

Goldman Sachs Research

The Bigger Picture | July 3, 2024 | 5:00AM BST

# WOMENOMICS

## 25 Years And The Quiet Revolution

**Sharon Bell**  
+44(20)7552-1341  
sharon.bell@gs.com  
Goldman Sachs International

**Yuriko Tanaka**  
+81(3)4587-9964  
yuriko.tanaka@gs.com  
Goldman Sachs Japan Co., Ltd



- We first published on women's contributions to the labour force, the opportunity for greater participation and the economic possibilities this provided 25 years ago in research led by our then head of Japan Portfolio Strategy, Kathy Matsui; ***Womonomics: Buy the Female Economy***. Her research helped to shape the policy agenda, and we detail the policy progress in Japan in this report.
- 25 years later we return to some of her themes. While Matsui focused on Japan, we look globally at the progress made and consider some constraints and opportunities from here.
- Women's contribution to the labour force is difficult to overstate. In Italy, for example, the workforce would have shrunk in recent years but for women's greater participation.
- In most countries, women's workforce participation has risen and pay gaps have diminished. But progress is neither linear nor universal; women in India have seen participation slip, pay gaps remain substantial (not least in Japan). Globally, women's share of non-paid work remains high: a major barrier to workforce participation and equality more generally, including the ability to reach the top echelons in firms, academia or politics.
- One of the areas of greatest progress is in the corporate sector; the number of women CEOs in the S&P 500 has doubled in the last 5 years. And in Europe 40% of board members are women.
- There is much to cheer but also much to do. Disappointingly, in Technology and Finance, women's share of jobs has fallen in the US and Europe since the GFC. And upward mobility to management levels for women in these industries is lower than for other sectors. With the AI revolution upon us, this is especially worrisome.
- There are also concerns that women's progress could stall, though we generally think these are overdone. Women's participation fell in the pandemic but has generally more than recovered since, pay gaps are high in older age groups, although even here the gaps have narrowed slightly, and there is a steady climb on most corporate-related metrics. ESG investing has faced scrutiny but fund inflows have flattened rather than reversed, and our Sustain team continue to show better performance for their Environmental & Social leaders versus laggards.

*The Bigger Picture is a publication series from Goldman Sachs Global Investment Research devoted to longer-term economic and policy issues, which complements our more market-focused analysis.*

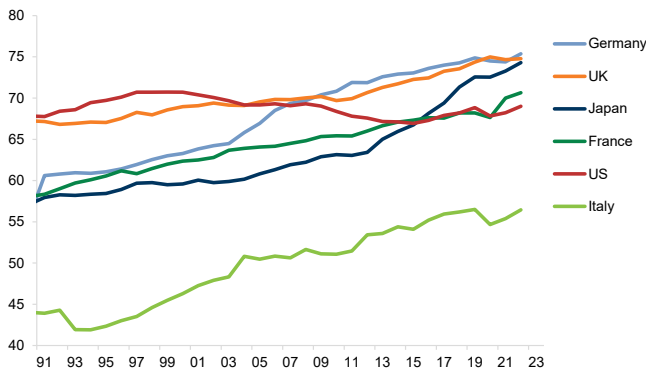
# Womenomics: 25 Years And The Quiet Revolution

## Women’s contribution to the labour force — difficult to overstate...

We’ve seen a clear trend to higher female labour force participation in many countries in recent years. The US was once clearly in the lead for women’s workforce participation, but while the US has seen no change in recent decades, others have caught up and overtaken (Exhibit 1). The most impressive has been Japan’s rapid increase (Exhibit 2).

### Exhibit 1: Female labour force participation has grown across developed economies

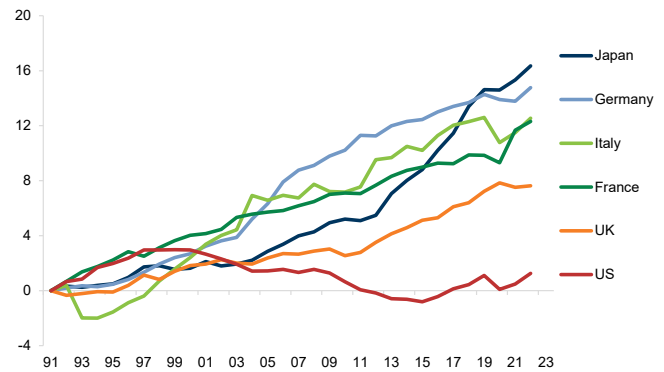
Female labour force participation rate (age 15-64, %). Latest data as of 2022



Source: Haver Analytics, OECD, Goldman Sachs Global Investment Research

### Exhibit 2: Japan increased the most, while the US has lagged

Cumulative change in female labour force participation (age 15-64, %). Latest data as of 2022



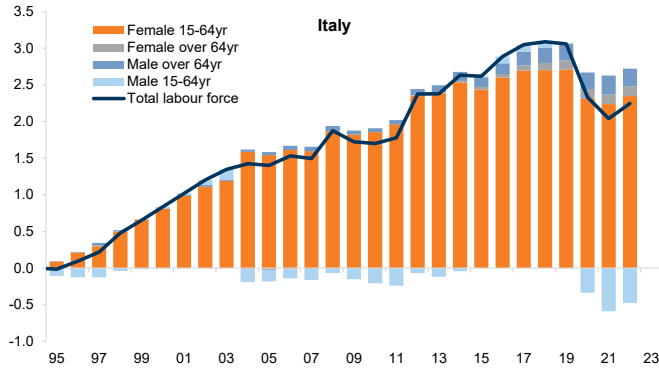
Source: Haver Analytics, OECD, Goldman Sachs Global Investment Research

The change in women’s contribution to the workforce over recent decades is difficult to overstate. For example, the rise in the Italian labour force since the 1970s has largely been due to women joining and participating more; but for this, the labour force would have been flat or shrunk (a function of a declining working-age population) (Exhibit 3).

In Japan, employment has grown despite the demographics, which alone would have pointed to a sharp decline in numbers of workers. It has been a combination of women joining and staying in the workforce with a higher propensity — encouraged by reforms to working practices and family-friendly policies — and older cohorts, both men and women, working for longer (Exhibit 4).

**Exhibit 3: The growth in the Italian labour force is largely due to the increase in working age women**

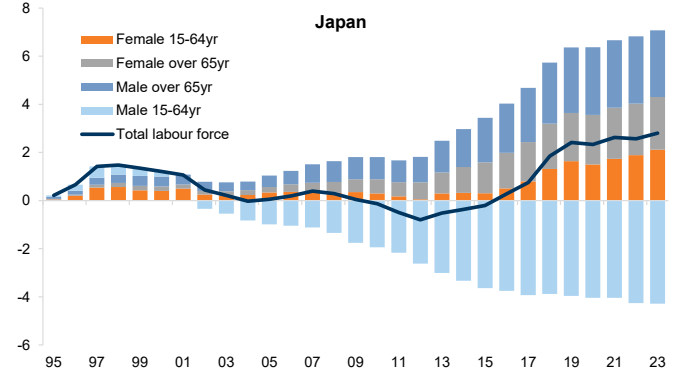
Cumulative change in labour force (millions people). Latest data as of 2022



Source: Haver Analytics, OECD, Goldman Sachs Global Investment Research

**Exhibit 4: Japan's labour force growth is mostly supported by older ages (re)joining the labour force**

Cumulative change in labour force (millions people). Latest data as of 2023



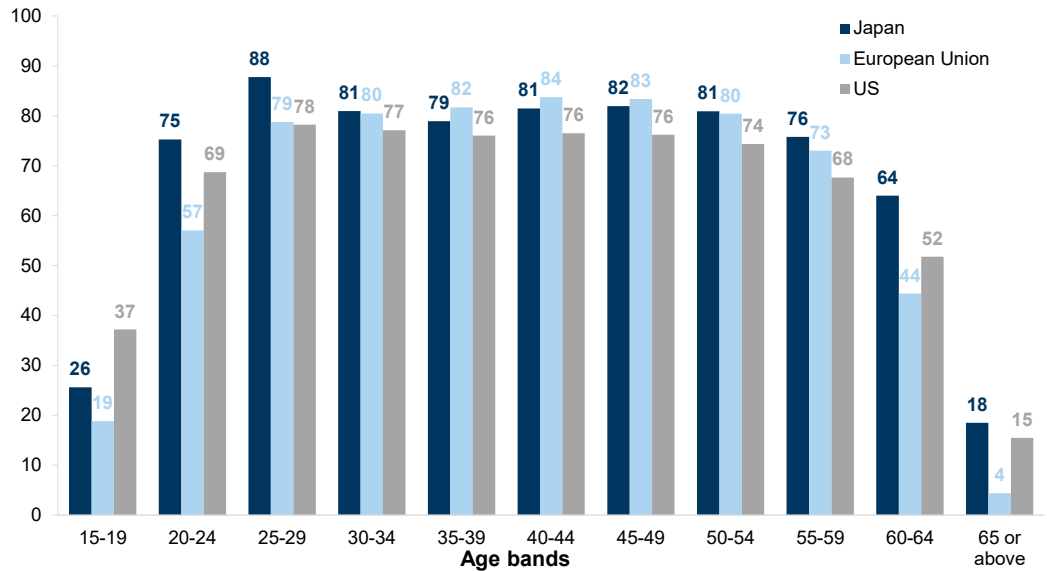
Source: Haver Analytics, OECD, Goldman Sachs Global Investment Research

In every age band, Japanese women are more likely to work than their peers in the US. In Europe too, in all the prime age bands (25-60 years), women participate in greater numbers than in the US (Exhibit 5).

We show the changes in the last 20 years by age band in Exhibit 6; it's not only an increase in women workers, but is also an increase in older women workers, especially those aged in their late 50s and early 60s in Europe (i.e., born in the 1960s).

**Exhibit 5: Japanese women are more likely to work than their peers in the US in every age band**

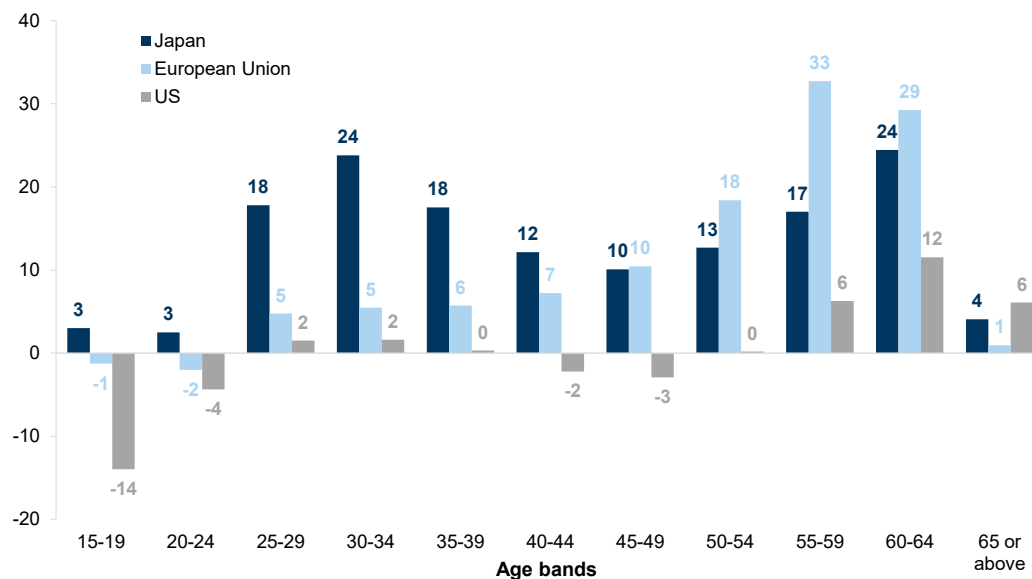
Female labour force participation per age band (%). Data as of 2022



Source: Haver Analytics, OECD, Goldman Sachs Global Investment Research

### Exhibit 6: Female participation has risen strongly in Europe and Japan for all prime age bands and especially for older workers

Change in percentage points in female labour force participation between 2000 and 2022 per age band



Source: Haver Analytics, OECD, Goldman Sachs Global Investment Research

What has driven these changes? In previous work, we have shown that family-friendly benefits and policies make a difference, along with changes in legislation on worker protection. Also, the increase of highly qualified women; based on 2022 data [Eurostat](#) reports that “among individuals aged 25-34, a higher percentage of women have tertiary education compared with men (48% of women and 37% of men, respectively)”. Another factor has been societal change and investor focus on better diversity in the companies in which they invest.

In Japan, government measures on childcare leave and child raising, which have developed and expanded over the years, not only include expansion of childcare facilities and benefit payments, but also measures encouraging a change in the attitude of corporates towards both men and women taking part in child raising. More recently, the Japanese government has set numerical targets on the number of female executives for large listed companies (at least one by 2025, 30% by 2030). The latest development (June 27, 2024, *Nikkei News*) is that the Japanese government plans to make it mandatory for businesses with more than 301 workers, both listed and unlisted companies, to publicly release the ratio of female managers on a regular basis (see Appendix).

### ...But still far to go

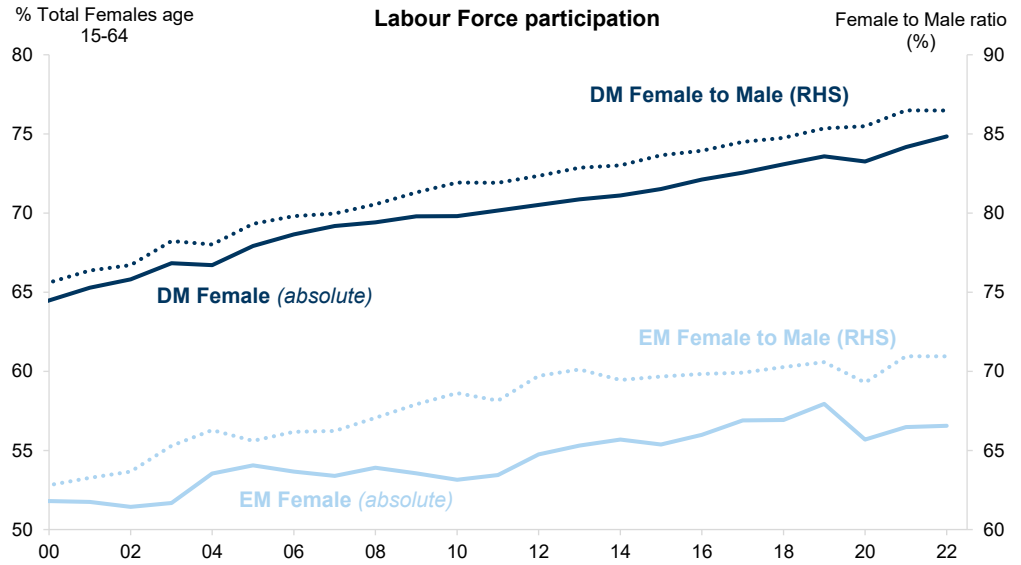
Of course, there is still plenty of progress to be made, as discussed in *Women (still) hold up half the sky*, the propensity of women to work remains lower than for men and this is especially so in emerging markets (Exhibit 7). In India, female labour force participation was already low and has fallen in recent years despite strong economic growth and more overall prosperity. In our research, we consider this to be a function of

under-reporting of women’s work, greater mechanisation and continued inequality in the status of women.

In addition, **even when women do work there are much higher rates of part-time work for women**, which means their overall contribution to the labour force is lower and some of this difference may also account for part of the gender pay gaps that still persist, given that part-time work tends to be lower paid.

**Exhibit 7: The female labour force participation rate has increased across DM and EM over the last 15 years**

Latest data as of 2022

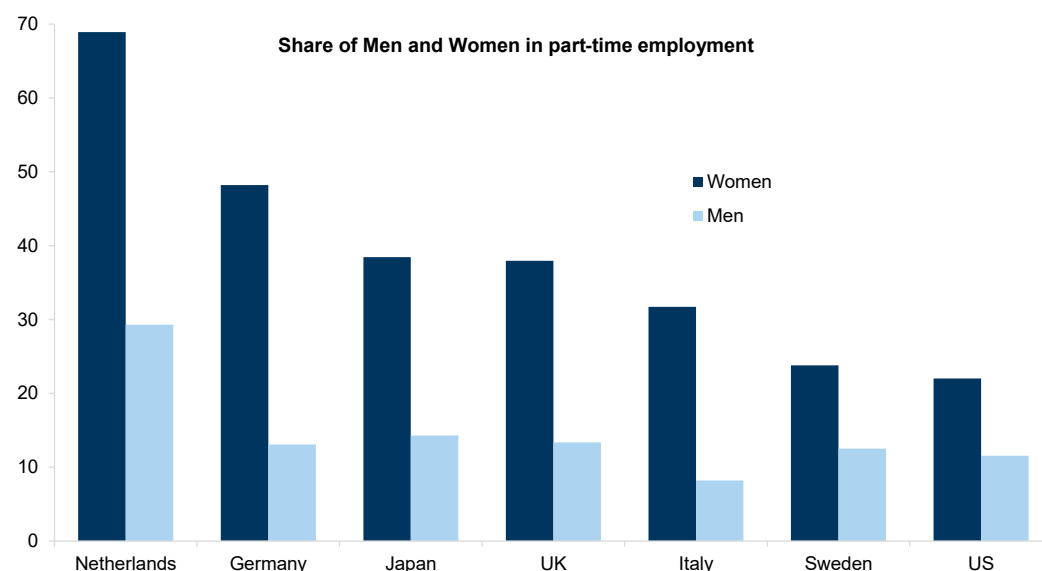


The data are modelled ILO estimates.

Source: ILO, Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 8: The share of men working part-time is lower across countries**

Data as of 2022



Three definitions of part-time work across OECD countries: (I) worker's perception, (II) a cut-off based on usual working hours, or (III) a cut-off based on actual working hours.

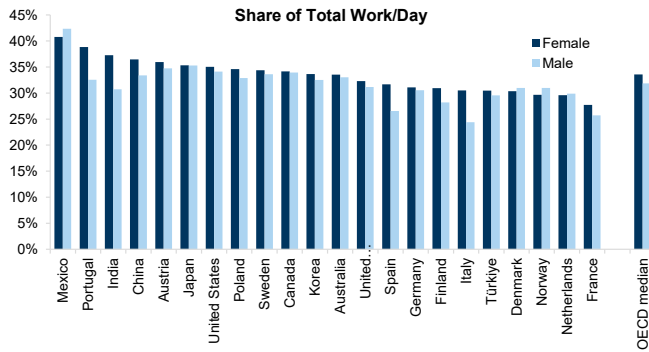
Source: OECD, Goldman Sachs Global Investment Research

**Women's share of non-paid work remains high:** A major barrier to women's participation in the workforce and equality more generally, including the ability to reach the top echelons in firms, academia or politics, is the burden of unpaid work which falls predominately on women. Indeed, figures from the OECD suggest the amount of the day spent in work in total (paid and unpaid) is higher for women than men in most countries, albeit only marginally so (Exhibit 9).

Looking only at unpaid work, it takes up a larger share of a woman's day in every country and in some countries the difference to men is substantial: in India, Mexico, Portugal, China, Turkey and Japan, for example (Exhibit 10). This high share of unpaid work is especially detrimental to women's ability to take on more leadership/management roles or in industries where long hours are more standard, often the highest paying ones.

**Exhibit 9: The total time spent in work (paid and unpaid) is higher for women in most countries**

Total work (paid and unpaid work) as share of a day's 24 hours. Latest data as of 2024

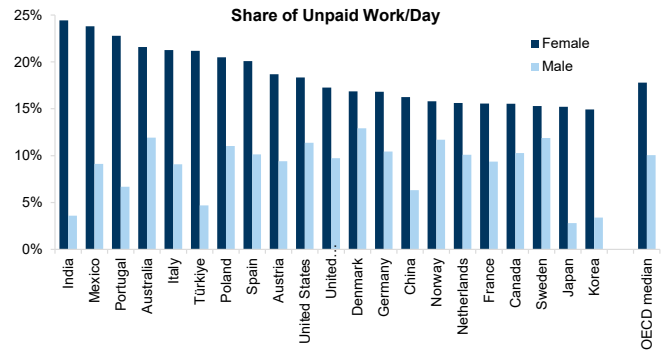


For time-use surveys a large number of people keep a diary of activities. Respondents' answers are then re-coded by national statistical agencies into a set of descriptive categories across a total duration of 24 hours (or 1 440 minutes) per day.

Source: OECD, Goldman Sachs Global Investment Research

**Exhibit 10: The share and difference to men of unpaid work in a given day is substantial**

Unpaid work as share of a day's 24 hours. Latest data as of 2024



For time-use surveys a large number of people keep a diary of activities. Respondents' answers are then re-coded by national statistical agencies into a set of descriptive categories across a total duration of 24 hours (or 1 440 minutes) per day.

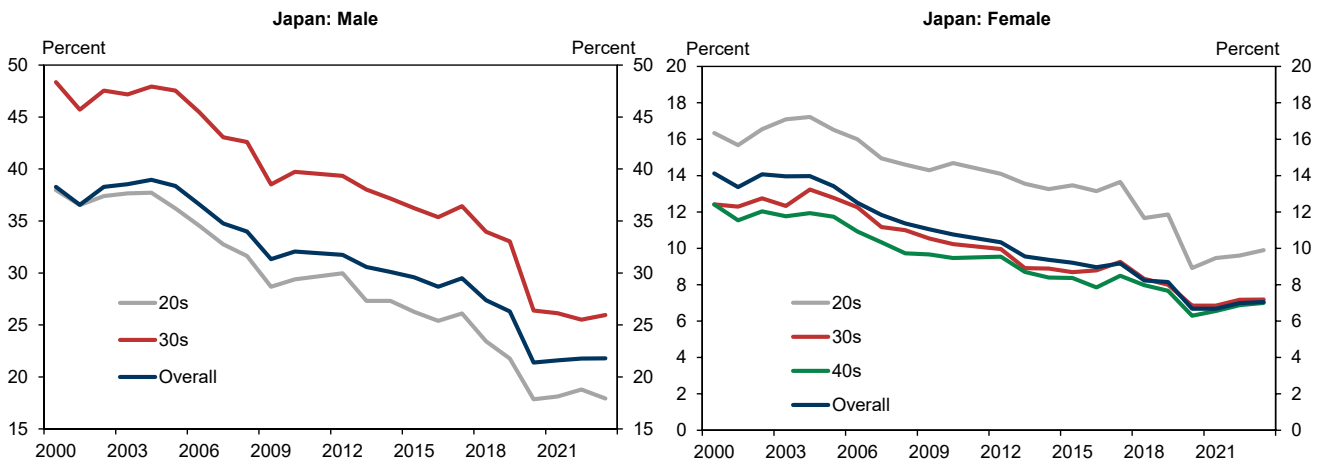
Source: OECD, Goldman Sachs Global Investment Research

Japan's share of total work in a day stands among the highest in the OECD for men (Exhibit 9). However, Japan has made good progress in reducing the long work-hour culture. Partly, this happened naturally after the financial bubble burst in the early 1990s and economic growth slowed (creating less need for long work hours); also, the government has encouraged society to change the long-hours work style in part to allow more room for childcare.

Recently the government implemented a cap on allowed overtime work in the Labor Act (see Appendix). Nearly 50% of men in their 30s worked more than 49 hours per week in the early 2000s, but this declined to 33% in 2019. COVID-19 pushed the ratio down further to 25%, and the low ratio since then seems likely to have become the new norm in Japan (Exhibit 11).

**Exhibit 11: In Japan, men working long hours have declined notably at child-raising age groups**

Share of men and women working more than 49 hours per week



Source: Ministry of Internal Affairs and Communications, Data compiled by Goldman Sachs Global Investment Research

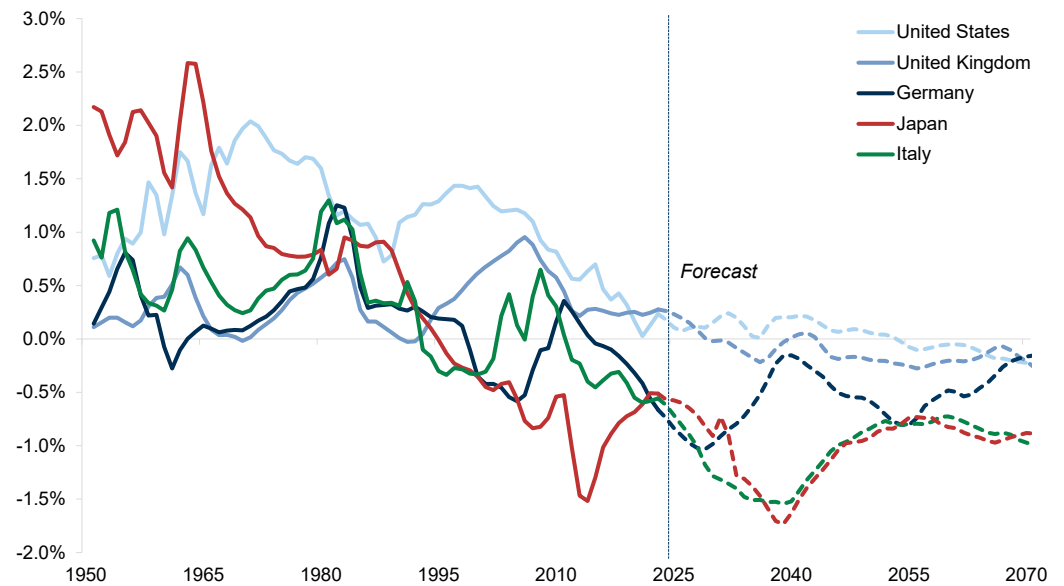


## Womonomics Amid Deteriorating Birth rates

Birth rates have fallen dramatically almost everywhere and are becoming a topic of concern for governments and investors. At the same time, current working age populations are declining, or at the very least growing at a substantially slower pace (Exhibit 12 and Exhibit 13).

In the absence of a major productivity boost, if economies aren't to shrink we need higher participation by women and/or older workers. Continued migration may be part of the solution, but the UN-calculated forecasts below already assume migration patterns of recent years continue.

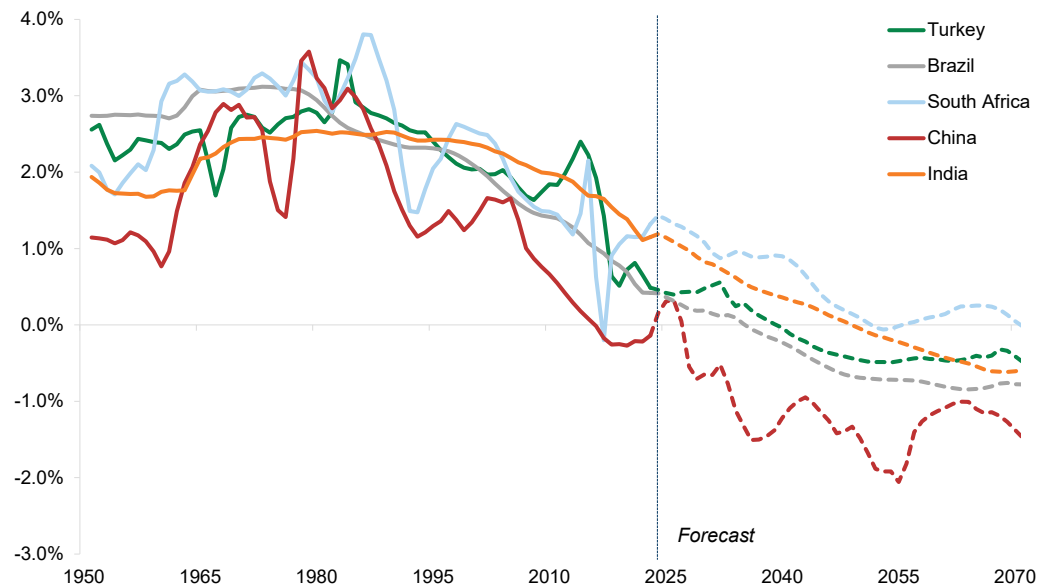
**Exhibit 12: Working age population growth is declining in developed markets...**  
 15-64 cohort population growth; United Nations forecast, working age annual population growth



UN uses probabilistic models for birth rates, mortality and migration based on past experience of each country and potential future changes based on the past experience of other countries under similar conditions

Source: Haver Analytics, United Nations, Goldman Sachs Global Investment Research

**Exhibit 13: ...and in many emerging markets**  
15-64 cohort population growth; United Nations forecast

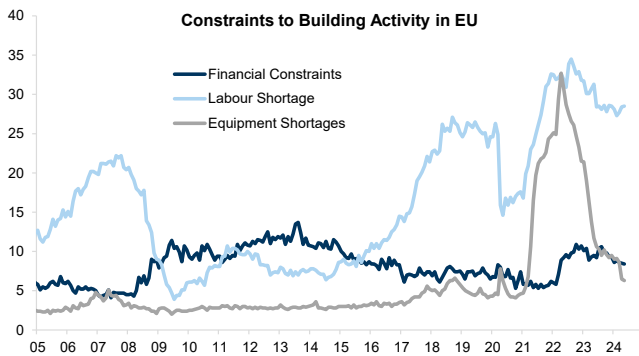


UN uses probabilistic models for birth rates, mortality and migration based on past experience of each country and potential future changes based on the past experience of other countries under similar conditions

Source: Haver Analytics, United Nations, Goldman Sachs Global Investment Research

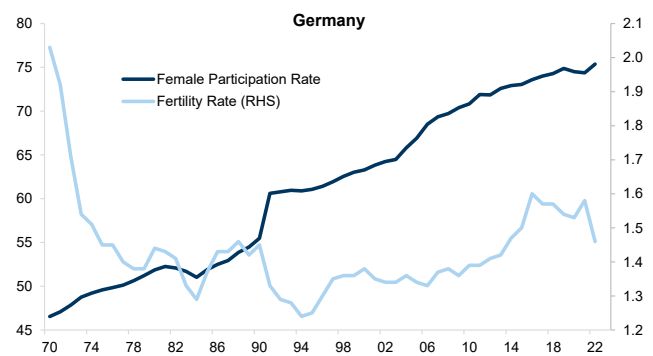
Indeed, recent survey data for the European Construction industry shows that it is not financial constraints nor equipment shortages which limit activity; it is labour shortages. These shortages were already apparent pre-pandemic but have become even more so since; unlike equipment or raw materials, there are no signs these are abating (Exhibit 14).

**Exhibit 14: Financial constraints or equipment shortages do not limit activity, but labour shortages do**  
Survey data European construction: indications of Financial, Labour and Equipment constraints (SA, %)



Source: Eurostat, Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 15: The female participation rate has grown steadily, as the fertility rate has dropped to a lower level**  
Female labour force participation (age 15-64, %) and total fertility rate in Germany



Source: Haver Analytics, OECD, World Bank, Goldman Sachs Global Investment Research

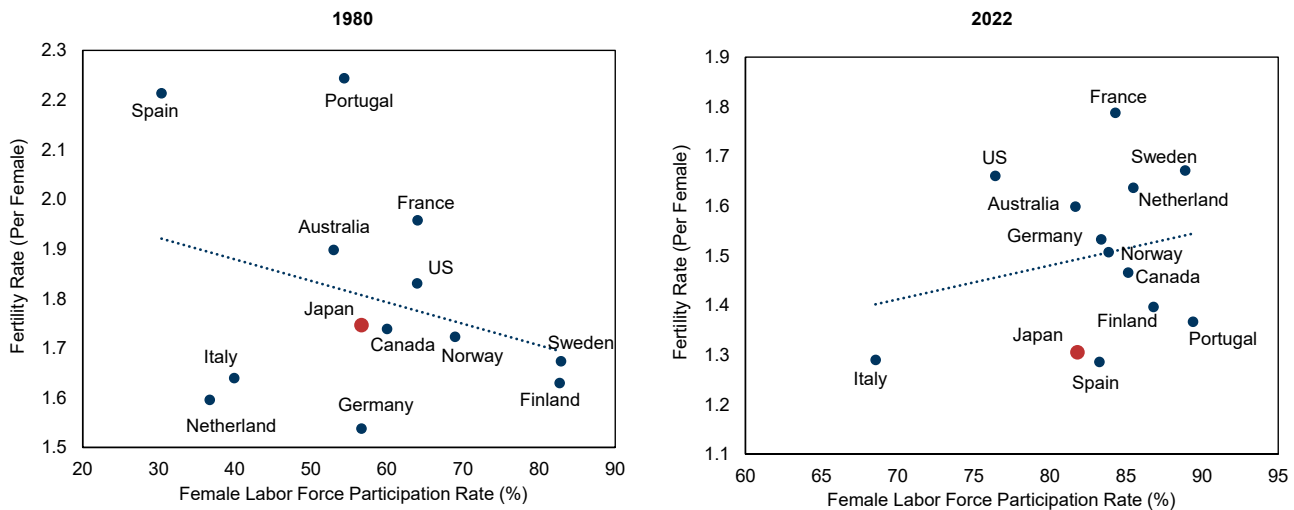
But, there is the concern that the higher the female labour participation rate, the more challenging it becomes to spend the time needed for child-rearing, which reinforces the trend toward a lower birth rates. Our Japan economics team looked at the academic research in detail in Pulse Check on Womenomics Amid Deteriorating Fertility.

They find the link between women’s workforce participation and birth rates is not strong, and in recent years if anything there is a modest positive relationship between the two (Exhibit 16). Maybe because of better availability of childcare or equality legislation, it is increasingly becoming a social norm, especially in advanced economies, for women to both work and have families.

Also, examining individual countries over time, there is no consistent relationship between female participation in the labour force and fertility rates. Germany is an example where fertility rates have been low and below replacement for decades during which female labour force participation has grown hugely with no obvious relationship to the fertility rate (Exhibit 15).

**Exhibit 16: Modest positive relationship between fertility and female labour participation recently**

Relationship Between Female Labour Force Participation Rate and Fertility Rate



Female labour force participation rate is for the 25 to 54 years age group

Source: OECD, Haver Analytics, Data compiled by Goldman Sachs Global Investment Research

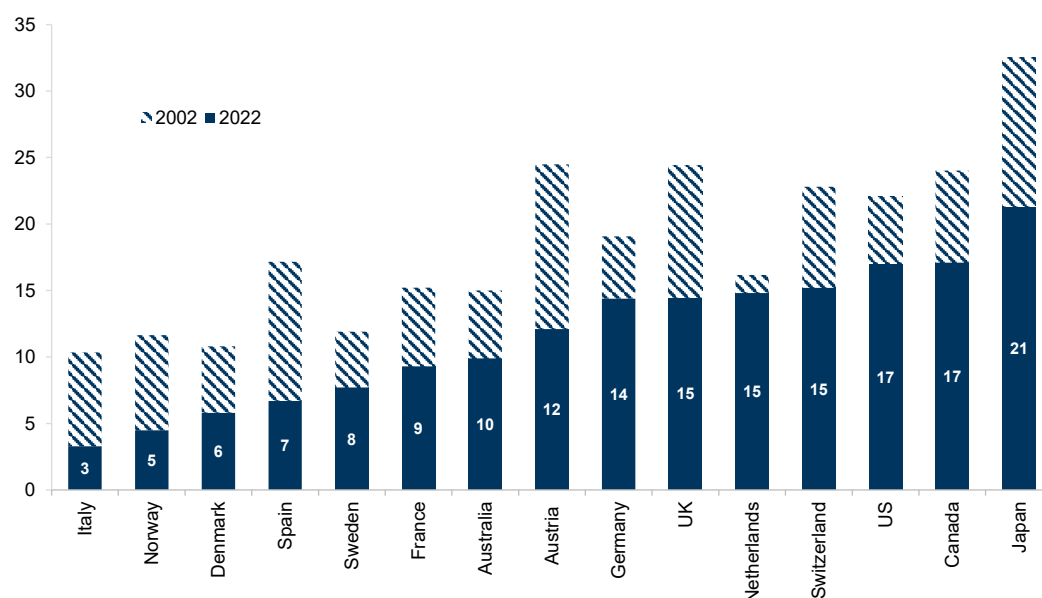
**(Slowly) Declining pay gaps**

**In addition to more women joining the labour force, the gender pay gap has edged lower** across many economies. In her 1999 piece, Kathy Matsui noted that much of Japan’s low score for working environment for women could be attributed to the significant gap in wage levels between males and females. At the time, the pay gap in Japan was 33%; now it is still comparatively high but has fallen to 21% (Exhibit 17).

**Pay gaps have fallen more or less everywhere;** part of the reason for the pay gap is the different jobs women tend to do vs men and different experience/working hours. But, the European Commission reports, “The far largest part of the gender pay gap remains unexplained in the EU and cannot be linked to worker or workplace characteristics such as education, occupation, working time or economic activity the person works for”

**Exhibit 17: The gender wage gap has fallen across countries during the past 20 years**

Gender wage gap in 2022 and 2002 (%)



The OECD defines the gender wage gap as the difference between median earnings of men and women relative to median earnings of men. Data refer to both full-time employees and self-employed.

Source: OECD, Goldman Sachs Global Investment Research

The pay gap seems to open up with age, and we see this clearly using ONS data for the UK in Exhibit 18. The pay gap is much lower for women under 40 years than those in their 40s or 50s. That said, the pay gap has been steadily declining for women in the older age bands, something we would expect to continue.

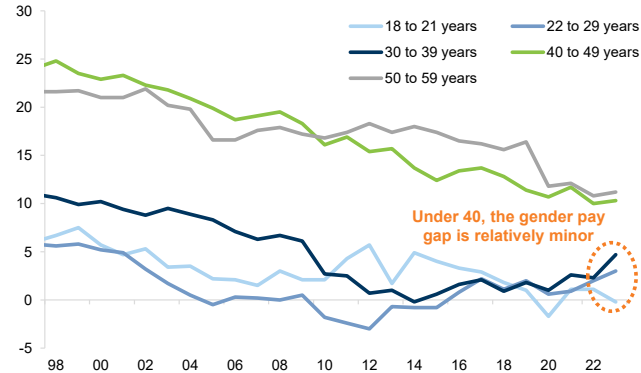
**Some of this decline in pay gaps reflects cohort effects.** Recent [research](#) from NBER analysing data from the US, Italy, Canada, and the United Kingdom argues that the decline in gender pay gaps originates from (i) newer worker cohorts who enter the labour market with smaller-than-average gender pay gaps and (ii) older worker cohorts who exit with higher-than-average gender pay gaps.

The latest 2023 survey in Japan (Exhibit 19) shows that university graduates start their career with a negligible income difference between women and men. The gap begins to widen with every move into the next 5-year age bracket, peaking at 45-49 years age group at 23%.

As Exhibit 19 is for permanent, full time workers' basic monthly wage, this should not include less overtime work or increase in part-time ratio for female workers as they enter the family raising age group. Rather, we think the exhibit reflects the smaller proportion of females in higher-income earning career positions, voluntarily or involuntarily, and also possibly the perception difference of females raising children and pursuing a career for the age group in the 40s and 50s, compared with the current younger generation (again suggesting a cohort effect).

**Exhibit 18: The gender pay gap has fallen almost to zero among full-time employees under 40**

Gender pay gap for full-time median gross hourly earnings (ex. overtime), UK. Data from 1997 to 2023

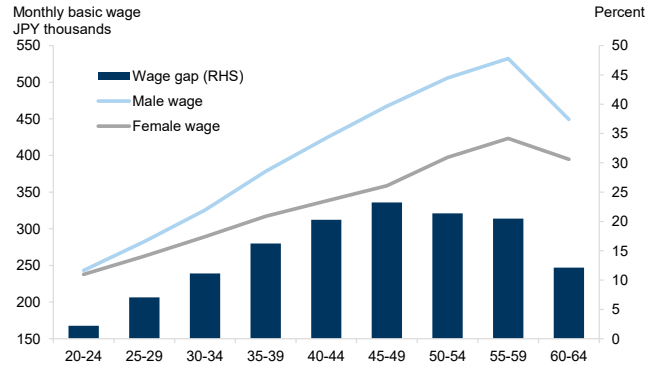


The ONS calculates the gender pay gap as the difference between average hourly earnings of men and women as a proportion of average hourly earnings of men's earnings.

Source: ONS, Goldman Sachs Global Investment Research

**Exhibit 19: University graduates start their career with negligible income difference**

Monthly basic income of university graduates, permanent workers. Data as of 2023



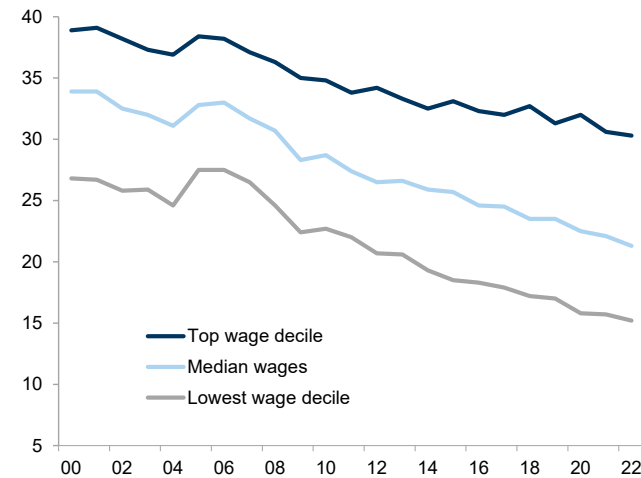
Source: Japan Ministry of Health, Welfare and Labor, Data compiled by Goldman Sachs Global Investment Research

**Pay gaps remain highest in the highest paid jobs.** We see this in more or less every country, the pay gap between men and women for the top decile is higher than for the median or bottom. In general pay gaps have been declining for all deciles, albeit they remain wider for the highest paid (e.g. Japan, Exhibit 20). Interestingly, the US has seen the pay gap stagnate for all pay levels since around 2010/11 (Exhibit 21).

Again, some of this pay gap for the highest-paid workers may be a cohort effect (these workers are more likely to be older), and some of it may reflect a lack of women in leadership positions as we discuss below.

**Exhibit 20: Gender wage gap remains wider for the highest paid in Japan**

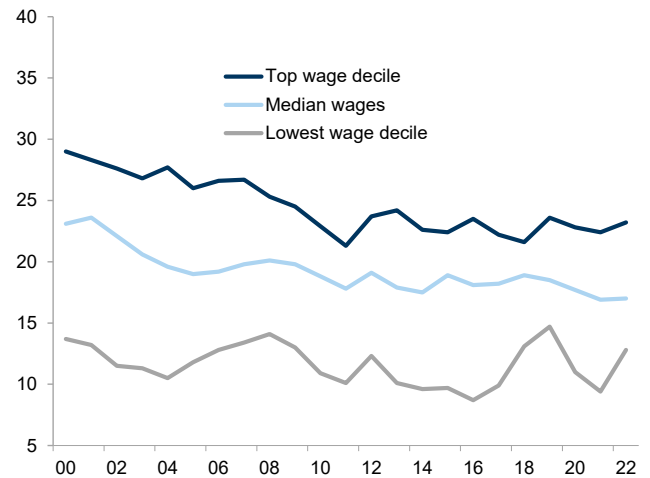
Gender wage gap by wage decile in the Japan (%)



Source: Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 21: US has seen the pay gap stagnate for all pay levels since around 2010/11**

Gender wage gap by wage decile in the US (%)



Source: Haver Analytics, Goldman Sachs Global Investment Research

## Leadership — the disappearing women

Women have made significant progress with respect to labour force participation, pay gaps and leadership roles. But while the latter has improved, the lack of women in the most senior ranks of firms, and especially at the executive level, is notable and persistent. Indeed, as we move up the leadership positions within companies, the share of women declines markedly (Exhibit 22).

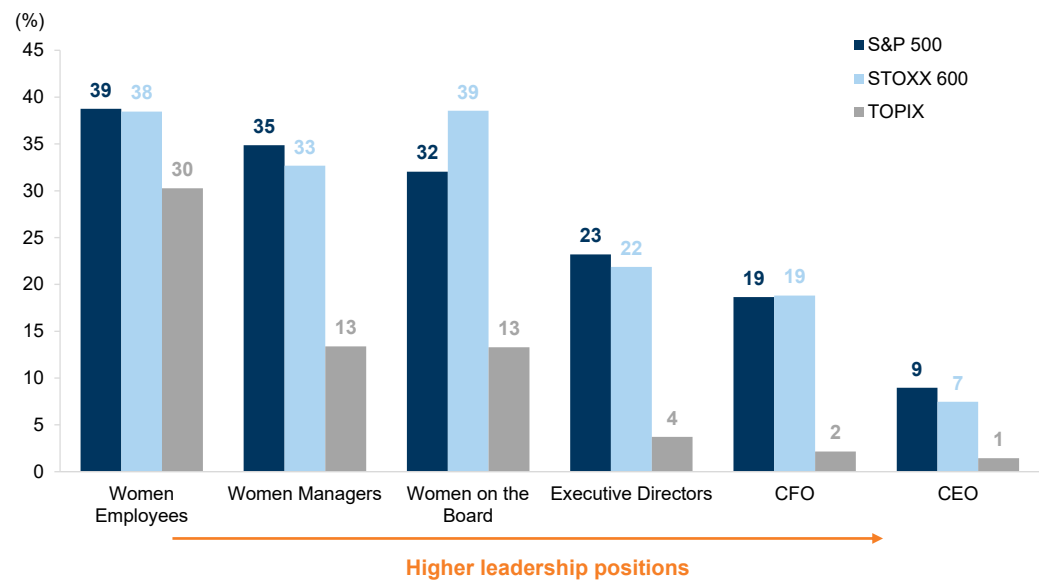
Women on the board in Europe is an undoubted success; women make up almost 40% of the average STOXX Europe 600 board (Exhibit 23). This has been achieved by a combination of quotas (Norway, France, Germany) and soft pressure (such as ESG flows, media focus and organizations, and the “30% club” in the UK). Also, the evidence that women might be over-boarded more than men is diminishing, according to analysis from [Deloitte](#).

That said, a focus on the Board level in Europe has meant an outsized representation of women at that level, compared with, say, the US, Japan or most EMs — but less so at other levels, such as Executive Director or CEO. Also, the roles of women on boards (and men) tend to be siloed, so for [FTSE 100](#) companies only 27% of chief information/technology officers are women, while 71% of head of Human Resources roles are filled by women.

Policies that promote women in the workforce more broadly, improve access to education, increased funding for small businesses/access to finance, and more public policies to help support childcare costs are more likely to provide deeper and broader change.

### Exhibit 22: As we move up the power structure of companies, the ratio of women diminishes

Average % of women at different positions. Latest data as of 2023 or 2024, S&P 500 (US) STOXX 600 (Europe), Topix (Japan)



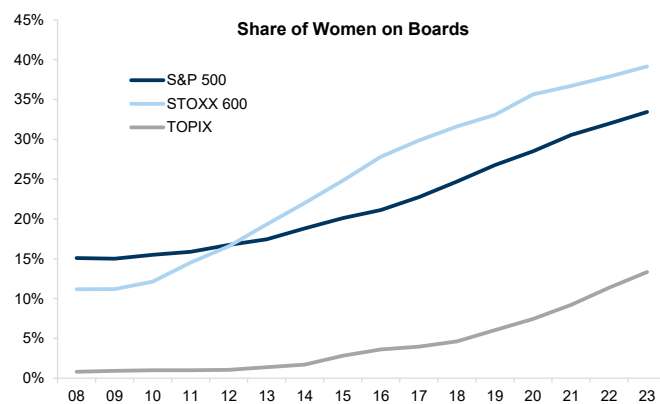
Source: Datastream, FactSet, Goldman Sachs Global Investment Research

The share of CEOs is increasing, but the base is low so the level remains small.

Nonetheless, this is a nice summary statistic of women's progress from 1%-2% women CEOs of major European/US companies 15 years ago to 8% today (Exhibit 24). In an echo of Matsui's Womenomics work 25 years ago, Japan remains far behind on these metrics but is improving too.

### Exhibit 23: Focus on WoB in Europe has meant an outsized representation of women at that level

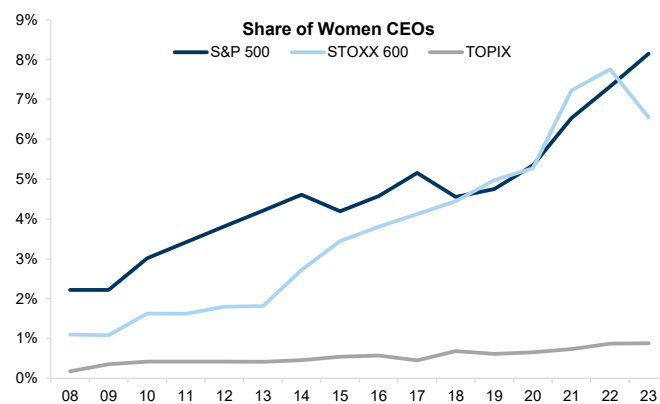
% of women on board for STOXX 600, S&P 500, and TOPIX



Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

### Exhibit 24: Just 1-2% of European/US CEOs were women, compared with 7-9% now

% of women CEOs for STOXX 600, S&P 500, and TOPIX



Source: Bloomberg, Datastream, Goldman Sachs Global Investment Research

## Is the improvement coming to an end?

We are often asked if the effects of the pandemic, the rise in AI (taking more service sector jobs where women dominate) and/or the stalling in ESG flows means an end to the progress women have made.

Indeed, there are some measures that have leveled out or dropped very slightly; for example, the ratio of women on the board in 2024 looks similar to 2022 in the US and Europe, whereas in the previous decade the year-by-year rise was clear and persistent. We have several thoughts on this:

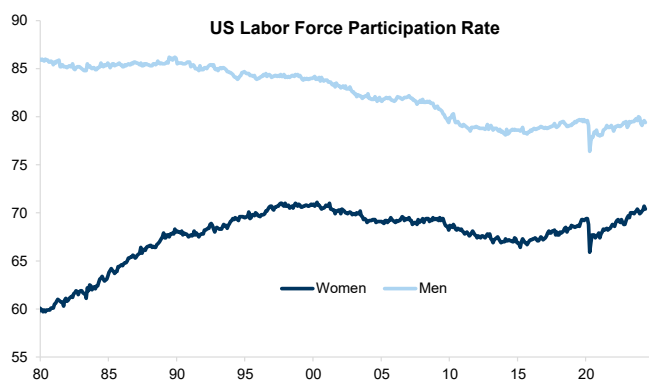
- **It's not a bad sign that progress is leveling;** it's a function of how far women have come, progress in the initial stages can be expected to be faster from a lower base.
- **With respect to women on the board in Europe, the ratio is now above the ratio of women employees in STOXX 600 firms.** We would argue that raising the share of women employees, managers and executive directors is the crucial stat on which progress should increasingly be measured and aligned. This should also help to reduce the pay gaps which are often-times the result of a lack of seniority among women. [France](#) and others have started to target this.
- **On women CEOs** the progress has been strong and continuous in the US; less so in Europe where the share for STOXX 600 companies is the same in 2024 as it was in 2021; again we'd argue for less focus on women on the board and more on managers and executive directors.
- **Fears that the pandemic would hit women more** (time spent outside of the workforce caring for children, for example) have proven incorrect. As we show for the US, the participation of women has risen while it's been weaker for men since the pandemic. This is not unique to the US (Exhibit 25): we see a similar pattern in

the UK, for example.

- **Does more WFH impact women’s prospects?** Recent research has been mixed on this. A recent HBR [study](#) suggests that more junior women do/can lose from less mentoring and fewer interactions when working remotely (this effects junior men too but to a lesser degree). But for senior employees women tended to produce more when working remotely.
- **The jobs that our economists assume will be most impacted by AI** tend to be held by women rather than men: ~60-70% of the workforce in these areas are women. That said, roles that require a high degree of face-to-face interaction, or caring professions – both areas where women dominate – are likely to be made more productive via AI and are unlikely to be supplanted by it.
- **The political zeitgeist has shifted in recent years** with increased questioning of the validity of ESG investing, especially if it’s seen to cost investors or consumers more. At the same time, there has been a rise in anti-immigration rhetoric (e.g., the rise in far-right parties in the recent EU elections) (often from the same voices questioning ESG). We think aging populations, large government deficits, a declining workforce and reservations about relying on immigration all suggest economies *need* greater participation for women and a more active role in leadership too. Also, while ESG funds globally have stopped seeing sharp inflows, we haven’t seen outflows (Exhibit 26).
- **Out-of-sample backtesting shows sizeable outperformance** for GS SUSTAIN Operational Environmental & Social (E&S) leaders (top quintile) and underperformance of GS SUSTAIN Operational E&S laggards over time (bottom quintile). In spite of a more uncertain ESG environment during the past year, the performance gap between Operational E&S leaders and laggards continued to grow. Furthermore, companies in our European Womenomics basket tend to have higher ROE, higher margins, and stronger balance sheets than the market average.

**Exhibit 25: The participation of women has risen while it’s been weaker for men since the pandemic**

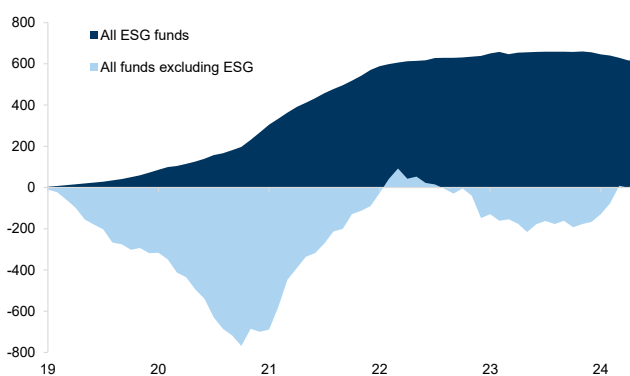
Participation rate by Gender (age 16-64, %)



Source: Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 26: Cumulative flows into ESG and non-ESG funds**

Monthly flows, USD bn. EPFR Funds Flows. Areas are overlapping.



Source: EPFR, Haver Analytics, Goldman Sachs Global Investment Research

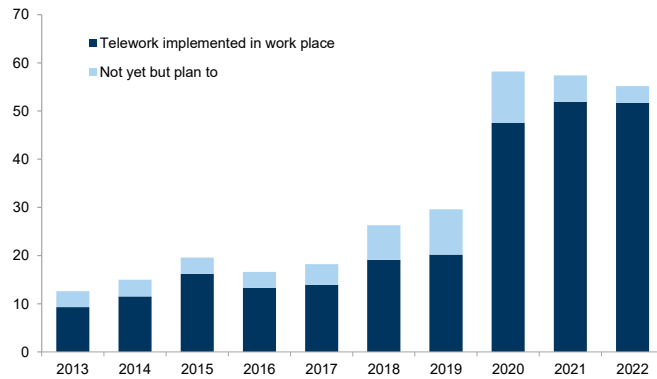
In Japan, the pandemic did hit female workers, especially part-time workers in the service sector which suffered from a decline in activities. However, the pandemic pushed Japanese corporates (and the working culture) to finally implement telework at a



dramatic speed (Exhibit 27). As of 2022, more than 50% of private sector companies have a telework system, whereas “only” three years ago, in 2019, the ratio was less than 20%. More telework has brought improved satisfaction in overall lifestyle, with child care and nursing care scoring higher improvement over leisure, personal development and income (Exhibit 28).

**Exhibit 27: The pandemic brought in long-awaited telework...**

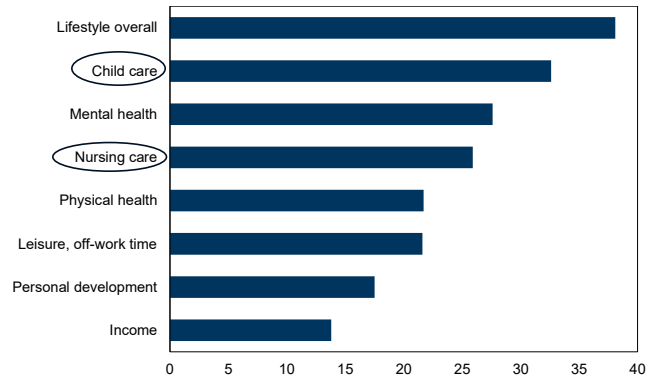
Ratio of Japanese private companies implementing telework (%)



Source: Ministry of Internal Affairs and Communications, Ministry of Land, Goldman Sachs Global Investment Research

**Exhibit 28: ...and higher satisfaction for child care environment**

Percent of improved satisfaction with telework (%)



Source: Ministry of Internal Affairs and Communications, Ministry of Land, Infrastructure, Transportation and Tourism, Data compiled by Goldman Sachs Global Investment Research

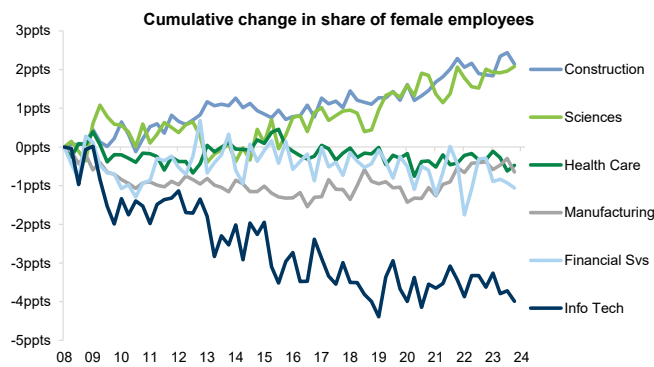
## Technology and Financials lag

### Different sectors show different progress (or lack thereof) on employment of women.

In Europe the share of women in construction and in the sciences has risen in recent years (for construction from a low base) whereas it has fallen for tech (Exhibit 29). We see a similar pattern in the US; indeed, in the US both tech and financial services (high-paying industries) have seen a fall in the share of women employees (Exhibit 30).

**Exhibit 29: EU: Women’s representation in construction/sciences is rising, but it has fallen in Tech...**

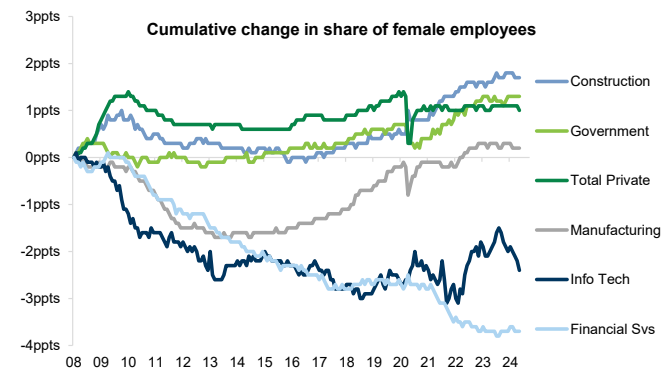
EU: Cumulative percentage point change in share of female employees (female employed/total employed)



Source: Eurostat, Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 30: ...similarly in the US both Tech and Financial services have seen the share of women employees decline**

US: Cumulative change in share of female employees since 2008



Source: US Bureau of Labor Statistics, Haver Analytics, Goldman Sachs Global Investment Research

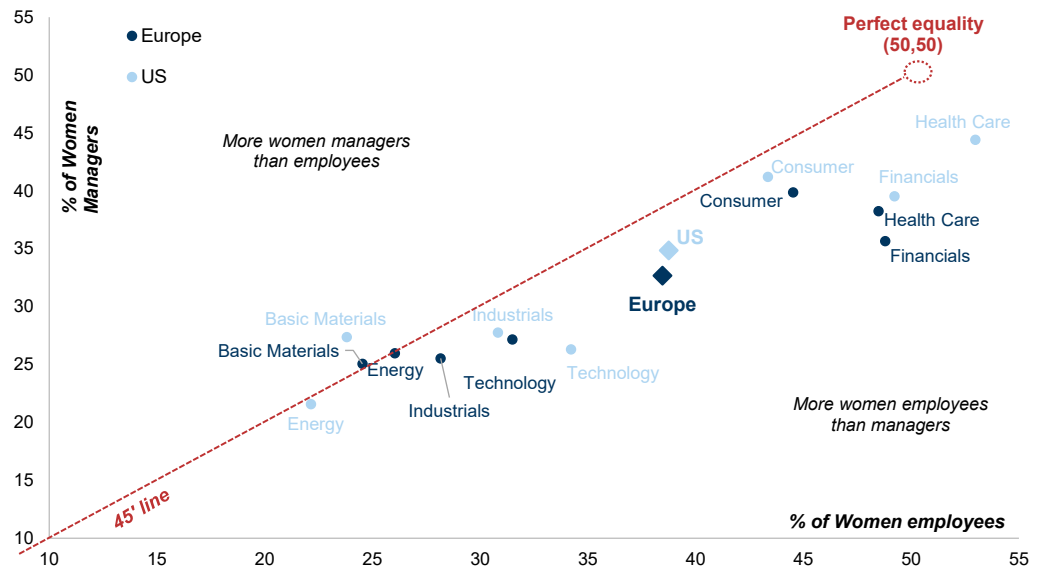
We find in every sector that women are under-represented at the management level (Exhibit 31). Even where women make up c. 50% of the workforce — in Healthcare,

Consumer sectors and Financials — they are under-represented in management. **And, this mobility gap — between representation in the workforce and representation at more senior levels — is often highest for high-paying industries, such as Financials and Technology.**

In contrast, some industries have relatively few women employees but no obvious upward mobility gap. The ratio of women employees is low across all regions in Basic Materials, Energy and Industrials, but the ratio of women managers is higher than for women employees (they are above the line in Exhibit 31). There are fewer women in these industries, but past data suggests they are more likely to hold positions in senior management.

No industry sits at 'perfect equality' of 50/50 for both women managers and women employees, although US Healthcare is close.

**Exhibit 31: We find in every sector that women are under-represented at the management level**  
 % of women managers vs. % of women employees for STOXX 600 and S&P 500. Latest data as of 2024



Consumer is an average of Consumer Staples and Consumer discretionary

Source: Datastream, Goldman Sachs Global Investment Research

## Appendix: Policy changes relating to childcare/greater social participation by women in Japan

---

In Japan, women gained the right to a vote for the first time in the immediate post-war period, casting their initial votes during the 1946 lower house election, and electing the nation's first-ever female member of parliament. On the employment front, the Equal Employment Opportunity Act (Act on Equal Opportunity and Treatment between Men and Women in Employment) was established in 1985, and required that employers treat men and women equally with regard to recruitment, employment, assignment, and promotion.

In the 1990s, Japan's aging population and declining birthrate became a widely recognized social issue, and led to the government gradually introducing policies to promote childcare and greater participation by women in society. In particular, the government introduced its "New Angel Plan" in 1999, which positioned the expansion of childcare support services (including nursery schools), the creation of an environment enabling work/childcare balance, and measures to change the focus on fixed gender roles and a workplace-first corporate culture as the pillars of government policy.

Japan formulated its first **childcare leave** system in 1972, but this only allowed women to take leave for childcare for a certain period upon request, and was limited to a best-effort basis on the part of the company and not legally binding. Under the Childcare Leave Act (Act on Childcare Leave, Caregiver Leave, and Other Measures for the Welfare of Workers Caring for Children or Other Family Members), which came into effect in 1992, both women and men were able to take childcare leave up until the child reached the age of one. While this was a groundbreaking scheme, in its initial stages employees received no benefits and leave was unpaid.

**Childcare leave benefits** were introduced in 1995, starting at 25% of wages. Since then, both childcare leave periods and benefit rates have increased incrementally. In particular, amendments in 2014 raised the benefit rate for the first six months of the leave period to 67% of wages, up from 50% previously, making it easier for both men and women to take childcare leave. The leave period has also been extended, and now covers children up to the age of two. In addition, the government introduced a new post-natal paternity leave scheme (Childcare at Birth Leave) in 2022, which is separate from childcare leave, that allows fathers to take up to four weeks of leave after the birth of a child in two separate installments, as long as the leave is taken within the first eight weeks from birth, so that they can provide support at home immediately after childbirth.

Meanwhile, Japan has also introduced a (elderly) nursing care leave scheme with benefit rates that are commensurate with those for childcare leave, as the burden of nursing care tends to fall more on women.

Government efforts to promote greater social participation by women include the **Women's Advancement Promotion Act** (Act on the Promotion of Women's Active Engagement in Professional Life), which came into effect in 2016, and aims to eliminate gender disparities in employment status/conditions, and to promote changes in

lifestyles/awareness among men and the creation of a system that allows women to become more active in society. This Act was amended in 2020 to strengthen the disclosure of information on women's participation, including female employee/managerial position rates, gender wage gaps, and childcare leave uptake rates by gender.

On the **corporate side**, measures aimed at further encouraging **internal company efforts** in the areas of childcare and female participation include the *Kurumin* accreditation system, which was introduced in 2005 to recognize companies that support child-raising and childcare among employees, and the *Eruboshi* rating scheme, which was introduced in 2015 and acknowledges companies that promote active participation by women. In 2019, the government also established upper limits on overtime working hours and started moving ahead with efforts aimed at shortening working hours as part of new "workstyle reforms" under the Labor Standards Act. In 2023, the government, in its women version of "Basic Policies on Economic and Social Reform", included a numerical target on female executive appointments for listed companies. The latest development (June 27, 2024, *Nikkei News*) is that the Japanese government plans to make it mandatory for business with more than 301 workers, both listed and unlisted companies, to publically release the ratio of female managers on a regular basis.

As summarized above, Japan's policies focused more on setting the childcare leave and childcare facilities during the 1990s. As these systems are more or less set in place, policy focuses are shifting more towards male participation in child-raising, female advancement in the society and changing the social perception on work and lifestyle, especially over the past 10 years.

**Exhibit 32: Policy changes relating to childcare/greater social participation by women in Japan**

1945	Women gain right to vote
1972	Initial Childcare Leave Act: Companies to endeavor to provide certain childcare leave for women upon request, but not legally binding
1985	Act on Equal Opportunity and Treatment between Men and Women in Employment comes into effect
1991	Public employment security office specializing in female job searches begins operations
1992	Childcare Leave Act: Both men and women become eligible for child-raising leave until child reaches 1-year old. No benefits paid
1994	"Angel Plan" proposed; initial plan related to childcare and child-raising
1995	Childcare leave benefit payments begin (pay ratio: 25%)
1999	Nursing care leave benefit payments begin
	"New Angel Plan" agreement: Main features (1) expanded services related to childcare support, (2) creation of environment to promote work/childcare balance, (3) promote change in focus on fixed gender roles and a workplace-first corporate culture
2001	Childcare and nursing care leave benefits increased (pay ratio: 25% to 40%)
2005	Childcare leave period extended (up to 1-year old --> up to 18 months old)
2005	Kurumin system introduced to recognize companies that support child-bearing/childcare. Other measures include focus on childcare leave uptake rates, promotion of childcare leave for men, flexible workhours
2007	Childcare and nursing care leave benefits increased (pay ratio: 40% to 50%)
2009	Childcare/Nursing Care Act revision: Shorter working hours for applicable employees made obligatory, childcare leave extended until child is 26 months old if both mother and father take leave
2010	High school education fee made essentially free
2012	Tokyo Stock Exchange and Ministry of Economy, Trade and Industry, jointly begin selection of "Nadeshiko" companies, among TSE listed companies that have outstanding recognition in women advancement
2014	Childcare benefit pay ratio raised from 50% to 67% for initial 6 months to promote childcare leave uptake
2015	Eruboshi system introduced to recognize companies that promote women's careers
2017	Childcare leave period extended (up to 18 months old --> up to 2 years old) Shorter work hour arrangements for employees on nursing care responsibilities; must exempt workers from overtime work for nursing care
2016	Act on Promotion of Women's Participation and Advancement in the Workplace enacted: Aims to promote women's advancement through elimination of gender disparities in the workplace as well as changing men's lifestyles/awareness. Publication of specific plan for women promotion made obligatory for large companies
2019	Pre-school education made free (for 3-5 year olds) Upper limit on overtime work hours established as a part of revised Labor Standards Act
2020	Revised Act on Promotion of Women: Further enhancement of information disclosure of women's careers (such as female employee ratio, gender wage gap, childcare leave uptake rates by gender)
2022	Paternity leave for fathers immediately after the birth of a child (total 4 weeks, to be taken within 8 weeks of birth)
2023	Women version of "Basic Policies for Economic and Social Reform" 2023: Included numerical target for Tokyo Stock Exchange prime listed companies to (1) appoint at least 1 female executive 2025, (2) 30% by 2030.
2024	Corporate tax exempt benefit provided to companies (less than 2,000 employees) that earn high points in recognition of childcare support / women's advancement

Source: Cabinet Office, Data compiled by Goldman Sachs Global Investment Research

*We would like to thank Willem van der Mee, who was an intern in the Equity Strategy team, for his contributions to this report.*

# Disclosure Appendix

## Reg AC

We, Sharon Bell and Yuriko Tanaka, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

## Disclosures

### Other disclosures

The Bigger Picture is a publication series from Goldman Sachs Global Investment Research devoted to longer-term economic and policy issues, which complements our more market-focused analysis.

### Marquee disclosure

Marquee is a product of Goldman Sachs Global Banking & Markets. Any Marquee content linked in this report is not necessarily representative of GS Research views. If you need access to Marquee, please contact your GS salesperson or email the Marquee team at [gs-marquee-sales@gs.com](mailto:gs-marquee-sales@gs.com).

## Regulatory disclosures

### Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

### Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of Global Investment Research of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Brazil:** Disclosure information in relation to CVM Resolution n. 20 is available at <https://www.gs.com/worldwide/brazil/area/gir/index.html>. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchasers of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Investment in securities market are subject to market risks. Read all the related documents carefully before investing. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Goldman Sachs (India) Securities Private Limited Investor Grievance E-mail: [india-client-support@gs.com](mailto:india-client-support@gs.com). Compliance Officer: Anil Rajput [Tel: + 91 22 6616 9000 | Email: [anil.m.rajput@gs.com](mailto:anil.m.rajput@gs.com)]. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters

arising from, or in connection with, this research. **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

**European Union and United Kingdom:** Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at <https://www.gs.com/disclosures/europeanpolicy.html> which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

**Japan:** Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan Type II Financial Instruments Firms Association, The Investment Trusts Association, Japan, and Japan Investment Advisers Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

## Global product; distributing entities

Goldman Sachs Global Investment Research produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or [contatogoldmanbrasil@gs.com](mailto:contatogoldmanbrasil@gs.com). Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou [contatogoldmanbrasil@gs.com](mailto:contatogoldmanbrasil@gs.com). Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

**European Economic Area:** GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland and the Republic of Ireland; GSI - Succursale de Paris (Paris branch) which is authorised by the French Autorité de contrôle prudentiel et de résolution ("ACPR") and regulated by the Autorité de contrôle prudentiel et de résolution and the Autorité des marchés financiers ("AMF") disseminates research in France; GSI - Sucursal en España (Madrid branch) authorized in Spain by the Comisión Nacional del Mercado de Valores disseminates research in the Kingdom of Spain; GSI - Sweden Bankfilial (Stockholm branch) is authorized by the SFSA as a "third country branch" in accordance with Chapter 4, Section 4 of the Swedish Securities and Market Act (Sv. lag (2007:528) om värdepappersmarknaden) disseminates research in the Kingdom of Sweden; Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research in the Federal Republic of Germany and those jurisdictions within the European Economic Area where GSI is not authorised to disseminate research and additionally, GSBE, Copenhagen Branch filial af GSBE, Tyskland, supervised by the Danish Financial Authority disseminates research in the Kingdom of Denmark; GSBE - Sucursal en España (Madrid branch) subject (to a limited extent) to local supervision by the Bank of Spain disseminates research in the Kingdom of Spain; GSBE - Succursale Italia (Milan branch) to the relevant applicable extent, subject to local supervision by the Bank of Italy (Banca d'Italia) and the Italian Companies and Exchange Commission (Commissione Nazionale per le Società e la Borsa "Consob") disseminates research in Italy; GSBE - Succursale de Paris (Paris branch), supervised by the AMF and by the ACPR disseminates research in France; and GSBE - Sweden Bankfilial (Stockholm branch), to a limited extent, subject to local supervision by the Swedish Financial Supervisory Authority (Finansinspektionen) disseminates research in the Kingdom of Sweden.

## General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by Global Investment Research. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (<https://www.sipc.org>).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

We and our affiliates, officers, directors, and employees will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research, unless otherwise prohibited by regulation or Goldman Sachs policy.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is focused on investment themes across markets, industries and sectors. It does not attempt to distinguish between the prospects or performance of, or provide analysis of, individual companies within any industry or sector we describe.

Any trading recommendation in this research relating to an equity or credit security or securities within an industry or sector is reflective of the investment theme being discussed and is not a recommendation of any such security in isolation.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at <https://www.theocc.com/about/publications/character-risks.jsp> and [https://www.fiadocumentation.org/fia/regulatory-disclosures\\_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018](https://www.fiadocumentation.org/fia/regulatory-disclosures_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018). Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

**Differing Levels of Service provided by Global Investment Research:** The level and types of services provided to you by Goldman Sachs Global Investment Research may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to <https://research.gs.com>.

Disclosure information is also available at <https://www.gs.com/research/hedge.html> or from Research Compliance, 200 West Street, New York, NY 10282.

© 2024 Goldman Sachs.

You are permitted to store, display, analyze, modify, reformat, and print the information made available to you via this service only for your own use. You may not resell or reverse engineer this information to calculate or develop any index for disclosure and/or marketing or create any other derivative works or commercial product(s), data or offering(s) without the express written consent of Goldman Sachs. You are not permitted to publish, transmit, or otherwise reproduce this information, in whole or in part, in any format to any third party without the express written consent of Goldman Sachs. This foregoing restriction includes, without limitation, using, extracting, downloading or retrieving this information, in whole or in part, to train or finetune a third-party machine learning or artificial intelligence system, or to provide or reproduce this information, in whole or in part, as a prompt or input to any such system.