

# Demographic Change and Economic Well-Being

## The Role of Fiscal Policy

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President Reif, thank you for the kind introduction, and thank you to the students and faculty for your warm welcome.

It is a tremendous honor to have the opportunity to deliver the Compton Lecture—and to be the first French woman doing so: *Quel honneur et quelle responsabilité!*

In many ways, this marks a visit to “our” alma mater—and by “our,” I mean the IMF’s alma mater. It is quite remarkable that our last five chief economists received their doctoral training here at MIT.

Kenneth Rogoff, Raghuram Rajan, Simon Johnson, my compatriot Olivier Blanchard, and, of course, Maurice Obstfeld, who took the helm of our Research Department last year. These economists are not only leaders in their fields, but they also embody the MIT spirit of intellectual honesty and openness and relentless curiosity.

Through their work at the IMF, these MIT alumni have played a crucial role in promoting the global public good of economic and financial stability—which has been the Fund’s *raison d’être* for more than 70 years.

Indeed, if the IMF had a motto it could be the image of the MIT motto—“*Mens et Manus*,” “mind and hand.”

Both institutions are keenly aware that the best research—the grandest ideas—are those that can change our lives, our economies, our nations for the better. Both institutions are keenly aware that this requires rolling up one’s sleeves and tackling problems hands-on—in the lab, in the start-up venture, in the offices of policymakers who are looking to us for advice.

In short, both our institutions are deeply committed to serving the world in the 21st century.

“...the world’s population is at about 7½ billion people today. Forty years from now, it will be an estimated 10 billion inhabitants.”

## THE ROLE OF DEMOGRAPHICS

When I look at our 21st century, demographic change is one of the first features that come to my mind. Think about it—the world’s population is at about 7½ billion people today. Forty years from now, it will be an estimated 10 billion inhabitants.<sup>1</sup>

In some parts of the world—especially in South Asia and sub-Saharan Africa—populations will continue to grow rapidly.

Other parts of the world—including most advanced and emerging market economies—will face a momentous transition toward aging and shrinking populations. Indeed, by the end of this century, about two-thirds of all countries are expected to have declining populations.

This will have profound implications for economics, financial markets, social stability, and geopolitics.

Without action, public pension and health systems will not be sustainable over the long term. Our grandchildren would face unsustainable public debt and sharp tax increases that could stifle growth and reduce their economic well-being.

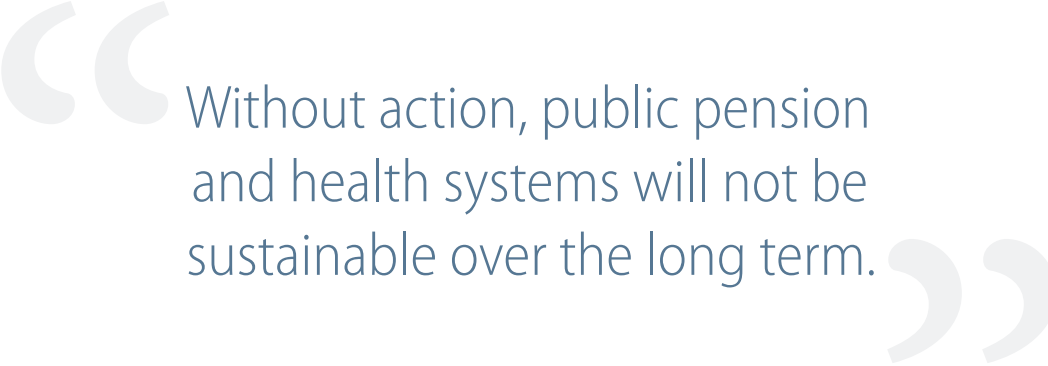
As Albert Einstein once said,

“The significant problems we face cannot be solved at the same level of thinking we were at when we created them.”

So we need to reframe the debate about demographics.

I believe that this challenge can be met. But it requires the right policies, political resolve, and strong leadership. I will argue that fiscal policy responses and technological innovation are especially important parts of the solution.

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## The Two Sides of Demographics

So let us start by looking at the sunny side of demographics.

Picture yourself getting together with your grandchildren! You may be in your 70s, but you are physically active and not afraid to impress the kids with your new Instagram account, or knowledge about gravitational waves.

Well, maybe you have a different vision of the golden years, but surely we can agree on one thing: being able to lead long and healthy lives is a demographic dream come true. By any standard, this is one of our most astonishing achievements.

### LIFE EXPECTANCY IS UP

John Maynard Keynes, one of the two founding fathers of the IMF, coined the phrase “In the long run, we are all dead.” Happily, the long run is now expected to be even longer!

Average life expectancy around the world has jumped from 47 years in 1950 to 71 years<sup>2</sup> today. Of course, life expectancy varies greatly across regions—from a low of 61 years in Africa to a high beyond 80 years in North America, Japan, and many European countries.

Few people today would want to swap their modern lives for an earlier existence. In the late 19th century, for example, the typical American household could expect to see almost one in four of its children die in infancy, and people suffered from diseases that would be easily curable today.

The difference between then and now lies in a powerful combination of factors: improved sanitation, the introduction of antibiotics and vaccines, expanded education, and better infrastructure and health care, to name just a few.

### FERTILITY RATES ARE DOWN

The increase in life expectancy and economic welfare that came with the industrial revolution brought with it the seeds of demographic change. In what we call today the advanced economies, it started with a pronounced drop in fertility rates in the second half of the 19th century that has continued today.

At the risk of oversimplifying Gary Becker—from the University of Chicago, I am afraid—the decline in fertility rates was related to changes in economic circumstances that increased the financial returns to education.

To put it simply, it became rational for families to invest in their children's education, and families increasingly opted for raising fewer better-educated children instead of a larger number of children. There is also ample evidence that children of better-educated mothers do better in terms of health and education. Educated women tend to have fewer children and devote more time to each child—while they enjoy broader opportunities in their own lives.

This virtuous circle that started in Europe and the United States more than a hundred years ago is now widely seen across the world. The economic, social, and political implications are momentous.

Fertility rates have come down—in 1950 the average woman bore 5 children; today she has 2.5 children (these are global averages). Over the same period, the global literacy rate jumped from 36 percent to 83 percent today.

## GLOBAL PER CAPITA INCOME IS UP

For one thing, increased investment in human capital has had a large positive effect on economic well-being. Average incomes in emerging market economies, such as China and India, have risen much faster than those in richer countries. Since the 1990s, the growth momentum has spread to more than 70 developing countries.

As a result, global inequality—that is, income inequality between countries—has fallen steadily over the past decades. And global income per capita has nearly quadrupled since the end of the Second World War.

Global poverty has also come down sharply. People living at or below the poverty line of \$1.90 per day account for 13 percent of the world's population, down from 44 percent in 1981.<sup>3</sup> China alone has lifted more than 750 million people out of poverty over the past three decades.

The bottom line: emerging and developing countries have been catching up with advanced economies in facilitating longer and more prosperous lives for their citizens.


## THE DARKER SIDE OF DEMOGRAPHICS

So what's not to like? What is the darker side of demographics? Well, with declining fertility rates, populations in some advanced economies did not just grow more slowly; they stagnated, or began to shrink. The same will eventually become true for emerging and developing countries.


Japan's and Germany's populations, for example, started to decline some time ago. Even the world's most populous country—China—has been facing a declining working-age population since 2012.

In most cases, shrinking and rapid aging go hand in hand. This is a demographic double whammy that will have major implications for economic growth, financial stability, and the public purse.

First—the impact on growth. For obvious reasons, older workers participate less in the labor market, and a country with an aging and shrinking population will therefore see lower growth over the medium term.



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Fewer workers also means less need to equip them with capital. And countries may become reluctant to upgrade their capital stock. Why build more infrastructure for fewer people?

Our research suggests that the combination of aging and shrinking will reduce potential growth in advanced economies by about 0.2 percentage points in the medium term—and by twice as much in emerging economies.<sup>4</sup> This may not look so bad, but it would be a severe blow to those countries that are already facing very low growth and high debt.

Second—the impact on financial markets. Many see population aging as a significant drag on asset prices. Some even hypothesize that retiring baby boomers may trigger stock market disruptions because they may liquidate their equity holdings to finance their retirement.

This may or may not be true, but what we definitely know is that governments, pension funds, and individuals seriously underestimate the prospect of people living much longer than anticipated.

IMF analysis suggests that, if everyone lived three years longer than expected, pension-related costs could increase by 50 percent in both advanced and emerging economies.<sup>5</sup> This would heavily affect private and public sector balance sheets and could also undermine financial stability.

Third—the impact on fiscal health. Again, IMF staff research shows that, in advanced economies alone, age-related spending is projected to jump from 16½ percent of GDP to 25 percent by the end of this century—unless policy action is taken.<sup>6</sup> How can this challenge be met?

Through borrowing? If governments were to finance the entire increase in age-related expenditure that way, public debt would explode from an average of 100 percent of GDP now to 400 percent by the end of the century.

Through higher taxes? In our hypothetical example, this would mean lifting value-added tax rates by roughly 20 percentage points, or increasing social security taxes by about 25 percentage points.

“Bribing people to have children does not seem to work—at least in the aggregate.”

Through drastic entitlement reforms? By our calculations, this would mean slashing pensions and health benefits on average by about a third.

There is a wide variety of country experiences, but broadly speaking, emerging markets and advanced economies face similar challenges. Without action, China’s spending on pensions and health care is projected to increase by 13 percentage points of GDP by the end of this century, compared with 15 percentage points in the United States.

So what can policymakers do to tackle these daunting fiscal challenges?

## Fiscal Policy— The First Line Of Defense

This is the point in the lecture where Groucho Marx would jump up and ask: “Why should I care about future generations? What have they ever done for me?”

Of course, we do not need a comedian to remind us that voters and politicians rarely look beyond the next election, let alone the next 85 years.

The question is—is there a quick fix, a silver bullet? The answer is—yes...and no.

Common sense tells us that simply increasing the fertility rate could help. Many countries have tried to do just that—with baby bonuses, family allowances, tax incentives, parental leave, subsidized child care, and flexible work schedules.

What is the result? Well, these measures have boosted the labor force participation of mothers—which is great news in and of itself—but they seem to have little or no effect on the number of births. So, bribing people to have children does not seem to work—at least in the aggregate.



## GAME CHANGERS

That is why we need a multipronged policy response. In other words, it is not enough to focus on just one aspect, such as pushing through a pension reform. We need game changers.

The first game changer is entitlement reforms. Start with health care—which accounts for the lion’s share of age-related expenditure increases.

Increasing competition among insurers and service providers will help. But it also requires more targeted spending, paying more attention to primary and preventive health care, promoting healthier lifestyles, and making more effective use of information technology. For instance, costs can be reduced by making greater use of health data history or using unique health identifiers for individuals.

If these efforts can be sustained over many years, it would help governments to bend the cost curve.

Another priority is lifting retirement ages to match longevity gains. This would bolster the pension system and extend the productive life of individuals. At the same time, however, policymakers need to put in place a proper safety net for those who might not be healthy enough to work longer.

Pension systems also need to be flexible enough to respond to demographic shifts. The Japanese system, for instance, automatically slows the growth of benefits to offset increases in life expectancy and changes in the labor force. Other countries—such as Germany, Finland, and Portugal—also link benefits to life expectancy. Again, the sooner the reform, the fairer the adjustment.

More broadly, in the current environment of already depressed aggregate demand, we need savvy fiscal policy—one that supports demand while ensuring sufficient savings in pensions and health care.

The second game changer is better tax systems and more efficient public expenditure.

“From a purely economic perspective, immigration can boost a country’s labor force, encourage investment, and lift growth—provided that migrants are well integrated into the workforce.”

On the tax side, this means broadening the base for value-added taxes, improving taxation of multinational corporations, and strengthening tax compliance—to ensure that everybody pays their fair share.

On the spending side, there must be better management of public investment. Our research shows that the most efficient public investors get twice the growth “bang” for their “buck” than the least efficient.

And, of course, energy pricing is key—not only for the public purse, but for the planet. This means more emphasis on energy taxation and less reliance on energy subsidies.

We estimate that global energy subsidies amounted to \$5.3 trillion last year, or 6.5 percent of GDP. This staggering number needs to come down so these resources can be better used. Doing it now, when energy prices are low, makes it that much easier.

The third game changer is a broad-based push to lift potential growth—to increase the size of the pie. In the end, there is only so much that tax measures and efficient public services can achieve.

One way to grow the economic pie is to add more workers. An obvious group is women. Scandinavian countries and, more recently, Japan have sought to raise female labor participation by offering affordable child care, making tax and legal systems fairer for women, and promoting equal pay for equal work.

IMF research indicates that raising female labor participation rates to those of men could increase GDP by 5 percent in the United States—and the numbers are even higher for many other countries.

Another source of additional labor is immigration. Of course, the associated political and social issues are not to be underestimated. But from a purely economic perspective, immigration can boost a country’s labor force, encourage investment, and lift growth—provided that migrants are well integrated into the workforce.

Why is growing the economic pie so important? Not just so there is more to share now. Higher growth means a fuller public purse and a more potent fiscal policy response to this demographic challenge.

There is, of course, an essential ingredient for growth—and that is raising labor productivity by using ever smarter technology. People here at MIT know a thing or two about that.

“Artificial intelligence, robotics, genetic engineering, 3-D printing, and quantum computing: these are only a few of the technologies that could profoundly affect our economic well-being in the 21st century.”

## Technological Innovation—A Must-Have for Methuselah

Indeed, MIT’s business is technological innovation, which is essential to raising living standards over the long term—so we can all “live long and prosper.”

Artificial intelligence, robotics, genetic engineering, 3-D printing, and quantum computing: these are only a few of the technologies that could profoundly affect our economic well-being in the 21st century.

Could these innovations revolutionize the allocation of labor and capital? “Yes!” say the optimists.


I am thinking of Erik Brynjolfsson and Andrew McAfee from the Sloan School here at MIT, who argue that technical advances will have transformational consequences leading to accelerating productivity and increasing

prosperity. In other words, the pie grows a good deal by itself and everybody enjoys more leisure. Please sign me up!


Well, not so fast perhaps. There are also pessimists in this debate! First among these is perhaps Robert Gordon, who also got his PhD from MIT, under the supervision of Robert Solow, almost 50 years ago.

Professor Gordon argues that the century between 1870 and 1970 was unique in inventing electricity, gas, the internal combustion engine, running water, sewers, the telephone, antibiotics, and much else. In his view, the technical progress achieved since then—admirable as it has been—is simply not visible in productivity growth.

Which of these views is correct? The short answer is, “Nobody knows.” What we do know, however, is that we need more innovation, not less.



We should encourage greater sharing of technology between the advanced economies and their emerging peers—including through foreign direct investment, trade reforms, investment in education, and better enforcement of intellectual property rights.



## INNOVATION IS KEY

Powerhouses like MIT have been leading the way for decades, including through partnerships with major corporations.

Governments also need to play their part—by removing barriers to competition, cutting red tape, and investing more in education and research and development (R&D). This would unleash entrepreneurial energy and help attract private investment in ideas that are new, surprising, and useful.

In addition to supporting universities and research networks, governments typically provide subsidies for private sector R&D. More investment in R&D means bigger benefits for the wider economy.

New IMF research shows that, if advanced economies were able to ramp up private R&D by 40 percent, on average, they could increase their GDP by 5 percent in the long term.<sup>7</sup>

Innovation is also critical outside the advanced economies. For example, China is today's number one in the world in terms of patent applications. And more and more multinationals outsource parts of their R&D to countries like Brazil and India.

To be fair, most developing countries still rely considerably on the imitation and absorption of technologies from advanced economies.

This is why we should encourage greater sharing of technology between the advanced economies and their emerging peers—including through foreign direct investment, trade reforms, investment in education, and better enforcement of intellectual property rights.

If this were to happen, it would be another global game changer.

## Conclusion

So let me conclude with this idea of sharing.

The life motto of Karl Taylor Compton, MIT's ninth president, was, "Leave every campground better than you found it."

We all know that we must address a huge demographic challenge, so we can leave our economies and societies better than we found them. We owe this to our children and grandchildren.

I am confident that we can meet this challenge. We all have a stake in this campground.

Thank you.

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## ENDNOTES

- 1 United Nations estimates.
- 2 United Nations estimates.
- 3 World Bank estimates.
- 4 April 2015 *World Economic Outlook*. Chapter 3: "Where Are We Headed? Perspectives on Potential Output."
- 5 April 2012 *Global Financial Stability Report*. Chapter 4: "The Financial Impact of Longevity Risk."
- 6 IMF Staff Discussion Note: "The Fiscal Consequences of Shrinking Populations."
- 7 April 2016 *Fiscal Monitor* (forthcoming).

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