (see *Exhibit 9*), we think that more governments in the future will need to align their immigration policies to attract more skilled foreign workers.

Exhibit 21

Immigration and Worker Visa Issuance Have Declined Steadily in Recent Years, Exacerbating the Labor Shortage

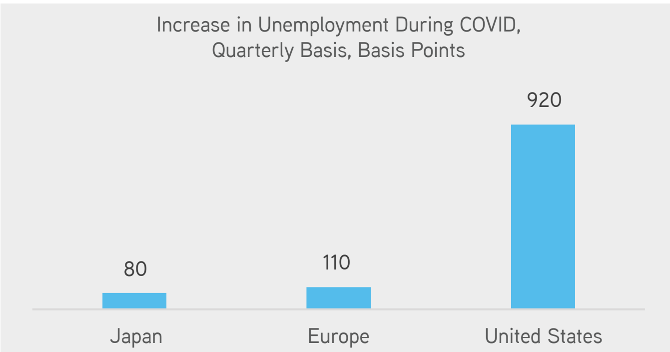


Data as at December 31, 2021. Source: U.S. Bureau of Labor Statistics, U.S. State Department, Haver Analytics.

Demographics are becoming more challenging in most developed markets, as people live longer and have fewer children.

Exhibit 22

Different Approaches to Job Retention During COVID Led to Very Different Outcomes Across Different Regions in the World



Data as at December 31, 2020. Source: Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

COVID Policy Responses. Different countries' policy responses to COVID continue to play a role in recent labor market trends. In particular – as we wrote last year – we think that the legacy of COVID will have a lasting impact on U.S. labor market dynamics. Remember that European and Japanese employers were largely able to keep more workers on payroll during the toughest days of lockdown in 2020, as the government provided short-term loans on favorable terms to create more short-term work schemes. As a result, on a quarterly basis, Europe's unemployment rate increased by just 110 basis points from trough to peak during the pandemic, while Japan's increased by 80 basis points. By contrast, U.S. unemployment surged by nearly 920 basis points, as the U.S. focused on fiscal support for the unemployed rather than job retention schemes. We think that these 'temporary' layoffs actually led to about 1.2 million 'permanent' labor force exits due to discouraged workers; moreover, they likely contributed to a further 1.4 million excess retirements during the pandemic. Finally, another 700,000 workers – many of them women – left the workforce to navigate family care obligations in the wake of the largest public health crisis in about a century. One can see our estimates in *Exhibit 3.* It is our thinking that COVID created structural changes in labor availability in the U.S. that are unlike those in other countries. Unfortunately, while the situation is improving on the margin, we think these pandemic-induced headwinds are likely to persist for some time beyond the pandemic.

So, our bottom line is that headwinds to workforce growth are mounting in much of the developed world and that COVID marked the beginning, rather than the end, of a more acute labor shortage in many countries, driven by structural issues around demographics, participation, and de-globalization. As such, even as cyclical forces cool and unemployment ticks up in the near term as a result of central bank tightening, we think that the labor shortage is really going to be the 'eye of the tiger' for the global economy going forward.

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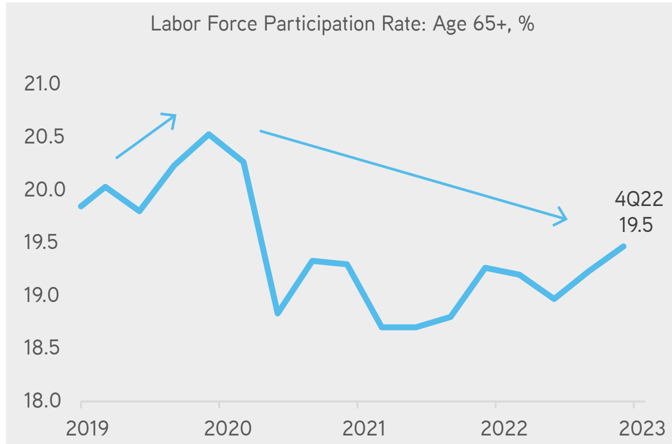
Section II: Where Do We Go From Here?

Looking ahead, when it comes to the global workforce, we feel strongly that the next ten years will not look like the last ten years, as the developed world transitions from a post-GFC worker surplus to a post-pandemic worker shortage. In our view, the path forward presents both challenges and opportunities. For one, the 'old formula' of population growth and stable participation will not be enough to match the demand for workers. Indeed, participation will need to rise just to keep economies in equilibrium as demographics slow. For instance, in the U.S., we forecast very modest population growth. One can see this in *Exhibit 14*, which shows that population growth will fall to just 60 basis points, compared to 1.1% during the 2010 to 2015 period. Job growth at that level would be enough to support just +25,000 in monthly job gains, assuming no increase in participation. Importantly, however, driving participation gains will depend on governments, investors, and employers working together to open a path for older workers, as well as working-age parents, to participate in the workforce in greater numbers. In the U.S., even though the participation rate for the population at large is not that high, the participation of eligible male workers in the prime 25-54-year-old group is actually quite elevated. In fact, as *Exhibit 16* shows, it is almost back to pre-pandemic levels. So, there are not that many more people of prime working age, especially men, to pull back into the workforce.

For one, the 'old formula' of population growth and stable participation will not be enough to match the demand for labor.

Exhibit 23

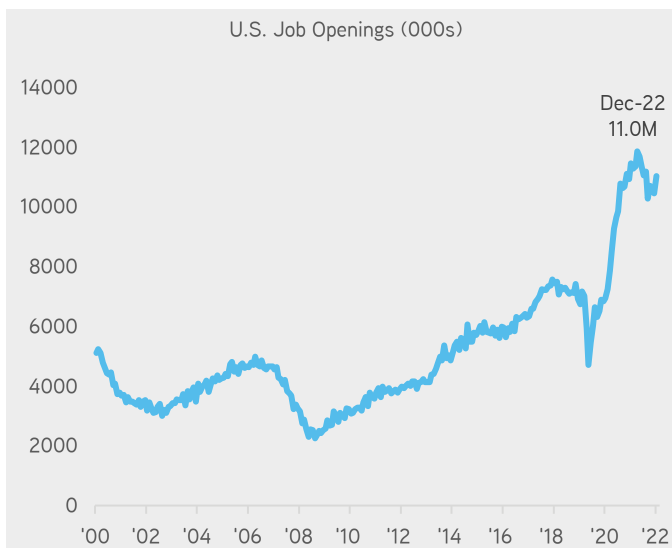
To Navigate Its Demographic Slowdown, the U.S. Needs to Bring More Older Workers Out of Retirement



Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Haver Analytics.

Exhibit 24

Even Amidst Cyclical Growth Headwinds, the Number of Job Openings Remains Extremely Elevated in the U.S.

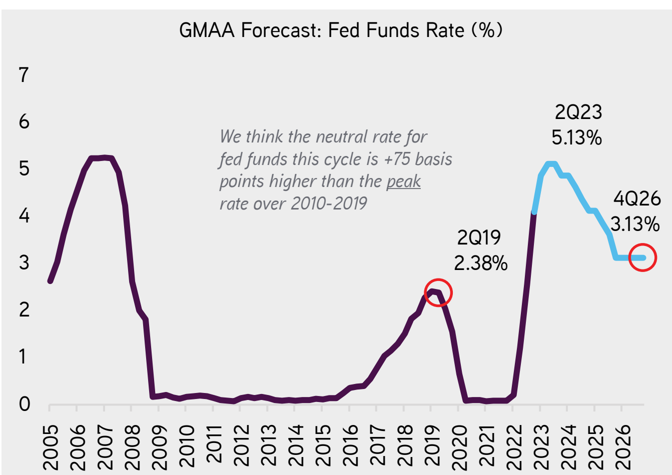


Data as at February 3, 2023. Source: U.S. Bureau of Labor Statistics, Haver Analytics.

This backdrop will pressure central banks to hold nominal interest rates higher in the near-term, but we still see lower real interest rates this cycle. The current backdrop of a tight labor market and U.S. unemployment at 3.6% (well below the Fed's estimate of 'neutral' employment in the mid-four percent range) is a very different landscape for the Fed to navigate versus the pre-pandemic world, from 2010-2019, where unemployment averaged 6.2% and inflation averaged just 1.8%. Said differently, the Fed's dual mandate has flipped from 'employment-first' to 'inflation-first' and that raises our outlook for the fed funds rate. Specifically, we envision the 'resting rate' for Fed policy this cycle as 3.125%, up from the mid-two percent range pre-COVID. Further complicating things for central banks generally will be the likelihood of wider budget deficits, as national pension and retirement programs come under strain with a rising number of retirees and a dwindling number of new workers to contribute. If we are right, then government debt-to-GDP ratios are likely to rise in coming years in much of the developed world.

Exhibit 25

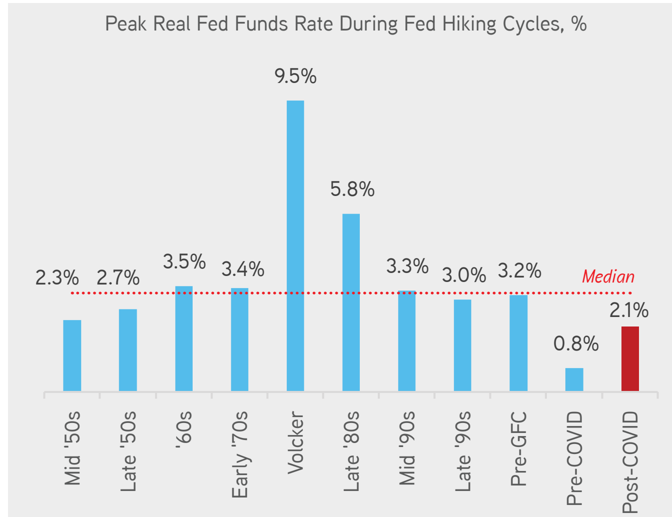
In the Near-Term, We See Fed Funds Settling in the Low Three Percent Range this Cycle



Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Eurostat, Ministry of Internal Affairs and Communications, KKR Global Macro & Asset Allocation analysis.

Exhibit 26

However, Our Longer-Term View Is That the 'Real' Fed Funds Rate Will Peak Out at Around Two Percent This Cycle, Well Below the Historical Average of Three Percent

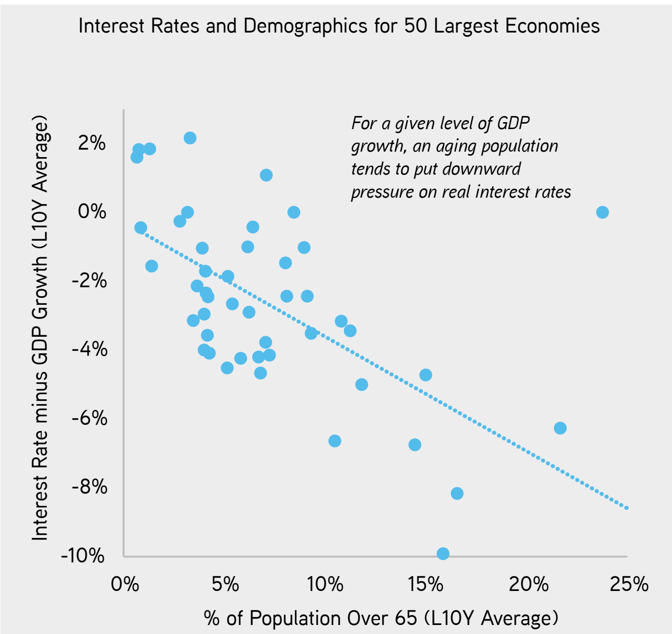


Data as at November 30, 2022. Source: Bloomberg, KKR Global Macro & Asset Allocation analysis.

That being said, we continue to think that *real* interest rates (i.e., interest rates minus inflation) will actually remain fairly low this cycle. One can see the impact of structurally lower real rates in *Exhibit 26*, which shows that we think the Fed will only need to take real rates to the two percent range this cycle. Key to our thinking is the way that an aging demographic impacts supply and demand for credit: people tend to borrow more in the first 40 years or so of their life (to finance education, the purchase of their first home, etc.), and to lend more in the last 40 years of their life (as they pay down debt and build investment portfolios and retirement accounts). As such, demographic aging typically increases the supply of credit available in the economy, while decreasing demand, thereby pushing down the real rate of interest (which is the right way to price the balance of supply of credit and demand for credit in the economy). While the accounting here is rather complicated, the impact is fairly simple – as one can see in *Exhibit 27,* interest rates tend to be lower for a given level of GDP growth when populations age.

Exhibit 27

Aging Demographics Tend to Put Downward Pressure on Real Interest Rates



Data as at December 31, 2022. Source: Bloomberg.

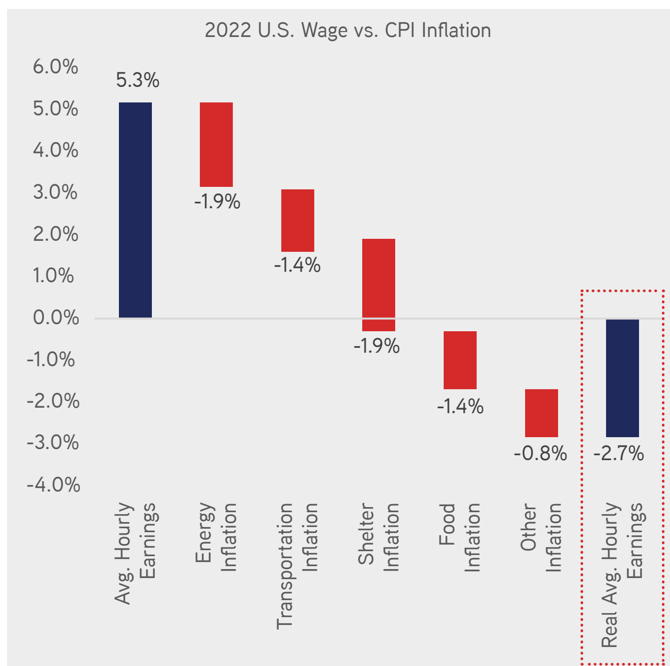
An ongoing worker shortage means that defendable margins will become more important for the corporate sector. Specifically, we think margins will likely face more headwinds across a variety of industries, including healthcare, services, and leisure/hospitality, on a go forward basis. The spread between consumer price growth and wage growth in the U.S. averaged just +65 basis points from 2010-2019, which helped boost margins as consumer prices rose at a similar pace to overall input costs. *By contrast, we think that wage growth could increase by 4.3% per year over the next five years, or fully 150 basis points above average CPI inflation of +2.8% (Exhibit 29).* We believe that investors need to be thoughtful not just about the consumer demand outlook, but also about the outlook for labor availability, and what this means for margins in light of shifting demographics.

In particular, as the population of young workers entering the workforce stagnates, we think that margin pressures will be most severe in industries that typically depend on a large number of junior workers. Specifically, fields like healthcare, professional services, arts and entertainment, and retail and hospitality tend to hire much younger workers and rely on a lot of headcount to generate sales.

By contrast, we think that a labor shortage actually creates a favorable environment for most Real Assets, given that their exposure to recurring labor costs tends to be much more limited versus that of Equities, and that rising replacement costs will actually increase the value of these investments (*Exhibit 30*). In concrete terms, the revenue stream from rental properties or toll roads is far less dependent on recurring labor costs versus the revenue stream from 'traditional' businesses such as manufacturing or healthcare.

Exhibit 28

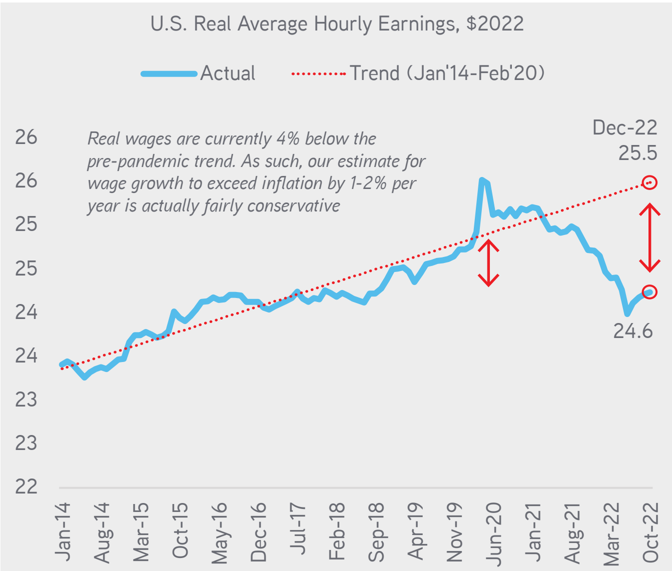
Given Wages Are Still Lagging Inflation, We Look for More Upward Pressure in Worker Compensation



Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Haver Analytics.

Exhibit 29

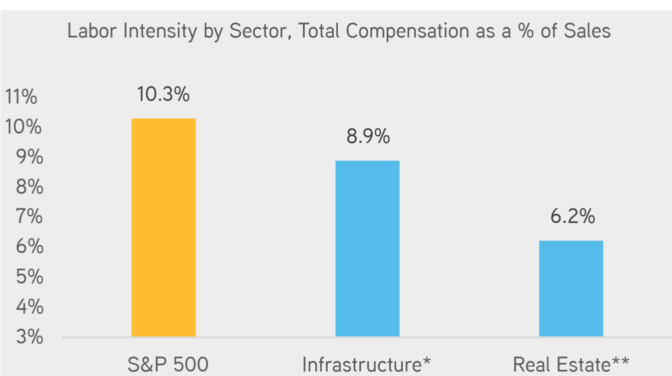
We Think That We Are Entering a Period Where Real Wages Will Need to Play Catch Up



Nominal wages translated to real using U.S. CPI-U All Items Index. Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics, Haver Analytics, KKR Global Macro & Asset Allocation analysis.

Exhibit 30

Labor Intensity for Real Assets Is Often More Limited Than That of the S&P 500



*Infrastructure companies are US companies in S&P Global Infrastructure ETF excluding regulated utilities. ** Real Estate companies from S&P 500 ETF. Total compensation calculated as number of employees * median compensation per employee Data as at December 31, 2022. Source: Bloomberg, Company Data, American Federation of Labor, KKR Global Macro & Asset Allocation analysis.

Advancement in all aspects of family care represents a significant investing opportunity, we believe. As we noted earlier, Europe and Japan have made rapid progress in attracting parents who are children's primary caregivers (most of whom are women) to the labor force over the past decade, largely by offering better access to childcare and family leave. As boomers age and their Generation X and millennial children have increasing caregiving responsibilities, this need will extend to more workers. Nonetheless, our estimates show that the gap between male and female labor force participation rates still accounts for 7.6 million 'missing' women workers in the U.S., compared to 6.8 million in Europe, and 3.1 million in Japan *(Exhibit 2)*. Said differently, we believe there remains huge untapped potential in investments to improve women's access to the labor market.

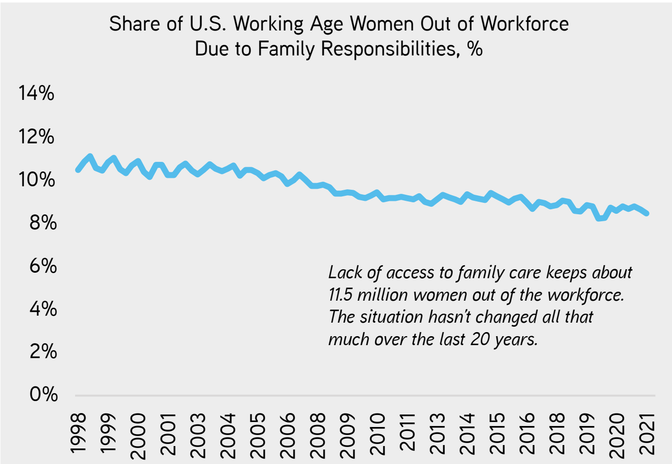
Greater investment in childcare and eldercare, especially in the U.S., where about 11 to 12 million women are out of the workforce due to family care obligations, are two such opportunities. Consider that parents in the U.S. typically spend nearly one fifth of their income on childcare, versus about five percent in Europe and just one percent in Japan. The high cost of childcare can disincentivize either or both parents from working. We think that as wages rise, helping to alleviate the childcare care cost burdens, there will be a large unmet need for greater investment in this theme.

On a global basis, we also see potential around family planning, including fertility services. For instance, about 24% of U.S. firms now offer fertility treatment as part of benefits packages, up from about 13% in 2016. We think that this share will continue to rise over time, as employers recognize the importance of family planning for their workforce.

Consider that parents in the U.S. typically spend nearly one fifth of their income on childcare, versus about five percent in Europe and just one percent in Japan.

Exhibit 31

Investing in Family Care to Bring Women Into the Workforce Is Important Too



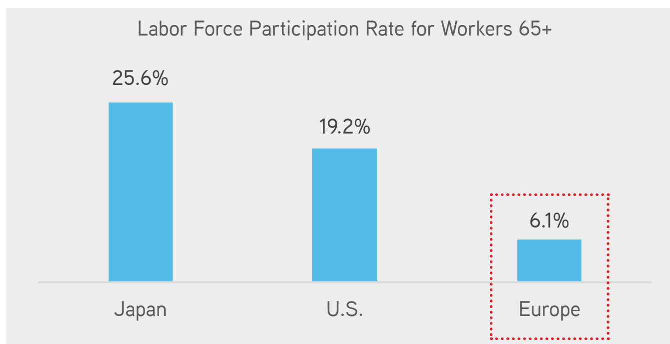
Data as at January 10, 2023. Source: Federal Reserve Bank of Atlanta.

Both the private and the public sectors should encourage more 65+ participation. To date, we think that employers across developed markets have made solid progress in keeping the 55-64 cohort engaged in the workforce. However, participation gains have been more limited for the 65+ demographic, with just 19% of this cohort working in the U.S. and 6% in Europe, compared to about 26% in Japan (*Exhibit 32*). As their populations age, we think that Europe and the U.S. will need to do more to bring these workers back into the labor force. Note that the 65+ population currently makes up about 22% of the adult population in the U.S., 25% of the adult population in Europe, and 33% in Japan *(Exhibit 8)*. By contrast, in 2000, the equivalent figures were 16%, 19%, and 20%, respectively. As such, participation rates for older workers make a much bigger difference to the overall economy than they used to. For instance, from 2010 through the present, about a 600 basis point increase in Japan's 65+ LFPR has added about 2.4 million additional workers to its workforce. If the U.S. and Europe were to achieve the same participation rate for this demographic, it could add some 3.7 million and 14.2 million additional workers to their economies, respectively.

What can Europe and the U.S. learn from Japan's success in keeping these workers engaged? Part of the answer lies in adjustments to incentives around retirement, such as allowing longer deferrals on social security, which governments in the Europe and the U.S. are beginning to slowly embrace. Moreover, we see potential in Japan's model for corporates to place older workers in new jobs after they retire from their 'primary' careers. Though retaining these workers requires both flexibility and deliberate planning on an employer's part, we think proper execution could pay dividends. Also, as we detail below, increasing worker tenure (and reducing labor market churn) plays an important role, as it enables workers to accumulate more institutional and job-specific knowledge over time, which makes them more productive as they age. Finally, the importance of automation and retraining will likely increase, we believe, in an era where careers last longer and job requirements shift more frequently.

Exhibit 32

Participation Rates for Older Workers Remain Too Low...

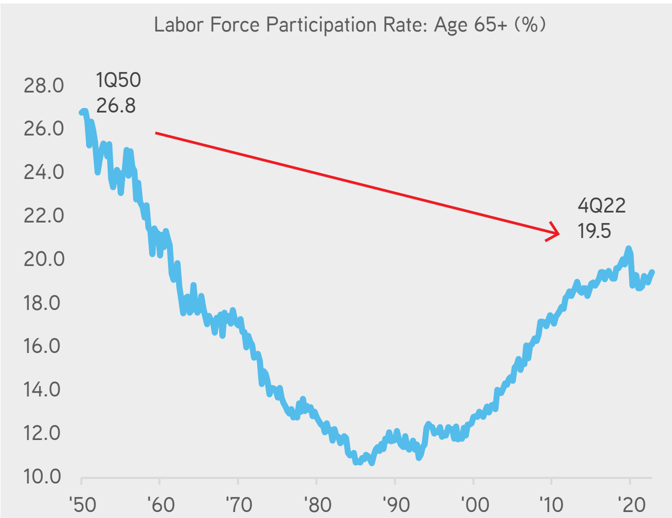


Europe data based on the 'Euro-Area 19' subset of E.U. members. 4Q22 uses latest data available in Japan and Europe. Data as at January 10, 2023. Source: U.S. Bureau of Labor Statistics, Eurostat, Japan Statistics Bureau.

For instance, from 2010 through the present, about a 600 basis point increase in Japan's 65+ LFPR has added about 2.4 million additional workers to its workforce.

Exhibit 33

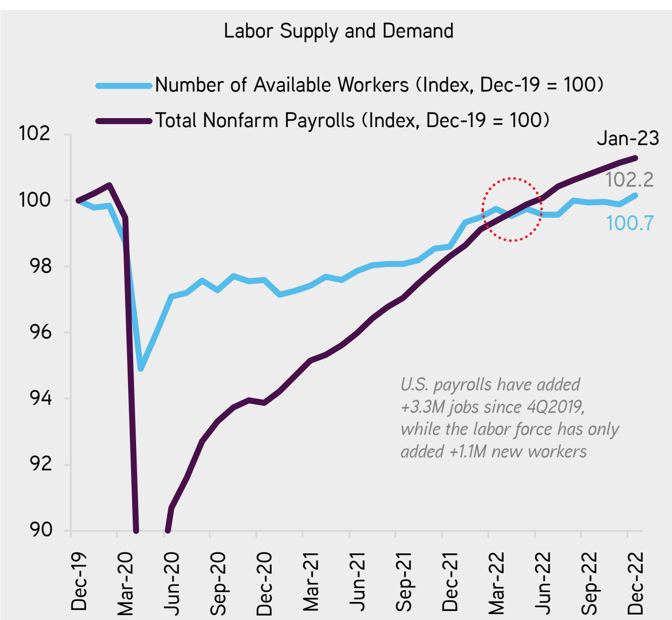
…Including in the United States



Data as at December 31, 2022. Source: U.S. Bureau of Labor Statistics.

Exhibit 34

In the U.S., Available Jobs Far Outpace Available Workers



Data as at February 3, 2023. Source: U.S. Bureau of Labor Statistics, Congressional Budget Office, U.S. Census Bureau, KKR Global Macro & Asset Allocation analysis.

A much greater emphasis on worker retraining/ education will be required. Amid increased automation and technological adoption, demand for skilled labor in the United States has consistently outstripped supply over the last ten years *(Exhibit 9)*. As a result, the unemployment rate for workers with a bachelor's degree sits at 2.1% compared to 6.4% for those with a high school education or less. Moreover, we believe that as of 4Q21, some 5-6 million workers had exited the workforce due to an inability to find a job – enough workers to (in theory) fill half of the 11 million job openings that existed at the time. Said differently, persistent skills mismatches between the pool of available workers and available jobs have been, in our view, a detriment to hiring. Just consider that a recent ExcelinEd Foundation study of career and technical education programs found that only 18% of credentials earned are actually sought by employers. This problem is not just a U.S. one, however, as about three quarters of EU firms report difficulty finding skilled applicants, along with nearly *90%* of Japanese firms. *On balance, we think that a shortage of skilled labor has become a critical chokepoint for global economic growth*.

Going forward, we worry that the skills crisis will only accelerate in developed countries. Top of mind for us is that as competition for younger workers increases and wages for entry-level positions grow, the upfront 'costs' of a formal post-secondary education (i.e., in the U.S., four years of missed wages) materially increase. Said differently, competition for younger workers could lead to higher pay, which ultimately may disincentivize some from ensuring they have the right skills for the jobs of the future, many of which may not be correlated to college degrees but require forms of specialized training.

Against this backdrop, a rethinking in approach may be warranted and could include: (1) shifting job requirements from a credentials first model to a skills first model. Importantly, we believe this will optimize ROI in education and training; (2) reliance on certificates to confirm training of people in areas of specific need and employment relevance; (3) a skills first model that allows workers and employers to understand skills adjacency, facilitating the upskilling of existing workers whose jobs have some overlapping of, even if all of, the skills needed; and (4) expand hybrid platform models that provide online credentialing paired with personalized coaching. These four steps may also help promote gender and racial equity by creating new opportunities for women and people of color.

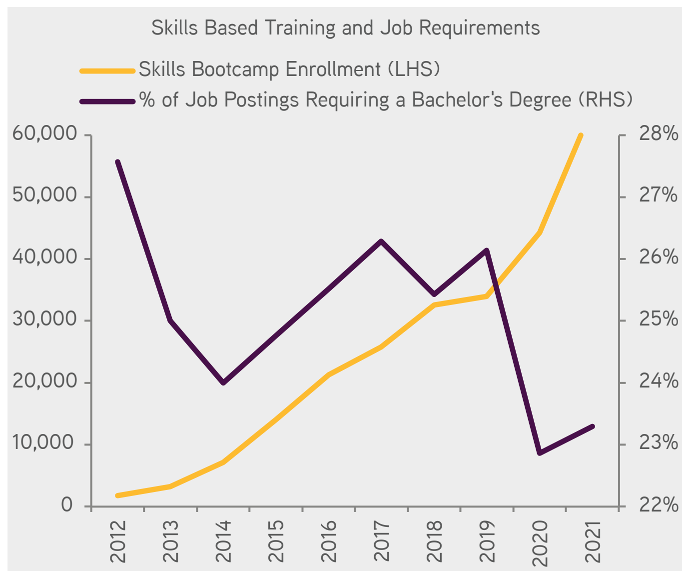
We also think that firms will need to be more deliberate about investing in skills training programs for existing employees that can help complement and supplement more traditional approaches to education. As such, worker retraining and upskilling will become more of a continuous process throughout employees' lifetimes and will likely become a major investing theme. In fact, a third of the skills required for the average job today are different than only a decade ago. As my colleague Ken Mehlman suggests, lack of mobility is behind both talent and opportunity shortages as workers need to gain skills to move ahead. In fact, only 44% of those born in the late 1980s out-earn their parents, down from 90% for those born in 1940. Encouragingly, we have seen signs that companies and workers are learning to adapt to this new reality. For instance, during the pandemic, major employers relaxed some requirements around college degrees in their hiring processes, and instead focused on applicants' possession of the requisite skills; at the same time, more and more workers are investing in acquiring new skills, as seen in the explosive popularity of programs like online coding 'bootcamps'. One can see this in *Exhibit 35*, which shows that the share of job postings requiring a bachelor's degree has actually declined by about six percentage points from 2012 to 2022, while skills training enrollment has increased sharply.

In our view, the opportunity set around worker retraining is particularly large in the U.S., which has historically lagged badly when it comes to public investment in worker education. In fact, the U.S. government invests less in worker training than almost every other OECD country for which data are available (ranking 31st out of 32nd, just ahead of Mexico.) We believe there is a considerable need for privately-funded skills training at all levels *(Exhibit 36)*.

Companies will need to implement strategies for increasing worker tenure. Approaches to achieving increased worker tenure can be complex and vary by country. In Japan and Europe, a mix of formal and informal labor market structures have helped promote significantly longer worker tenures than in the United States. In fact, U.S. workers tend to change jobs about 2-3x more often than their foreign counterparts. More recently, however, Europe and the U.S. have seen a rapid increase in job vacancy rates as labor market churn is increasing. One can see this in *Exhibit 37*.

Exhibit 35

Skills Training Is an Important Part of the Solution

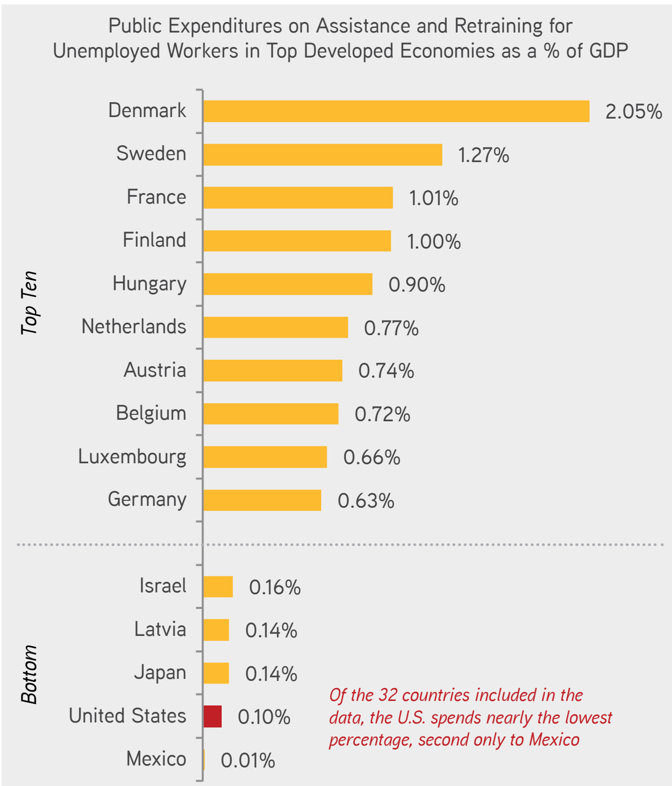


Data as at December 31, 2021. Source: U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, Career Karma, EMSI BurningGlass, U.S. Department of Commerce.

On balance, we think that a shortage of skilled labor has become a critical chokepoint for global economic growth.

Exhibit 36

The U.S. Spends Less On Worker Retraining Than 31 Out of 32 OECD Countries Studied

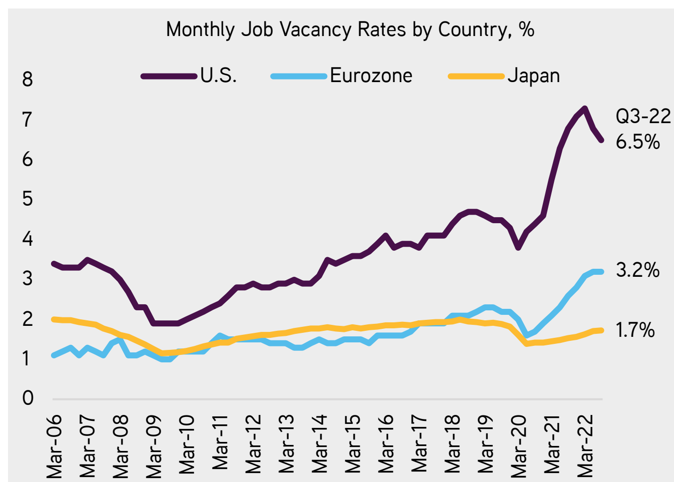


Data as at December 31, 2022. Source: U.S. Department of Commerce.

Looking ahead, we think that there is room for management to increase working tenure by better aligning their employees' incentives with their own, including by promoting elements of employee ownership. In the U.S., for example, employee ownership programs have been seen to reduce quit rates at major food firms during the pandemic by nearly forty percent. In the private equity arena, shared ownership models are ensuring that employees join in the upside of private equity buyouts. This type of participation structure can also incentivize employee-driven operational improvements at every level of a company, and we have seen that it can can often lead to better employee morale and safety conditions. Said differently, firms will need to get more creative about giving workers more 'skin in the game' in an era where competition for workers is increasing, and the need to recoup investments in worker training is rising. Indeed, many of our portfolio companies have been building ownership cultures by granting employees shares of ownership, involving them in decision making, increasing education and financial literacy, and linking job performance at all levels of operations to value creation goals. We have seen these employees act like owners and drive initiatives such as decreased waste and lead time, route efficiency, labor productivity and market share gains. One such company, CHI Overhead Doors, increased margins by 1500 basis points and improved EBITDA 4x. We think that these efforts are particularly important in a post-pandemic world in which employee engagement scores have started to decline towards post-GFC levels.

Exhibit 37

U.S. Worker Turnover Rates Are Much Higher Than Those in Other Developed Countries



Data as at September 30, 2022. Source: U.S. Bureau of Labor Statistics, Eurostat, Bank of Japan, Haver Analytics.

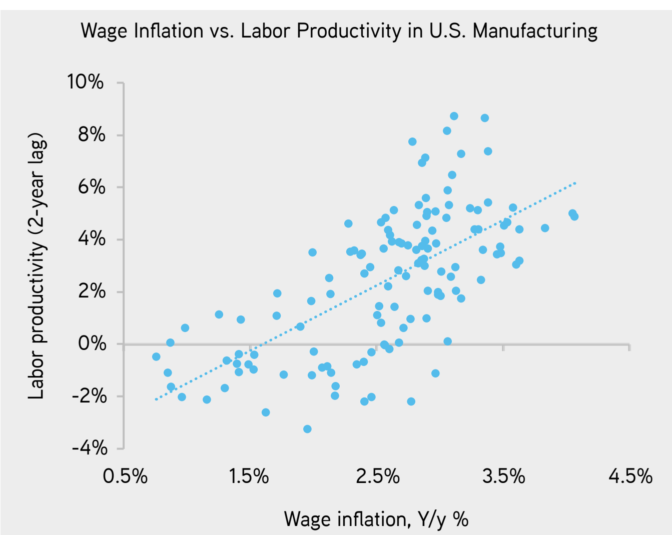
The opportunity set is particularly large in the U.S., which actually ranks just above Mexico in its public investment in worker retraining and invests just 1/10th to 1/20th the share of GDP that many of its European peers do.

Corporations will need to focus on automation and productivity gains. Periods of labor scarcity have historically been opportunities for greater automation. In terms of key offsets, our team at KKR is particularly focused on technological advancements and their impacts on productivity. Specifically, many of the important technological trends, including automation and digitalization, that were already in place before the pandemic have now only accelerated. Using history as our guide (*Exhibit 40*), our research suggests that the recent uplifts to productivity are closely linked to a resurgence in capital investment that began around 2014.

Consistent with this view, the previous large U.S. capex cycle in the late 1990s coincided with a substantial uptick in productivity, albeit with a three-year lag between investments and results. While productivity enhancements can come in many forms across multiple industries, recent capex spending has skewed increasingly towards technology and the digital economy, including areas such as robotics and advanced manufacturing. One can see this in *Exhibit 39*.

Exhibit 38

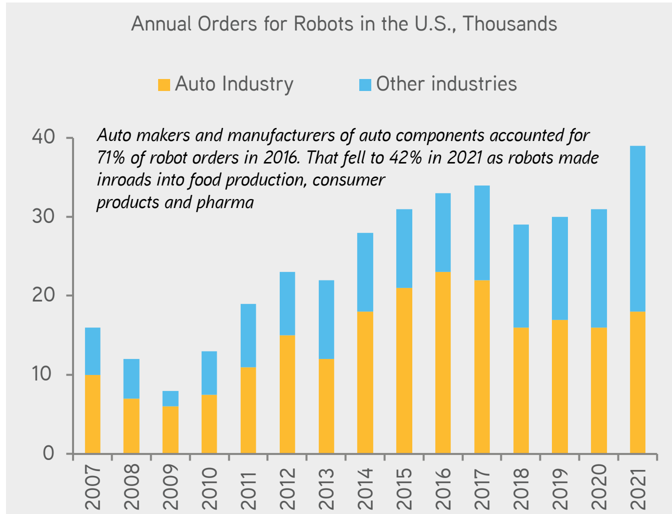
Wage Gains Have Historically Led to Periods of Rising Productivity



Data as at May 31, 2022. Source: BofA Quantitative Research.

Exhibit 39

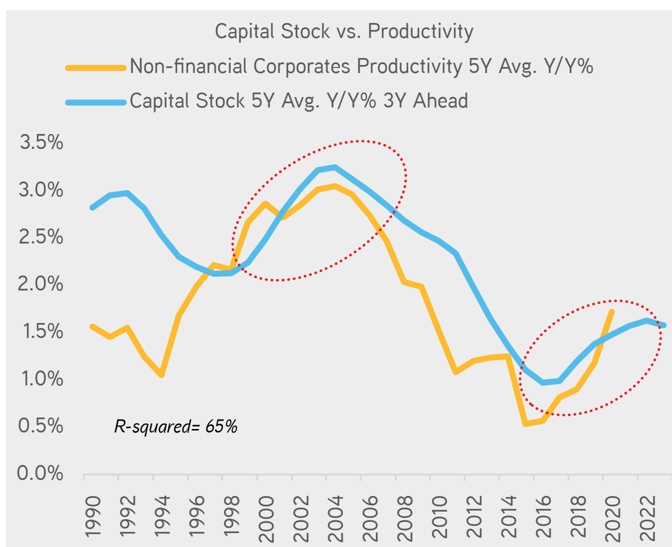
Automation Is Expanding Rapidly Beyond the Autos and Components Sectors



Data as at December 31, 2021. Source: Association for Advancing Automation.

Exhibit 40

Capital Investments Lead to Productivity Gains. The Last Major Wave of Capital Investment Occurred in the 1990s and Another Is Currently Underway, We Believe

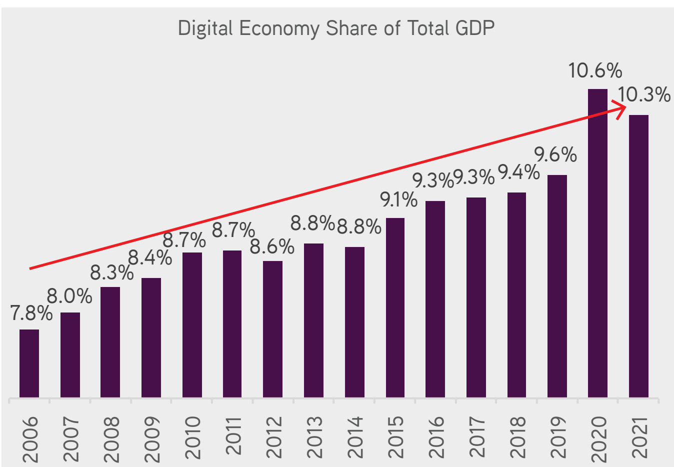


Data as at December 31, 2021. Source: U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, Cornerstone Research, Haver Analytics.

To date, the most advanced efforts have been heavily concentrated in the manufacturing industry, which in the United States accounts for less than 10% of total employment but nearly 90% of all robot installations. However, the playbook is starting to shift, as the aging population makes it harder to fill junior roles in service industries. We have already seen robots cleaning floors at Heathrow and clearing dishes in Japan, and think this trend will accelerate as automation increases in fields like retail, leisure and hospitality, and healthcare. No doubt, automation and productivity is an emerging mega-theme, in our view, and actually accounts for about 20-25% of our deal teams' PE activity since the pandemic.

Exhibit 41

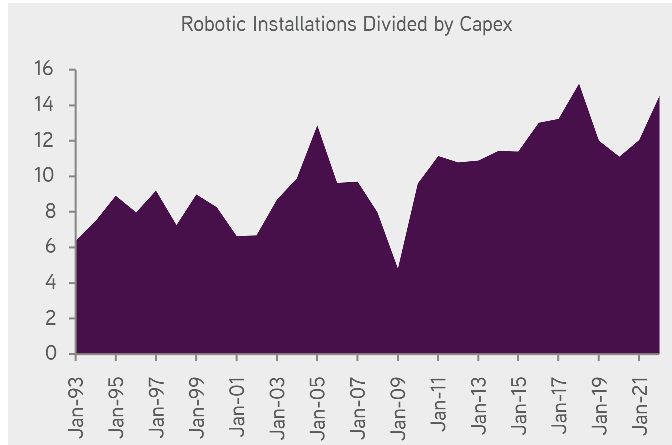
Capex Investments Are Increasingly Geared Towards the Digital Economy, Which Continues to Grow in Influence



Note: Digital Economy: 39% Digital Paid Services, 23% Software, 22% E-commerce, 13% Tech Hardware, 4% Cloud Services per the U.S. Bureau of Economic Analysis definition. Data as at November 30, 2022. Source: U.S. Bureau of Economic Analysis.

Exhibit 42

Automation Is a Rising Share of Total Capex



Data as at January 15, 2023. Source: Piper Sandler.

Consistent with this view, the previous large U.S. capex cycle in the late 1990s coincided with a substantial uptick in productivity, albeit with a three-year lag between investments and results. While productivity enhancements can come in many forms across multiple industries, recent capex spending has skewed increasingly towards technology and the digital economy, including areas such as robotics and advanced manufacturing.

Section III: Conclusions

As we look to tomorrow, it is clear that we have entered a very different macro environment from what the world experienced over the 2010-2019 decade. Importantly, the confluence of slowing demographics and geopolitical and behavioral shifts during the pandemic mean that the labor market is now the 'eye of the tiger' for many of the key dynamics that will impact investors over the next decade. Top of mind for us:

1. **We see a world of higher nominal interest rates, but lower real interest rates.** As populations age and workers become harder to find, we expect that wage growth will contribute to higher and more volatile inflation. At the same time, however, real interest rates should fall as the availability of labor becomes relatively scarce compared to capital across economies. In our view, this environment will likely ensure that the backdrop for investment in Real Assets remains attractive, particularly given these asset classes' lower exposure to labor costs (see *Exhibit 30*).

For many years, the workforce relationship has been more transactional in nature. Today's environment, we believe necessitates a shift to a longer-term mindset. This more invested relationship will require helping workers keep skills fresh by making training more responsive to actual needs. In our view, the U.S. will represent ground zero in this effort to embrace change.

2. **Demographics are getting more challenging. This means public policy will need to focus on raising participation rates, especially in the United States.** Over the last ten years, population growth has driven the bulk of labor force growth in the U.S. That is no longer sustainable, as demographics present a mounting headwind across developed markets. As such, *we think that the U.S., Japan, and Europe will all need to redouble efforts to bring more female workers and workers aged 65+ into the labor market*. Without changes in this arena, many companies and countries could see their competitiveness diminished, we believe. *We also think that increased immigration could play an important role in helping major economies offset slowing demographics. In particular, we see a growing need for greater skilled immigration in an era of persistent skills shortages*.

3. **Employers need to better engage with their workforce.** We think that companies will need to work harder to find ways to attract, develop, and retain key talent in an environment where wages are growing faster than inflation. We are particularly focused on efforts to increase worker tenure by aligning management with workers, as well as the potential for greater investment in worker training. For many years, the workforce relationship has been more transactional in nature. Today's environment, we believe necessitates a shift to a longer-term mindset. This more invested relationship will require helping workers keep skills fresh by making training more responsive to actual needs. In our view, the U.S. will represent ground zero in this effort to embrace change. Indeed, just consider that U.S. workers tend to switch jobs about two to three times as often as their international peers, making it difficult to retain key workers in essential roles. Resolving this problem is complex, but at a basic level, we think that employers need to find a way to directly incentivize workers to have more 'skin in the game' in an era where competition for their attention is only increasing.

4. **Investment in family care will be needed to bring 'new' workers into the workforce.** We are bullish on nearly all aspects of childcare, eldercare, and fertility as governments and companies work hand-in-hand to incentivize higher female labor force participation. Increasing female participation in the workforce will become an even more important policy topic in coming years across many countries, we believe.

5. **Automation will continue to gain in importance.** Rising wages and a shortage of key skill sets will encourage automation across sectors and industries, with a particular focus on bringing productivity gains from manufacturing to the service sector.

So, our bottom line is that structural forces such as demographics and technological change require new approaches by companies, governments, and investors. Therein lies the challenge and the opportunity.

The good news, we believe, is that we see increased opportunities around many of the dynamics that have helped tackle labor shortages in other developed markets, including worker retraining, better participation and retention rates, and more employee engagement. Perhaps most importantly, business executives and the capital providers who support their businesses need to be clear-eyed about the fact that we are at the beginning – rather than the end – of a potential structural change in the global workforce, a key underpinning to our 'regime change' thesis.

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