THE BROOKINGS INSTITUTION

FALK AUDITORIUM

PUTTING TECHNOLOGY TO WORK FOR INCLUSIVE PROSPERITY: CHALLENGES FOR PUBLIC POLICY

Washington, D.C.

Monday, July 15, 2024

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ROUSE: Hi. Thank you. Hi, I'm Cecilia Rouse, and I'm the president of the Brookings Institution. And it's my pleasure to welcome you to this very special event, which is the launch of Harnessing Technology for Inclusive, Inclusive Prosperity, Growth, Work and Inequality in the Digital Era, a very timely and exemplary book. This book was edited by Brahima Coulibaly, the vice president and director of the Global Economy and Development program here at Brookings, as well as with Zia Qureshi, who is a senior fellow in the same program. Now, since this is a tech-centric event, I thought, why write my own speech when I could ask GPT, ChatGPT for help? So, according to ChatGPT, this book is a testament to the idea that technology wielded with foresight and compassion has the unparalleled ability to uplift communities, empower individuals, and create a future where prosperity is truly inclusive. It is a call to action, a roadmap for policymakers, entrepreneurs and global citizens alike to embrace and steer the technological wave towards a more equitable and prosperous world for us all.

Okay, so don't get me wrong, it is a wonderful book. It's unclear, however, if this book has the unparalleled ability to empower individuals to create a truly inclusive and prosperous world for everyone. So, here's what I have to say. A little less gushing, I'll admit. But perhaps a bit more human. In 2018, Brookings launched our Artificial Intelligence and Emerging Technology Initiative, an institutional commitment to generating leading research pertinent to maximizing the benefits of technological digital technologies while minimizing the cost to society. This book truly reaffirms that commitment. And in true Brookings style, this book bridges the gap between research and policy, providing viable, pragmatic, and actionable solutions. Okay, so enough from me and my assistant ChatGPT. We have a very strong panel for your discussion today spanning academia, the policymaking community, international organizations, and the tech industry. I thank our distinguished panelists for taking the time to join us. And now I will pass the mic to my colleague call to say a few more words. Thank you.

COULIBALY: Thank you, Cecilia, for the welcoming remark. And thank you for contributing a very insightful foreword to the book. As I listen to what ChatGPT you, I feel more like ChatGPT took it from you. And so, thank you all. And thank you, for your forward, what really set the set up nicely the rest of the chapters. So good afternoon to all who are joining us both in person and online, many in

different time zones. We are really delighted that you could join this conversation on how to put technology to work for inclusive prosperity. I'd like to think Zia Qureshi, my coeditor and contributors, David Autor. Kaushik Basu, Dani Roderick, Santiago Levy, Radhicka Kapoor, PP Krishnapriya, Haroon Bhorat and Landry Signé who's sitting here, Lucas Chancel, Carol Graham and Janina Broeker. Cecelia nicely set the context for the research presented in the book, so allow me to say a few words about the book, specifically its main messages, and then we'll turn to, our panel for the discussion. So, the technological transformation led by the digital technologies, and now I most notably, is a big story about a time full of exciting opportunities but also risks.

The book addresses the agenda of harnessing this technology, to build a more prosperous and inclusive future. Policymakers, business leaders, workers, citizens more generally face many questions, including in what ways are the new technologies altering markets? Business models work, and in turn, economic growth and income distribution? How are they affecting inequality within advanced economies and emerging and developing economies, and the prospect for economic convergence between them? What are the implications for public policy to capture the new opportunities and manage the new challenges? The book addresses all these questions, among others. So, we know inequality has been rising in many economies, and the new technologies have an important role contributing role. They have been changing market dynamics in ways that increase inequality among firms and among workers.

Firms at the technological frontier have pulled away from the rest, acquiring dominance in an increasingly concentrated markets and in raking in supernormal profits. So, increasing automation of low and mid skill jobs has shifted labor demand toward higher skills, hurting wages and jobs at the lower end of the skills premium. How will artificial intelligence, the next phase of digital revolution, affect the relative demand for skills and earnings and earnings inequality? There is still much uncertainty about how the scope of AI capabilities may evolve as AI advances. Displacement risk could affect some higher-level skill job as well. In contrast to the previous waves of automation. However, the displacement risk at a higher skill level may apply more to the task level than to the job or the entire job more broadly or other occupation, as has been the case with the low and mid-level job skills. It is not only that inequality has been rising within economies.

The expected productivity dividends from digital technologies has not fully materialized. So, while these technologies do make productivity measurements more complex, data show that productivity growth has slowed rather than accelerated in many economies. Furthermore, leading the change, the charge on the new technologies, so-called the Big Tech, have captured the lion's share of the returns, while productivity growth has stagnated or slowed for smaller firms. Will artificial intelligence reverse the productivity slowdown? Possible, but again, that remains quite, yet to be seen, in contrast to rising within country inequality. Inequality between countries has fallen in recent decades. Faster growth in emerging economies have narrowed per capita income gaps relative to advanced economies and technological change, however, posing new challenges for this global economic convergence.

The manufacturing led growth in emerging economies has been driven by their competitive advantage in low wage and labor-intensive products. This source of comparative advantage increasingly will erode. With expanding automation of low skill tasks and jobs. Disrupting traditional pathways to development. So, what did these trends imply then, for public policy? Large and persistent increases in inequality are not an inevitable consequence of technological progress. The history of past major technological breakthroughs tell us that public policy choices matter greatly to whether technology serve the interests of a few or become the foundation for more spread prosperity. Unfortunately, public policy is generally, in general, has been slow to rise to the new challenges. Policies have lagged, shifting growth and distribution dynamics as technology has increased shift markets, business and work.

The digital economy must be broadened to disseminate new technologies to wider segments of firms and workers. This will both help advance rising inequality and capture the productivity dividend from digital transformations across a wider swath of the economy. Combating inequality as technology drives change. Therefore, it is not only a distributional issue, but also a growth issue. The policy agenda, as detailed in the book, is broad, spanning competition, policy and regulatory frameworks, research and development policies and digital access, education and training, labor market policies, and social protection and taxation. The agenda goes well beyond redistribution, with discussion on combating inequality often narrowly focused on inequality, often narrowly focused on.

The book emphasizes the range of predisposition, policies to make markets and economic growth of their received by technology more inclusive. So, adapting to new technologies is a big challenge for policymakers. But it really challenge is the shape of technological change itself, so that it supports broader economic and social goals, rather than the interests of narrow groups of stakeholders. Can technology affect the pace of global economic convergence? Yes, it can. As it alters the patterns of international comparative advantage. But as technology disrupts traditional pathways to development, it offers new opportunities for developing economies that successfully adapt their growth models to the changing economic paradigm.

These range from leapfrogging opportunities in development made possible by new technologies to greatly increase international connectivity to new areas of comparative advantage, going beyond traditional manufacturing and encompassing services that technology is making increasingly tradeable across borders, and these new pathways to development is the subject of a related research agenda that we have on a forthcoming book, label, the premise of industrial industry without, smokestacks. So, you have the preview of that here. So, besides the major public policy challenges at the national level, they are important new challenges at the international level not only must pass gains in establishing the rules based multilateral system for trade and investment, be shielded from today's increased protectionist pressure and resurgent nationalist industrial policies.

But new rules and discipline must be devised for globalization that is growing increasingly digital. In particular, international cooperation in governance of powerful emerging technologies, notably, AI, will be important in realizing their benefits while managing the risks. So greater international cooperation seems daunting in the current geopolitical environment, but it is essential to harnessing technological progress for the benefit of all. So now, let me now invite our esteemed panelists to come to the stage. We are really honored to have you all share your expertise perspective with us. And my colleague Zia would be the moderator for today. So yeah, over to you and dear panelists. Please welcome to the podium.

QURESHI: Thanks. We are all set and our microphones are working. So, let's get started. Thank you to, Cecilia and, and Coul for getting us off to an excellent start and, setting the context for our

discussion. And, we couldn't have asked for, a better panel for our, discussion today, as, Cecilia said, our panel, spanned, academia, policymaking community, international organizations and the tech industry, all, important players in the quest to, harness technology for, inclusive, prosperity. In the interest of time. I will be brief in introducing our panel, the event page on the Brookings website, has links to their, impressive, full bios, in alphabetical order and in the order of seating to my right. Justina Gallegos is deputy director in the White House Office of, Office of Tech, Science and Technology Policy and, among her, other functions there. She leads the team on industrial innovation.

Simon Johnson is a Ronald A. Kurtz professor of entrepreneurship and professor of global economics and management at the MIT Sloan School of Management and also faculty co-director of the MIT Shaping the Future of Work Initiative. Victoria Kwakwa is vice president for Eastern and Southern Africa at the World Bank. My former institution, she previously, served as vice president for the World Bank, Southeast Asia and Pacific region. So, she has a very broad and rich perspective on, emerging market and developing countries. And David Weller is senior director for emerging tech competitiveness and sustainability, sustainability policy at Google, where he has also been leading Google's global team on economic opportunity and, and society. I should also mention here that Google is a provider of generous support to Brookings. And I would also like to underscore Brookings' commitment to independent research.

So, we will proceed as follows. We will have a couple of rounds of questions, with the, with the panelists, related to the, themes and issues, discussed in the report that we are launching today. And the questions I will ask also to reflect some of the questions and comments we have received in advance from those, registering for this event. And we will then open it up and invite, questions, from the floor. Those joining us online can submit, live questions by email to events@brookings.edu or via X to @BrookingsGlobal using the #techforinclusivegrowth. That is #techforinclusivegrowth. Lastly, if you would like to obtain a copy of the book, copies will be available for purchase, at a desk, just outside this auditorium. And I'm told at a 20% discount. So, so with that, let's start with our discussion. Simon, if I may start with you, with, with a big picture question, you recently, coauthored, with, Darren Okolo, an important book titled, "Power and Progress: Our Thousand Year Struggle Over Technology and Prosperity."

The book that we are launching today looks at the technology and inclusive prosperity question in today's setting. In the context of digital transformation and AI, from your perspective, spanning the history of major, technological breakthroughs, how do you see the challenges of harnessing today's technologies? For, inclusive, prosperity? This is admittedly a very broad question. But from your recent work, what are the key lessons? That should inform, public policy today?

JOHNSON: Well, thanks. That's a great question. And I think if we'd been having this discussion, let's say 1980, about 40, 45 years ago, the answer would have been we've solved the problem. We know how to do this. This is what we've been doing at least since World War two, in the United States and in Europe and in other countries, harnessing technology. And unlike, let's say, the earliest phase of the Industrial Revolution, which was very difficult for many people since 1850, let's say from 1850 to 1940 and 1950, there was a lot of figuring out, a lot of building of institutions. There was a rise of trade unions, there was a rise of the regulatory power of government. And in that postwar period, the French call it the glorious, three decades, 30 years.

There was enormous success, I think, on exactly the issues that began with today. So, I think, unfortunately, we have to ask what has gone wrong? What did we lose since 1980, and what ways have we lost our ability to deliver on inclusive prosperity? Because technology clearly advances faster than ever. The productivity gains are disappointing, yes, but mostly I think what we worry about is the widening inequality between people of different education levels in the United States and the potential for that to impact other, other countries. And, you know, to sort of try to answer in a very focused way is here. I think that we need to find ways to provide incentives to the people who develop technology that pulls the technology in a way that's complimentary to workers. Some people call it worker augmenting AI as opposed to worker displacing AI.

So, there will be some automation that is absolutely an unavoidable part of what this and many other, information technologies involve. But you can also enhance the abilities of people, the productivity of people, the marginal productivity of people, and the ability to earn wages off people who don't have a lot of education. Now, if you can do that in the United States and do that in Europe, you can presumably do that around the world. It's not one size fits all, but that is what we did in the successful

phase of call it Western economic development. It's not, unfortunately, what we've done in recent decades. So, getting back to that path is not going to be easy.

QURESHI: Yeah. Well, thank you. We'll come back to, some of the issues that you were just touched on. Justina, the US is the economy at the technological frontier on, digital innovations, on AI. It's a home of the big tech. It, it has also seen economic inequality rise in recent decades and in fact, more than in most advanced economies, which have also seen inequality, rise. So, from your vantage point in the US administration, how do you see the, the challenge of. Making technology, promote, more inclusive growth in the U.S. context. What are the key policy initiatives and what more needs to be done?

GALLEGOS: Thanks. Yeah, that's such a great question. And we can see from all of the work that the president has done to date that he cares deeply about channeling our nation's immense industrial capacity and innovation capacity towards really inclusive growth. And you've seen, from the historic bills that have been passed across the bipartisan and, the Inflation Reduction Act, that bipartisan infrastructure law and the Chips and Science Act and the American Recovery Plan for really historic pieces of legislation, you can see the shape of a modern American industrial strategy that echoes I'm really industrial policy that has happened in the past, as was just discussed. And when you look at the shape of all of those bills together, you can see, an Invest in America agenda that is really, focused on bringing back strategic sectors to our country with the thought of advancing economic growth by harnessing those technologies, but really putting them in specific places and regions that are focused on, inclusive economic growth.

And so, when you look across that, set of bills, which we call the Invest in America strategy and agenda, you can see almost $900 billion in net new public sector investment across really critical sectors that we all care about. So, think about things like clean energy, bio manufacturing, heavy industry, semiconductors, sectors that we know are critical to US growth. And all of these are creating new jobs, particularly good paying jobs, union jobs and jobs that really don't require a college degree. So, we're seeing new entrants participating in the economy in regions that were historically left behind and really novel ways.

In just the past three years, we've seen 15 million new jobs and the highest level of new business growth in recent years, over 17 new business applications, 17 million new business applications, which is incredible. So, we're seeing all of these indicia of new economic growth happening in new places across our country. And I want to give three policy examples of where we're seeing this new industrial strategy take hold, and how it's really taking shape for a new model for inclusive economic growth. First is in the Chips and Science Act. We created the first new directorate, the National Science Foundation, in over 30 years, called the technology, Innovation and Partnerships Directorate, or the Tip Directorate.

And one of the most important programs within the directorate is called the NSF Engines Program, which announced a tranche, of first of kind investments in regional regions across the country. There were ten that self-identified emerging innovation ecosystems, many of which are AI enabled, where communities identified their own sectors of strength and receive specific investment that connects the dots across all of those regions to really bring communities together in a novel way that brings for those technologies. Second, the Department of Energy is embarking in what has been described by many as the most significant clean energy and climate strategy in our nation's history. And many argue in the world and is investing over 100 billion in clean energy demonstration and deployments across more than 60 new programs DOE is leveraging AI across many of these solutions.

When you think of really sticky, clean energy challenges like, deploying, regulatory hurdles like permitting, how can I be used to really fast track permitting so we can build more large, clean energy projects and unlock clean, growth in sectors that we care about, like the grid. And finally, the Department of Commerce's Economic Development Association administration has launched numerous programs, including the Build Back Better Regional Challenge and Tech Hubs that is really designed to empower, communities to self-identify their sectors of strength and then use those federal government resources to connect the dots across those communities. And so, you see, new growth happening across our country in a really novel way that I think reflects a lot of the historical growth that has happened to date with the intention of that growth being inclusive.

And I would really put an emphasis on the new places, that that growth is happening. We often think of technology and being based, particularly on the coast, but we're seeing, new battery belts pop up and new regions, and all sorts of new sectors, popping up across the country, which is really exciting.

QURESHI: Thank you. Now turning to, emerging economies. Victoria, there's a risk that the new technologies may slow global economic convergence. That is the process of, emerging economies narrowing income gaps relative to advanced economies. And, this can happen as automation erodes the competitive advantage of, emerging economies in their traditional, less skill intensive manufactured exports. And, and this can, create new challenges for these economies in terms of their future sources of growth and, generation of higher productivity employment for their large and growing labor forces at the same time. And I mentioned that, the new technologies are also, creating new opportunities, for these economies and Africa, the region that you're, currently engaged with at the world Bank, provide some, some, promising examples. So how do you see these, these risks and opportunities, in, in emerging economies?

KWAKWA: Sure. Thank you, Zia, and thank you so much for the opportunity to participate on this panel. As you said in introducing me, I've worked on East Asia, the Pacific, and working on Eastern and Southern Africa. Now, I'll focus my comments on Africa. And I say this precisely because some of the experience on East, East Asia is quite different, from Africa. So how do I see the risks, and the opportunities, I think all the technologies that, we're seeing emerging, presents some risks, you know, whether it's that inequality globally or within countries that you've mentioned, we're seeing in Africa in particular, that Africa is not converging, really with the rest of the world and the trends, partly because of low adoption of technologies, and, low use, of technologies. And then if you see within countries, we're also seeing, seeing inequality, inequality is generally worsening in Africa.

That's a trend we're seeing inequality between the rural and urban. We're seeing inequality across gender. And we're seeing inequalities. Also in terms of across firm size, large formal, firms, large size formal firms and micro, informal, by, size informal firms, you know, and so you really see the technology or digital divide it hasn't gotten, you know, so the inequality, is, is a reality, in what's happening, to Africa on the question of jobs and, and automation in particular, for Africa, the

industries that, really, where this is relevant in aren't quite established in Africa yet. So, I don't really worry about, technology displacing jobs in Africa yet. And so, I think that if Africa can adopt more technology overall, we need more technology and capital deepening.

So, adoption of technologies that increases, technology use for work, I think will, on balance, be good as opposed to not good. And then as several, the two speakers said at the beginning, public policy has a role, and public policy can be implemented in a way, that you mitigate some of the downside risks and you make sure that technology, increases human capability and, and is flourishing as opposed to doing the negative things. So, the risks are real. We're seeing some of it. But as you said, there are also opportunities and benefits. And we're seeing those as well. We're seeing some more in other places, some places than in others. You know, a colleague just mentioned, green energy technologies. So, we're seeing this make a difference. In certain parts of Africa, particularly in rural areas, distributed renewable energies, bringing access to electricity for the first time to some of the most disadvantaged people and helping them also get access to services.

And then we're seeing this a lot, in some of what is happening in education in particular. We take the example of Kenya, where the government has used a lot of. Digital Access to Digital services, a digital technology to provide access to education, particularly in some of the rural parts in northern Kenya where people are the poorest. You know, some of what is done on radio, wonder, has gone into the use of digital, textbooks, you know, providing access to more people. We saw what happened under COVID, where children were able to learn, digitally. But there, you know, there was an upside and a downside, because those kids that lived in remote areas whose parents couldn't pay and didn't have access, you know, lost a lot and dropped out, you know, in large numbers.

And we had not they hadn't all come back yet, you know, so you're seeing good things happening, but you continue to see the equalizing, impacts, that is this is happening. And then we see also in health, where the use of technology, whether it's telemedicine, whether it's using AI, to compliment health sector workers, particularly in areas such as imaging. And so, one is helping, you know, because the W.H.O. standard is to have, 45 health care workers per 10,000 population, but most countries can't afford in Africa. So, bringing some of these digital, these technologies in including AI.

And so, one is making a difference. To some extent. We also see some of that in agriculture, where artificial intelligence is helping, to really to monitor soil health and also to make, some suggestions about, pest management and control. So, several examples of, things happening that will help or is helping to raise productivity, creating growth spurts and, and also providing services, to particularly people who are in rural areas who are underserved. So, all of this is good. I think the challenge that we have is that a lot of this is really still at small scale, you know, so you need to go to scale. And you also, really need to address some of the issues of affordability of technologies. You have to address some of the issues of literacy, to use technology and, and so on. So, I think it's very much early days, in Africa. And the promise is great. But we need to continue to work at it to really see this realized.

QURESHI: Thank you. Thank you, Victoria. So, David, now, we turn to a perspective from the, from tech industry that is a source of the technologies whose implications, we are discussing. So, how do you, see this debate about, technology and inclusion and, concerns about, small businesses and workers? Especially given your work at Google on, economic opportunity initiatives. How do you see the role of tech industry in this context?

WELLER: Well, thanks so much, Zia, for having me. And this is such a great conversation because, I feel like the past year we've had two predominant conversations. One conversation has been the wow conversation. Oh, my goodness. I wrote President Rouse's speech. And yeah, it was, you know, as she said, it wasn't entirely human, but it was pretty good. And many amazing things that we are all seeing and to some degree, what happened a year and a half ago in ChatGPT, 3.5 was first released to the world with sort of people seeing under the hood a lot of AI developments that were happening that could touch it. And that was sort of a wow moment.

The second conversation we've been having is sort of the oh wow conversation, which is this kind of seems a little bit scary, too, right? Like the killer robots, the, you know, AI out of control, loss of autonomy, those kinds of issue. And that really has dominated a lot of the conversation. But I think there's a key conversation that we need to be having more of, which is exactly what your book and Brookings is focused on, which is ultimately right. Technology is a tool.

The question is, how do we harness this new ‘Wow’ technology to actually produce inclusive prosperity and make people's lives better, both across the United States and across the world? And I think too often we have had those conversations in different silos or not had them at all. And, you know, frankly, as someone from the tech industry, I will say, like in sort of the first generation of this, there was a lot of techno utopianism in Silicon Valley. You know, we're going to release these awesome, amazing products. We're going to let it free and great magical things are going to happen. And some very good things have happened. But we also have learned a lot over the past 20 years that, things don't happen automatically.

And so, I think the fundamental question around you, your book in this convening is, you know, what is to be done to ensure that we translate that we both, harness and direct technology development in a way, and have complementary policies so that it translates into true broad, inclusive growth. And there is a lot of work to be done. And I think what's great about this panel and your book, and we're really honored that you included a company as part of this conversation, is no one sector is going to resolve any of these issues alone. Sitting in government, sitting in a university, sitting in international organization, sitting in, in the tech industry, sitting in some other sector, right, like that, that we are all going to have different perspectives on that. And the solutions to these problems are going to require deep, collaboration. And so, I think that's super important.

Maybe I'll just sort of spend a couple of minutes offering quickly sort of how, how AI and we have been thinking about what some of the key ingredients are to translating, what I think most agree is a new general-purpose technology, a transformative technology into, into broad and inclusive, prosperity for, for, for people. The first is inclusive infrastructure. I think, again, we've seen a lot of public discussion about, and it's well understood the importance of compute, and, hardware and data centers, the importance of data sets, the importance of, of algorithms, for, for AI, how do we ensure that we are, in fact, building those in the right way and that they're broadly available? And so, for instance, R&D, Google and many other companies spending a huge amount, you know, 40 plus billion dollars a year on, on, on R&D.

What's the open element to that? What's the open science element that to ensure that it's not just, you know, one company, one player? But we're doing this in a way that, is broadly leading to, to, to, to increase knowledge. On the infrastructure side, connectivity. Right. We like how do we ensure that to, to your points, Victoria. That the underlying digital divide that we already have with, you know, depending on how you count a third or a quarter of the world without true broadband access and affordable internet connectivity, how do we not replicate that in the AI world and have an AI? Divide? And we and others are spending a lot of effort building subsea cables, for instance, to make internet, more accessible and affordable and in Africa and other places. But what are kind of cross-sectoral, approaches on that?

And then, you know, we have universities, small businesses, others who need to be part of the R&D ecosystem, but often because of, either, the, the unavailability of specialized data sets or the expensive compute don't have access. So, we have, efforts like the near the national AI, research resource that is, being, stood up in the United States to help make those kind of resources available to democratize, research. We talk about the need for something like a greater, like a global, resource. So, this is all sort of, as part of the innovation, infrastructure ecosystem. The second is workforce. And, ensuring that we have an AI ready workforce. This is a super complicated area. And, particularly with some of the other folks on the panel, I'm reluctant to talk too much about this because there are deep, deep experts on, on workforce issues.

But this is a very complicated, area. And I'll just mention a couple of ways that we have been thinking about it, I think both at Google, but other others in the tech sector, one is ensuring that there is broad familiarity with, I think, you know, in the same way that numeracy or, you know, reading literacy is expected for, out of our schools. We're going to need the same. Thing for me. If we're going to be in a sort of AI centered economy in the future, or at least AI powered economy, you need that broad availability. Secondly, is sort of the skills to jobs pipeline. We have a challenge in the United States, right? Which is it's both a challenge. And, and an attribute which is we have a very, mobile workforce, where labor moves, quickly. And that can, can, can allow for, for a very resilient and flexible economy. But it also means that firms sometimes have less incentives to invest in long term training. How do we address that?

And one way to do that is to identify in need skills, provide training of those skills and credentialing so that others can recognize it. And then a pipeline to jobs. And rather than, you know, needing a university degree from a fancy university to get a job at exercise, if you need to be an IT support person or a cybersecurity professional. Those are concrete skills which we can do trainings around. We've developed something called Google Career Certificate, which is aimed at that, which is sort of, developing these certificates and then an employer consortium who will look at those with the certificates. And then the finally a sort of workforce based, programs like apprenticeship programs. And then the third broad area, really goes to broad and inclusive adoption.

And I think a number of folks have, have referred to this. If this amazing tech sits within, you know, the tech sector and the 5% of American workers who are who are part of digital, services and technology, we will have deeply failed. And, you know, there were some reference before to, you know, superstar firms and different productivity. That's exactly what we're going to do with AI if it's only tech that's adopting this and financial services, which, by the way, also tends to be an area that adopts new tech quickly.

But if we're not doing it across manufacturing, if we're not doing it across agriculture, different service sectors, we're going to see that kind of, inequality and lose out on the, on the, tremendous, benefits. And maybe just I know we're I'm short on time. Just the very last point I would make here, is really the importance of, sort of place-based approaches. And I just wanted to mention, you know, Mark Morrow. Yeah. Here in the Metro program has done really good work. And that whole program and looking at what role kind of, place based, kind of cross-sectoral initiatives, can, can play so that this is not just a coastal story. And of course, there's an international version of that as well.

QURESHI: Thank you very much. Simon, back to you. I mean, looking ahead, there are, as you know, there are differing views currently on how AI, which is the next phase of the digital revolution, how, that may affect, inequality between workers. So, there's one view, which, looks at, AI as, skill bias, technological change on steroids, which will continue or even intensify, recent trends of wage and job polarization, disadvantaging less skilled workers and exacerbating an inequality. Right.

So that that's one view is another view that sees, AI as a potentially equalizing force, which could extend expertise to and, augment and empower a larger, set of, workers. And this divergence of view is, in part understandable because we, do not yet have the full measure of how, AI capabilities may evolve and their impacts. And much, of course, would also depend on our policy, public policies, response. But what's your take on, on this debate? Looking ahead.

JOHNSON: Well, I think we face a really big choice, a fork in the road, if you like, on the one hand, and there's some strong positive. So, what Justine and her colleagues have been working on, I think is very, very sensible. Create new sectors, get science to work, turn science into commercial products, spread that around the country. So, no more of the East coast. West coast predominance will reduce that predominance, although they can displace is going to remain strong. And you know what David and his colleagues work on is also completely understandable and justifiable, which is we want the technology to be available to more people, we want more people to adopt it and so on. But the problem is, and this is what the choice is, and it's a difficult choice, okay.

And I'm not saying anyone is particularly blocking it or being or refusing to do the sensible thing. Here, but the choice is. Although the problem is that any technology like this naturally automates to some extent. So, you are replacing. People doing tasks, as cool said, with machines doing tasks, and one CEO described it to me, the people he felt most in line to be replaced. This is his term, not my term. He called them cut and paste jobs, took jobs that have some routine element, but they're not entirely routine because they were already been automated by what we've seen in the past few decades. Now, if you look at their LinkedIn data, for example, those people are generally between sort of 20th and 30th percentile income earned income distribution.

So, these are white collar jobs. They are maybe not the best jobs. You can make up your own mind on that. But a lot of times their entry level jobs that step up the ladder, some people they are career jobs as well. Now when those jobs go away and I think they will go away, what do those people do if they're able to get trained and something else is able to enhance their skills? If they're able to pivot, that's good, and they may actually earn. We'd hope they earn more money in that case.

But unfortunately, what's happened in the past four decades with the skill bias, technological change that you mentioned and that David Ortiz chapter in your book is a brilliant expression of David, one of my colleagues at MIT. What happened previously in our immediate prior history is that people who had those middle class, middle income, middle education jobs lost them due to technology and also globalization and got pushed down to the lower end of the market, was intensely competitive. You don't earn a premium wage. So, a key question is, what's going to happen to those people who are in the line of fire? People at the top end. And I think many of the people in this room probably will fall into that category, will generally do fine.

People on the lower end having mostly manual jobs, are not going to be that much affected until I comes to those jobs into manufacturing, but that's a ways down the road, as we've been discussing what's going to happen to those people in the middle, and to what extent can we develop technology that enhances their skills, that accelerates the change for them towards better jobs and a better life? That's a difficult question. And that's not a question that is, has yet been completely cracked by people in the policy space, although just, you know, and people many people on the Hill are thinking about this, all people in the private sector, although David and his colleagues and other people and including the competitors are also thinking about this, that is the choice that we now face as a society. And I think as a world.

QURESHI: And just, a quick follow up on that, you partly touched on that and also linked to your recent book, spanning history. Besides this concern about increasing inequality, there is also this concern that, if, age, if, artificial intelligence, progresses toward, artificial general intelligence, AGI, that, that could eliminate many jobs across the skill spectrum. But we also know from history that in the previous episodes of major technological breakthroughs, new tasks and jobs emerged to replace those that were displaced. But there are some who were concerned and asking this question, that with AGI. Could this time be different?

JOHNSON: So, look, it's a fantastic question. And we could spend days and days discussing it. We don't know yet because we're a long way from AGI. But the key point on the history is here. We do know which is sometimes big technological breakthroughs have generated lots of new tasks and an

increased demand for labor and rising wages. And sometimes they haven't. Sometimes big technological breakthroughs generate a lot of wealth for a few people, and they undermine the existing jobs, including the well-paying jobs for others. Now, people may still have to survive, but getting pushed down to a subsistence level of wage is not anybody's idea of a fantastic technological transformation, is it?

So, I think the AGI is an important issue, and I know and I'm happy to join debates on that. I think what we're facing right now is something much more immediate in our faces and unavoidable, which is what happens to those jobs in the middle. Are we going to further hollow out the American economy and American opportunities and become more polarized from an economic point of view, which feeds into other forms of polarization? I think there's lots of evidence on that and what happens in other industrialized countries, and then what happens in the developing emerging world? Can they find their own path, as Victoria was saying, or will they get pulled into this, particularly because I think, well, my colleagues who work on bringing AI to manufacturing have a lot of work to do, but they're very busy and they're trying to bring it to manufacturing. And that could also have an impact, as you said at the beginning. It's cool said about on the labor-intensive, labor-intensive sectors that some countries rely on for that. Well, most countries have relied on at some point for their economic development.

QURESHI: Yeah. So just in, moving from labor markets to, product markets, from workers to, to firms, there are also challenges for, public policy, to ensure that markets, remain competitive and inclusive as they are reshaped by technology to, check the rise of monopolistic structures, keep the, playing field level for firms and also to guard against, risks of misuse of data and technology. So, there are new challenges for public policy, relating to, competition policy and regulatory frameworks now in Europe, important, new, regulatory frameworks have been put in place.

The General Data Protection Regulation, the Digital Services Act, the Digital Markets Act, and most recently the AI act. In the U.S., there has been action as well. For instance, the president's executive order on the recent tightening of antitrust enforcement, and then there has been, also, some buildup of, reform, momentum in Congress, but so far, major legislative success as in Europe. Here has been

elusive. So how do you see this, this policy agenda that progress on this, in the US context? And also related to that, the need for international, coordination on this agenda?

GALLEGOS: Yeah. Thank you. Zia, that's our great questions. And I want to talk about sort of the shape of the change that we are trying to drive in the US economy. And I think a really central question that everyone should ask is what change? And specific shape of the economy do you want your government creating and what should that economy look like for you? And that was one of the central questions that we set out to answer right at the beginning of the administration. And you saw one of the first actions that the president took was set up a really first of kind novel competition council, with a focus on looking at the shape of the US economy and how it can better work not only for firms to enhance competition, but to really think about how competition can put workers first and how workers can be central to economic growth and really prioritized in competition.

And so that Competition Council, included over a dozen agencies and over 70 different actions to date. To think about how, competition policy across, all sorts of different, policy sectors from financial, regulatory, spaces to technology spaces to, broader industrial strategy are really putting workers first. When you think about a few examples, as you mentioned, for example, the FTC most recently, put in a non-compete ban that, if finalized in its current form, could raise wages by nearly $300 billion annually for over 30 million workers. So, there are a bunch of examples of how we are trying to prioritize, really, putting workers first in all of our policies.

And you see that reflected also in the legislation that has already been passed in Bill chips, an era where when we are making these regional investments in specific sectors, we are incentivizing, employer employee centric, opportunities. So, for example, in the Inflation Reduction Act, which is the largest climate action in history, you see a ton of incentives for companies across the clean energy spectrum. There's about 38 different sectors that are invoked, in the clean energy transition. And there are a bunch of incentives to produce and manufacture, new innovative technologies, particularly here in the US. And when you think about the government, incentivizing production in sectors that we really care about, that, of course, is great.

We want to be spurring new economic growth, but we don't want that economic growth to just all go to firms and be really firm centric. We want that to be, in fact, in communities across the country. And we also want that specifically to be incentivizing good jobs for everyday people. And so, when you look at the incentives and what's in those incentives for production of new manufacturing, there are specific rules tied to a lot of those production incentives for companies for the shape of the jobs that they will create. And so, you see a lot of union activity that's being spurred, a really novel union activity across the country. So, these are good paying jobs, often jobs that don't require a college degree, they're being triggered by public investment.

That's then being followed on by private sector investment. So, there's really strategic intention. And a lot of that, federal government investment. And then when we think about AI, I also want us to think about sort of the shape of the policy that we are trying to trigger. And we've been really intentional in our approach, noting, we, hope for legislation, but yet to come. One of the first actions that we took around AI a few years ago, before this sort of took over, every conversation that we were thinking about, was create a first of kind blueprint for the AI Bill of rights, which, if you read it, has a number of principles that lays out really how workers and everyday folks should be centered as we think about the technology transition that will come and that we knew was about to come through AI.

And so first laying out those principles and then second, you see, as I mentioned, the, AI executive order last fall, which when you look across the, I think it's over 150 executive actions at least. Have been put out by our administration. This executive order is the largest. Executive order to date. There are hundreds of new activities across. I think it's nearly every agency and government that have been spurred. And so, when we think about all of those activities, the intent is both to harness the potential of AI, in driving economic growth, but specifically to also make sure that we are addressing the potential challenges. Specifically, those challenges might be posed for communities and specifically for workers.

And so, you'll see many actions across the federal government focused on online safety, on privacy, and also on, addressing alignment and shared practices with international partners. And so how we are trying to use that executive order and all those policy actions to spur further aligned activities, both

at the federal level, hopefully at the congressional level, but that actually trickles down into specific, both job opportunities that, enhance the quality of those jobs for, everyday workers across the country, but that also enhance, protections and safety.

QURESHI: Thank you. Justina. David, if I may turn to you, the, the tech industries, response to, to the competition policy and regulatory agenda relating to digital markets. And now AI has been a mix of, defensiveness, resistance, but also support. For instance, some, tech industry leaders have expressed support for, AI guardrails. I was just, earlier mentioning to, to sign on that, open AI, CEO Sam Altman, has expressed support for, a new international agency to regulate AI, citing concerns about risks of, global risks from, from, misuse of advanced AI system. So, from the perspective of the tech industry, how do you see this, this agenda, the need to strike the right balance between, promoting innovation and, managing innovation, responsibly and inclusively? Right balance. So, as we avoid both excessive regulation and insufficient, regulation. And at the right time. Right. These are all the hard questions.

WELLER: Well, thanks, Z. And I will try not to answer the question, defensively, or I will say also, I don't speak for the tech industry. I'll give you I'll give you my, my views. Look, our, our CEO said a few years ago that his line was AI is too important not to regulate and too important not to regulate. Well, this is obviously a deep, important, transformative technology and regulation needs to play a role. And as you say, what's the line between too little and too much regulation? Maybe I'll just talk about 3 or 4 principles, that we've put forward and how to, how to think about these questions. I think the first is really taking a very risk-based approach to AI regulation. Part of the problem of, honestly, the whole AI conversation is, you know, what is AI, right?

It's it is a broad field of science and technology that does everything from, you know, keep spam out of your, phone and help you get to a place more efficiently and help you do customer service, more seamlessly to potentially, you know, something that your bank is using to make a loan decision or that a pharmaceutical company is using to discover a new, drug. Right. So, it's many, many different things. And like other, like, many areas of technology, we should be regulating technology and where it meets the world. We should not be trying to regulate the underlying science and technology.

So, another way to think about it is sort of what are the outputs, what we and again, in some of my examples, the first couple of examples. Sure, you need underlying rules around privacy and competition enforcement, in how a company is deploying AI for your, you know, map directions. But it's probably quite different than if it's used by a regulated sector for decisions about, you know, money or your life. So that risk-based approach that's focused on uses, the couple of other quick things I'll say is impact. And it's sort of a corollary to this which empower existing regulators. Sometimes we have the notion that all this AI stuff is brand new. If we're using AI in employment decisions, guess what? We have the EEOC.

If someone is if an employer is discriminating using AI systems, they should be held accountable there. Similarly with health and safety issues, regulators need to be empowered to do that. They need the right knowledge about AI. You need the right powers. And there may be gaps that need to be filled. But let's look first to them before sort of coming up with the new, you know, agency of AI. And then maybe just the final point I'll make is the importance of international alignment. We are every country in the world is thinking about these same issues. And if we take 100 different approaches to the same questions, boy, are we not going to actually ensure that AI is deployed in a way that meets our common goals and we're just going to end up in in major policy cacophony.

QURESHI: Thanks. Victoria, in terms of this international, cooperation agenda that we, touched on, a little bit, just now, particularly in relation to one area of collaboration, which is the regulation of the new technologies. So that is one area. Another is, to assist countries in adapting to, the new technologies and to the, shifting, economic paradigm. Right. So, what, policy priorities do you see? Cross-cutting policy priorities, for developing economies in recalibrating their growth and, development strategies, recognizing that it's a diverse group, developing economies. And in that context, how is the world Bank, supporting, it's, member, developing countries?

KWAKWA: Sure. Thank you. Look, I think that, for countries in Africa, one of the, the main, policy priorities or priority areas of action is really opening up, digital markets, you know, in structures, because a lot of them have come from, you know, monopoly, settings where you have one public parastatal, you know, just doing everything. And that has not made room for competition.

You've had some unused, government infrastructure capacity. You also haven't had the private sector be able to come in and support the provision of infrastructure, you know, which they couldn't do. And so, I think the first priority is really opening up these markets, you know, allowing other players, private players to come in, compete, drive prices down and also bring resources into the provision of infrastructure and therefore promote both access and affordability of services. And so, we're supporting that. We're doing some of that work in Senegal through what we call policy based, support or policy-based loans, which is really around changing policies, and so on. I think the other thing is really, again, in terms of affordability and equity considerations and making sure that the poorest of the poor are served.

So, instances where public sector, has to provide subsidies, to the private sector to service some of the most remote areas and, in all, in all the facets. And so, policies around that very being very deliberate to make sure that the most vulnerable are not left out. Of course, the pricing of devices, you know, a lot of people don't use, some of these technologies just because devices are too expensive, you know, it will take so much of your monthly income. And so even how do you work with the private sector? You know, it doesn't all have to be by the public sector, to make sure that there's affordability in access to devices. I think these are very important issues. Then, of course, with use. It's also skills, you know, in digital literacy.

Again, people don't use it because they're not literate enough. They don't know how to use it. Some of it is very basic training and skilling up. But really, needs to be done. So, this is also an area that we're working in. We're working with the private sector to provide basic, literacy, particularly for the youth and for women who tend to get left out. We are doing some of that in Malawi. We're doing that in Rwanda and several other countries in terms of, and then issues around the data privacy, cyber security is also important because right at the beginning, you want to build trust and. You want to let people feel that you know they're being protected and their information is being protected.

And then in terms of collaboration, we're also working with the WTO, to help countries, really put in place their regulatory frameworks to enable digital trade, you know, and e-commerce, which, you know, is picking up in quite a few African countries. But what's the regulatory framework that would

enhance it that will allow more people to come into that space and, you know, be able to earn a living? We've just announced a program in eastern and southern Africa, to work between now and 2030, to provide to, to double access in the region, to provide, to increase the number of people who use, digital services or digitally enabled services, both, 100 million and 134 million, to be precise, and also to support governments and work with them, to increase digital IDs and so on, which could be the basis of service provision in several areas. So, we we've really stepped up our work in this area. It's a huge agenda for us. We, as I said, see the promise. But lots on the table still to be done. Thank you.

QURESHI: Thank you. Interesting. So, let's, now open it up for, questions. From the floor. If, you, please raise your hand if you would like to ask a question and, a hand on, handheld microphone will be brought to you. And, when asking your question, please identify yourself and your affiliation. And if you wish to address, your question to a particular panelist, please indicate indicates so. And lastly, please keep your questions short so we can accommodate as many as we can. So, who is the first? Lady. The lady there. Yes. And then the gentleman here. And so, we will take 2 or 3 questions and then, get back to the panelist. Yes, please.

AUDIENCE MEMBER: Hi. My name is Paul in the U.S. Department of Treasury. My question. Well, because the of the very high cost that we associate with AI development or any other advanced technology, it naturally leads to monopolies. But then there's a pushback from various governments in the US and in Europe as to how we're supposed to handle that. So, any thoughts on that? Whether how can we reach that balance between maintaining the few monopolies? Because, well, that's the natural way to do this, but also encouraging more competition. And then just a very quick question about, what do you think about the fact that Europe does not have their own large companies like Google and Microsoft? I mean, they're lacking in that area doesn't mean like the world is pretty much going to be divided between the haves and have nots as far as technology is concerned.

QURESHI: Thank you. Let's take, two more questions and...

AUDIENCE MEMBER: Hello. How are you? My name is Reggie. I'm with the, IMF, Youth Fellowship. So, I'm here in DC. I came from Jordan and. Yeah. So, throughout the conversation, one thing that, we've been working on, in Jordan and specifically in the wider Mena region is, youth unemployment and unemployment in general. We have like in Jordan specifically, we have 47% unemployment rate among youth. We're talking 18 to, 35 years old, and, and the general Mena economy. And I'm sure this, that's, that's a reflection on the wider global South is that it's highly, SME based and micro businesses based. So, my question is, if, like, what would you advise policymakers in, those regions to, to help deploy technology to, kind of combat unemployment and also, do we need more, disruptive tech companies in those areas and do we need them more? Generally, now in this era, we're having lots of them, especially, with the tech layoffs. Are those a solution for such economies and to enhance the global economy in general?

AUDIENCE MEMBER: Yeah. First of all, thank you for sharing your thoughts today. It was very engaging and insight insightful. And I'm Ian I'm a master's candidate at Harvard School of Public Health. I want to ask you about your effect of technology. Technology has the potential to drive economic growth, prosperity and productivity. And at the same time, in many cases have shown that it can exacerbate inequality. For example, a quarter of the US population in rural areas lacks access to the internet. And another example is that some countries, like Bahama and Nigeria, implemented censored bank, central bank, digital currency. It has many other benefits, but at the same time, there are many issues from the perspective of, financial inclusion due to the lack of digital literacy, especially for those who live in rural areas. So, I want to ask to, Doctor David, how to how do you propose to, to balance this, to your effect? Thank you.

QURESHI: Okay, let's, we'll come back to, a couple more questions. I so, a few additional hands, but let's, get back to our panel. So, who would want to, take, one of those questions, and. Yeah.

WELLER: I'm happy to respond.

QURESHI: And we will...

WELLER: On the, on, the first one. So, look, I think with respect to I, this is a very new and emerging space, in particular generative AI. So, I think the market, the market dynamics are very much in flux. But I would just note a couple of things. And maybe to challenge a little bit the premise of the question, that, the costs are so high that it will be sort of a natural monopoly. So, you know, right, there are different key ingredients, as you know, right, in terms of AI development, when you think about, the, the data side, ChatGPT many of these other models have largely been trained on the web crawl on the open web. Right. So that is available to anyone. A big, bottleneck area has been computed and the cost of compute. But the cost of compute, both because of efficiency of models and because hardware is getting cheaper, has dropped and is dropping very, very quickly.

So, it's been going down. The cost of training models are going down something like 70% a year over the past five years. And it I think most people expect it to continue. It doesn't mean that these things are inexpensive. They are the third thing I would say is just sort of what's like looking at the market, right? I mean, not until two years ago no one heard of open AI. Now they did later get a big investment from Microsoft. But, you know, as a company that was not part of the ecosystem, there is tremendous VC activity. In fact, many people think it's probably overheated, but we just see a lot of startups in this space at all layers of the stack. Something like 150 AI chat bots were, introduced just in the first half of last year, for instance, in terms of model availability, we have, yes, you know, Google, open AI, others, but we have many others as well, you know, cohere, Mistral, character, AI, Alpha, Alpha, many other companies, which, you know, again, you know, they've been able to raise funding in order to train.

And then the last thing I would say is sort of the open-source piece, there are a lot of open models now, again, whether it be Lamar of Acuna or Google's own GEMA, Jeep 42, that others are building on top of. And it's much, much, cheaper than to train and fine tune on top of that. And so, I think that's part of the reason it's sort of honestly been such a frothy market. So, I think time will tell. It's right for competition authorities to pay attention and to look at, make sure there's not anti-competitive conduct going on for sure. But I think it's way too early to say that the economics of this are going to lead to, you know, two big players or three big players in in AI at any level of the stack and seven.

JOHNSON: So just as a counterpoint to that, I think monopolies are always very dangerous and damaging to the public interest and including if you've got a couple of companies dominating a space, which is where we are now. But David. Right. It may change. I think we also have to worry about algorithmic collusion, not a term I've invented, but you can go look it up and add something to that Wikipedia page if you want that. That's going to be a very important issue also. But I think more than just the market structure conventionally defined on the second and third questions, I think what you're articulating. Correctly and quite effectively is there's a lot of demand in the world for better solutions to youth unemployment problems, to public health problems and access problems. So, we know there are analytical problems.

We know there are complex. Potentially problems that can be addressed with better computation and with better algorithms. But the, focus of the companies that are driving this space, including all the competitors David talked about, is not, I would humbly suggest, youth unemployment in in Jordan or public health problems in rural America. It's not thereafter, you know, digital ad dollars for, you know, Facebook and other types of opportunities because that's where the money is, right? So, the way you count, and I can say this because I used to work at the IMF. Go talk to the world Bank. That's what you got to do. Because what you need to do is organize by purchasing arrangements where maybe Jordan isn't big enough, but all other countries that have similar issues can get together and say, look, here's a problem.

Here's a problem facing a billion people. If you build it, we will buy it. And we know we're here at a specifications. Who's going to buy that for us? Same thing with the public health from the world Bank leads on vaccine development, for example. And they've done this for many other things. Tactical eradication for example. So, if you articulate, the market demand and put money behind it, people will build to it. But if you just complain about it in conferences like this, nothing's going to happen.

QURESHI: Any other quick replies, it will take more questions.

KWAKWA: I like your suggestion that, you know, in response to the youth unemployment, and this is a major issue in Africa. You know, you have a huge youth bulge, no jobs. So really coming together to

see what the right way might be to, to really get at how these technologies serve this problem. It's an important one. I still go back to things that the governments, individual governments can do. I go again to the literacy, challenge. Human capital levels are really still low. And then a lot of the problem is also because these very small firms are largely in the informal sector. And so, it's very hard to organize around how you reach them in a systematic way and support them. But access to finances is one of the challenges are we're seeing younger people get into startups and try to really create something, for themselves. So, policies also to support startups and to help them navigate, the space, would help. Yeah.

QURESHI: Justina, you wanted to...

GALLEGOS: Yeah. Too, I think all three of these questions where investment is going and where economic activity is being triggered, I think is really important. And if you go on to invest.gov on the white House website, there's a new tracker that we put out of where all of the federal investment that the US government is pouring into, sectors across the country is going and you'll see hundreds of little dots across every single state in the country. To exactly the question that you raise of firm size. And we want diversity of entrants at the firm level to increase competition, but also to drive further innovation in all those critical sectors, but also to enhance economic activity in every area of our country. And you see that happening across Bell chips.

And I write this three mega, pieces of legislation, driving really novel innovation in, new areas of our country. So, there are, hubs popping up in Georgia, in Nevada and Arizona, places you wouldn't necessarily think of as big drivers of the US as next innovation. Curve, you can see, big investment hubs popping up in Ohio, upstate New York, North Carolina, Idaho. I could go on. But when you look at that map, I think it really gives you to your question of broadband within. Bill, there is, an intentional focus on broadband in rural communities, but I would say that that's spread of entrance, but also the literal place based spread, of, public investment that is triggering historic private sector investment is a very intentional think approach to economic development that, both we are learning from in real time, but that we also hope to, continue with further investment.

QURESHI: Thank you. There was one hand there. So, I think we are we have just, we can take two more questions. So, that one hand was there already maybe one there.

AUDIENCE MEMBER: Yes. Hello, my name is Yahya. Finishing with the United State of Africa 2017 project as well. I usually don't have a question. I usually make a suggestion to the panelists and afterwards a suggestion for the Victoria Bank banker, the professor of entrepreneurship. I was at the AWS summit two weeks ago and at the Amazon booth. I came back and there was something they were doing, and then they said. I said, what is? She said this? And then she said to me, ask the question. And we asked if they think the question, what are the benefits of a united state of Africa? And I said the results that came out, I said, up, and I sent it to all the presidents of Africa to read it. So, you do that in the world Bank and then with your cousin IMF, let them do that too. Okay, I know you understand why y'all are wasting your time talking all this nonsense about Africa Global Development.

QURESHI: Okay. So, one question, last question there, yeah.

AUDIENCE MEMBER: So, my name is Sophia. I'm from Mecates Research Center. My question is, I think, I think, someone can ask who thinks is the best I have just in mind, how can we protect like sound financial regulations and one specific sector when we know is like it's emerging, there are a lot of innovation, it's also very difficult. And we need to learn a law like day by day. And I. I heard of all like Sam Altman from open AI being interested. And I like how we also protect consumers and actually American citizens to be lobbied by those huge industries who have a lot of money in order to protect their interest. And this is just my open question to everyone.

QURESHI: Yeah. Thank you. So let me add one final question. We are running out of time, to this, which came up in the, in the, from our, online participants, which is, should government take a more active role in influencing the direction of technological change? I mean, technological change is not exogenous. So, as Danny Roderick, who is a paper in our book, said that the discussion should not only be how labor should adjust to technology, but also about how technology should adjust to labor.

So, so should, is there a role for a more, more active role for government in influencing the direction of technological change, including toward more labor friendly, technology and its, innovations, the way it is deployed, ways that, augment rather than displace labor and avoid what, Simon, your coauthor, their own calls, excessive automation that destroys jobs, without, increasing productivity. So maybe, one minute each, in terms of responses. And then we will conclude.

GALLEGOS: Sure. I think, to that question, we would say emphatically, yes, that government can and should, have a role in shaping economies. The government certainly shouldn't be in the role of picking winners and losers at the firm level. But at the sectoral level, you can see across bill trips and I area those three big pieces of legislation, clear direction in sectors that we think will drive economic growth, specifically inclusive economic growth. See big investments in, the Chips and Science Act, particularly in the semiconductor industry, to manufacture semiconductors and then to create a really robust R&D ecosystem that will help the US maintain and leapfrog in that specific technology because it undergirds so much of our economic growth.

You see, in the Inflation Reduction Act, a huge focus on 38 plus sectors that will be critical to the clean energy transition, which we know when the president says, he thinks about the clean energy transition, he thinks about jobs. And so centered in every one of those, incentives in the Inflation Reduction Act are specific, worker centric, elements of that policy. And then and the bipartisan infrastructure law, you see a huge focus on the underlying sort of roads, bridges, broadband that we know are critical to enhanced economic activity. And so, we would say emphatically, yes, both. There are sectors that are specific to economic growth that we are actively investing in, but also the shape of those investments can and should work for everyday communities and workers. And you also see that, and the arc of those investments is 1 to 7.

JOHNSON: So yes, governments should act in this space. I think Justine and her colleagues in the Biden administration have done exactly the right things with a lot of bipartisan support. Emphasize that, and I hope they do more of it. And I hope that this scales up, and I hope that other, governments that have a sufficient capability around the world learn the lessons. It's not one size fits all, but I think there are lessons for industrialized countries and for emerging markets and maybe for some others.

However, the question I think does raise two very important side points that we shouldn't let slip by. One is what about consumers? I think there's a fantastic opportunity for someone to build AI tools that help consumers redress the balance. Vis-a-vis large companies, including the financial sector where many people are taken advantage of, because they don't really understand the products and they and they can't navigate their way around what's a moderately complex set of AI products.

That's something that could be taken on. It's not trivial from a regulatory perspective to get it right, but it absolutely can be overcome. And that would be an amazing use of AI tools could be done by big companies, could be done by smaller companies. That opportunity is there to be touch right now in the US and around the world. However, there is another very important point with regard to finance, which is as these models become predominant, what you're going to see presumably, is a lot of convergence in certain sectors towards almost. So, the remaining players will use very similar sorts of models. In finance.

That's particularly dangerous because it'll exacerbate the boom bust cycles that we get. And we've already seen plenty of we've already seen plenty of copycat crises, but lots of people pile into mortgage-backed securities or whatever else you whatever else the fad of the matter was. This is a regulatory concern that I'm afraid is going to have to be watched very, very closely. And it's going to be hard. It's almost certainly going to play a role in the next serious crisis, whenever that comes.

KWAKWA: Thank you. I would also say yes. I would say yes. But smart, you know, because you also don't want to have government intervention and government action that really defeats the purpose of what you're trying to do, creates more distortions, keeps people away from the services and the benefits of, technology. But clearly an active role, at a minimum, to ensure that it's more equalizing than an equalizing by taking care of, what is needed for the most vulnerable groups, is super important.

So, so, if you look at Africa, a lot of what is happening now is we're taking technology, from we're not doing a lot of technology development yet, you know, so part of it is, is really how government policy ensures that these technologies can be rolled out with maximum benefit and impact, for productivity,

for growth, for people and also, an active role, to, to promote, research and development that would lead to some innovations, coming from, from Africa and emerging countries as well. So yeah. Thank you.

QURESHI: So, David, you have the last word.

WELLER: Yeah. So, I agree with a lot of what was said. I think first on Justine's point, very much agree that government policies can help shape investment, particularly where there are either market failures or strategic reasons for investment in a sector that the private sector isn't otherwise in addressing. And the bipartisan Chips act is a great example of that. Things like grand challenges are a really good example of that. What are big public health or other challenges that we're facing that you need to enlist? Private sector interest in, in, in addressing. The second thing I would say, and picking up on Simon's Point is on government services.

And this is another way in which, utilizing technology and AI to deliver government services better to solve, collective problems more effectively, whether that be around climate, whether it be delivering services during COVID and unemployment support or job training. Right. And then and then I guess the third thing I would, I would say is, and maybe this is a bit of caution, that question of, you know, one part of the question was, how can government policy kind of shape technology towards labor augmentation versus labor substitution? I think one real challenge there is, how do you know that in an ex-ante way, at the technology level? I think that's a really, really hard problem.

I think over time we have seen that, new technologies, if do much more than labor substitution, if they're true general-purpose technologies, they are creating all kinds of new occupations that we haven't thought about. The recent paper from David Autor, I think found that, like the majority of U.S. jobs now are in occupations that didn't exist in 1940. Right. So, you know, we have computers that took away certain jobs of kinds of, you know. You know, certain kinds of accounting jobs or secretarial jobs. But they created, you know, the software engineer class where there are millions of people working. So, it's just very hard to know some of that in advance. So, I think there is a role for government, but it's got to be very carefully done.

QURESHI: Well, thank you. We are, out of time. I would like to, this has been a stimulating discussion, and I would like to thank our panelists for their, insightful, contributions. It's, it's both, an exciting and challenging time of change. So, let's, give our panelist a big round of applause. And I would also like to thank all the participants for joining us and sharing your, comments and, and questions. We will, post a recording of this, event, on the Brookings website, and it will also be available on YouTube. So, thanks again. Thank you to the forum. Thank you very much.