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PEOPLE OVER ROBOTS:
HOW POLICY DISTORTS DECISIONS AROUND AUTOMATION

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GREG WRIGHT: All right, well, go ahead and get started now. Welcome to Brookings and welcome to our People over Robots event. Thank you for joining us here at Brookings. And thank you also to those of you who are joining us online. I'm Greg Wright. I lead the Workforce of the Future Initiative here at Brookings in the Global Economy program. And today, we will indeed be talking about the workforce of the future. And specifically we'll be talking about the ways that public policy can and should guide technological progress toward the workforce and the society that we want. So my job is just to briefly introduce everyone, our speakers today, and then I'll get out of the way. So with that, let me start with Simon Johnson, who is the Ronald A. Kurtz Professor of entrepreneurship at the MIT Sloan School of Management. Simon was previously the chief economist at the IMF and is now the co-author with Daron Acemoglu of the book *Power and Progress: Our 1000 Year Struggle over Technology and Prosperity*. Simon will be joined on stage by Lant Pritchett, who also has a very long resume but is currently the research director at Labor Mobility Partnerships. He's also a fellow at the London School of Economics and is affiliated with Oxford School of Government. And many of us know land for his influential research on economic growth, labor markets, education and other topics. And finally, our moderator today will be Matt Yglesias, a journalist and a prolific writer on policy topics, who is a columnist for Bloomberg Opinion and the author of the newsletter *Slow Boring*. So without further ado, let me allow the speakers on stage and I'll pass it over to Matt.

MATT YGLESIAS: Everybody. Thanks for coming. It's really great exciting for me personally to be back at Brookings live for the first time since the COVID 19 pandemic. It's good to see you. No in-person events coming, coming back to life, but we are, of course, also operating online these days. There should be an opportunity for people who are watching virtually to submit questions that way. And if you want to tweet about this program, we have the *PeopleOverRobots* hashtag so that you will be identifiable by the robots who run Twitter. They can they can promote discussion on this subject, you know, which is an important one. I think we are all sort of thinking about how to interact with advances in technology that seem to be happening very rapidly in the artificial intelligence space, and that exists on a policy level as well as as a personal level. So I consulted ChatGPT to see what is thought, I should say by way of introduction here. It thinks Lant is still at the Kennedy School. But that's that's not that bad. It comes with a disclaimer that no information since 2021 is available. I think that kind of like a decent guess at what Simon and Daron's book is about, just based on general knowledge of them. And it wants me to say that in our increasingly interconnected and technologically advanced world, the challenges and opportunities presented by automation and labor mobility are more relevant than ever. This book offers a comprehensive analysis of these issues, examining the roles that governments, businesses and individuals must play in shaping the future of work. It also highlights the importance of fostering a more inclusive and equitable global economy, as well as the potential consequences of failing to do so. I think that's about right. But, you know, it's a very big picture book. A thousand Years is it's a grand sweep of human history, much bigger than just the kind of latest chatter about these these AI bots and things like that. So can I ask Simon to come up first and let people know what's what's going on?

SIMON JOHNSON: Thanks a lot, Matt. Okay. So I think Matt has laid out a pretty good challenge for us today, which is to do better than our representative bots could do. Right? We could all appoint an AI to just have this discussion and maybe in the future we will. I do also really like the title of this session. I think maybe we should have chosen this as the title of our book, *People Over Robots*. It's a little dramatic, it's a little bit in-your-face, but I think it's entirely appropriate, including the question of, you know, when we get together, when we had this kind of discussion, when we go back and forth, we think we're special. We think we're we're good at some things that we think the algorithms can't yet do, including the human interaction, understanding, context and so on. Is that really the case? I think this is a good a good test today. And the robots will be using this against us if we if we don't if we don't do very well. So the book is *Power and Progress Our Thousand Year Struggle over Technology and Prosperity*. And I will give you the very short summary of that. It is a thousand years sweeping history that we try to put before you. And if anybody claims they read the book in, you know, in one day, I think we can we can question that. It's a little a little on the heavy side. But we we try to be somewhat comprehensive. We try to look at major technological transformations and understand when these things happened in the past. And you can go back at least a thousand years, you can go back earlier for some pieces. But in terms of being able to have it, we think a fairly accurate picture of what was developed, who had the idea is what was the impact. A thousand years, you've got a pretty robust set of data and historical observations, and there's three things that really come from that that I think are important in general and really important to engage with today, including with Lance

work in the work of LAMP, of course, our sponsor today, working on Responsible Migration, which is a fantastic, fantastic idea if we can get that organized. So the three things are about vision, about the bandwagon effect that really exists, and also what is what really is automation and how do we get the most of it. So the first and most important point is that in every one of these technological transformations, there's always people who are in charge of developing the technology and the revisions, ideas about what is this technology, how can it be used and what kind of opportunities are we going to create? These are entirely socially constructed. And if you go back and look at the Middle Ages or you look at the American South before the Civil War, or if you look at the peak of industrialization in the UK, in the United States, in other initially European countries, there's always this there are visionaries, There are people who put forward the ideas or people say, yes, it's got to be this way. This is how we get the higher productivity gains. But this is entirely something. This is the train that should be and sometimes has been in the past, absolutely contested. So when we say when you say people over robots, I don't think that's just a rhetorical flourish. It's really asking the question, what are you trying to invent here? What is the the the the purpose and the impact of the windmill of the cotton gin of Henry Ford's assembly line, and that those decisions are absolutely fundamental. Two. To everything that happens in terms of how technology rolls out, the idea that there's some sort of technological determinism, technology's going to happen. Just sit back and, you know, either enjoy it or hate it and then try and deal with maybe some redistribution at the other end. That's an idea that we just don't find appealing. Having looked at the historical, historical record, so first the first and most important, where's the vision? Whose vision is it? And whose vision is driving a guy who's who's in charge of this vision? What are they telling you? What is the dominant narrative? It's about, I think, machines replacing humans disproportionately machine intelligence. Let's let's teach machines to play chess better than people. Oh, and then they can run checkouts at the grocery store better than people. So we don't need the people. And we think that that's far too skewed in one direction and one direction of computer science. The other direction that we prefer is one in which you actually design machines and intend for machines to help humans to augment human capacities and capabilities. And if you do that, and if you change the vision, we argue you're going to be happier with the outcomes in terms of the jobs that you create in the U.S. at least. And then we come to discussions of migration. So who's in charge? Who's vision? That's point number one. So point number two is, is there a bandwagon effect By which I mean and you hear this a lot from the tech visionaries, they say, look, Simon and Jerome, you're worrying about this far too much. Technology arrives. Nothing can do about that. And there is a dynamic and there is capital. And certainly innovation happens. There is going to be higher wages. There's going to be better health and there's going to be more opportunity for most people. Everybody is going to gain eventually. Okay. The key word there is eventually. And that's what you always want to dig into. If you look at the early industrial evolution, which started sometime, I would argue in the 1720s with a silk mill outside Derby north of England, where I'm from 1720s in the 1840s. We know for a fact that small children were pushing carts full of coal deep underground in the same part of the then part of the world. So that's 120 years now. Conditions got better, wages did improve. Second half of the 19th century was much better for working people than the first half because countervailing power developed political franchise, expanded trade unions became more powerful. But 1722 18 4120 years. Eventually, if I tell you, look, I hear it's going to change everything. All those cognitive tasks you thought were reserved for humans, they're now been snapped up by chap, including being the unpaid moderator of panels on Monday morning. It's all gone. But don't worry. In 120 years, Matt and Lance descendants are going to benefit. I think you want to say 120 years is too long. How do we get something more immediate? And I think the core of the problem and aligned with this point is this What is automation, right? Automation, Absolutely. Am involved is I think you can define it in as using machines to replace people. Right. So when Henry Ford brought car assembly, car production to an assembly line, when he brought electricity to that assembly line, he replaced tasks that have been previously done by artisans. However, in the early 1900s, the US made about 3500 cars a year on artisanal process. By the time Ford and his and the people who work for him and his competitors were done with that transformative process, let's say the end of the 1920s, US car industry was making around 3 million cars a year. It was employing 400,000 people, most of whom were doing jobs or tasks that people had never done before. So yes, automation does eliminate some jobs. We're not opposed to that. We're recognizing that. We're questioning whether you should focus so exclusively on that in the realm of technology. But what we're also saying is what really matters for the demand for labor. And we're going to talk about which kind of labor, which country and so on with lunch. What really matters for that is do you create new tasks? Are you using this technology to open up new opportunities upstream? Downstream? What is the car? How do you use the car? What are the materials you need for the car? Those are those are the positive transformations that we've had with a

big increase in the demand for labor and consequently with what's backed by sufficient political power and voice. Big increase in wages. And the last point I make or corollary to that, just because I think excuse up last concerns exactly is that if you think about productivity levels and think about wages between countries, there's big gaps that emerged in the 19th century. Last flight was one of the first year of like this. In modern literature, those gaps have not closed, particularly including in recent decades. What is going to happen when I of this chat form the clever cognitive abilities comes to lower income countries? I think that's a that's going to be a technology that is at least as damaging to jobs in those countries as it is in the United States. Okay. Maybe we have an ability to adapt. We'll talk about that. What would it help us to adapt? What would create more opportunity here? What is, though, what is going to happen? There's other countries like. I think is a question. And if those countries are less able to cope. Doesn't that further increase the gap in incomes? And isn't there something that we can do with regard to responsible migration to help either close those gaps or maybe just from a self-centered point of view, address the needs that we have in this economy? The needs are not going to be addressed by artificial intelligence. Thank you.

LANT PRITCHETT: So in order to this mainly devoted to Q&A, I have 10 minutes to change your lives forever. And I think I want to start by giving three big facts that lead to one huge distortion in the way the global economy is now working in the direction of technology and then point out that this creates one massive opportunity. So the three big facts are the demographic facts of the future are already written. We know what populations are going to look like because everybody who's going to be 30 years old 30 years from now, happy birthday. They were born today. So we know demography with some certainty. And what's going to happen is there's going to be lots more old people in the rich countries and lots fewer worker age people in the rich countries. So the demographic pyramid is going to invert, which means there's going to be chronic labor shortages of native born workers. That's just a fact. We know about the future. On the other side, there's going to be 1.4 billion additional workforce aged people in the poorer countries. So this and that again, is just going to happen. That's the first thing. So there's going to be chronic labor shortages of native born workers in one place and a huge surplus of workers, available workers, available movers in another part of the world. Second fact is that the consequence of technology for the U.S. labor force over the last 40 years is not been a linear change. So that high skill got more rewarded in the labor market and wages fell for low skill. It's nonlinear, meaning there are a group, a large amount of jobs for which technology has not yet displaced those jobs because they involve non-routine physical work. They involve things. Computers are really good at repeat repetition. They're really fast at doing repetitive things. But there's a whole bunch of jobs like cleaning a hotel room. I use that example because I stayed in a hotel last night that are actually enormously complex for machines to do, but super easy for people to do so. The second thing is the real question for the future is if we think of the changes in the labor market so far as driving down opportunities in the middle, increasing opportunities in the top, it's also so far been increasing opportunities at the what I call human skill jobs, things that humans still do well. The question is, does technology go after the bottom half of the you? The question is, does technology now go after those jobs, too? Right. The third fact is that there are massive productivity differences between places. The world does not have poor people. The world has people in poor places. So the main determinant of a person's wage and productivity is not who they are, but where they are. And so if you allow the exact same person to move from a low productivity place to a high productivity place, their productivity goes up. They're not in general low productivity people. They're people in low productivity places. Those three things combine to create a massive distortion and a massive opportunity. The massive distortion is that the people in the United States who are guiding technology and deciding what to devote the incredibly scarce resources of super high skilled engineering talent, super high skilled entrepreneurialism ability are responding to labor scarcities that are artificial, driven by policy barriers, not by the facts of the world. We have the most scarce resources on the planet economizing on one of the most abundant resources on the planet. That, to an economist, is not economizing. That's perverse. So the path of technology is being driven by the fact that people can't get people to drive trucks in the U.S., not because there aren't hundreds of millions of people in the world who wouldn't willingly. At the wages and conditions for truck drivers in the U.S. drive trucks, but because U.S. border policy won't let them. And therefore, we're inventing things. So, you know, necessity is the mother of invention. False necessity is the mother of dumb invention. And we're creating, through our inability of having legal pathways for people to drive trucks in the U.S. false necessity. That is, I feel, the world's largest distortion in the path of technology. It's that the technological path is being driven by needs of the rich countries, which are driven by labor shortages, and then those create blowback of the type Simon just talked about. I was in Kenya a few months ago and proudly in the local business press and announced that the French chain grocery chain Carrefour

was introducing self-checkout in Kenya. If there's one thing that the world doesn't need that's bad for the world, it's self-checkout. In Kenya, it's just a terrible idea. So that leads to what I regard as the world's greatest opportunity. The world's greatest opportunity is to change the way that people can work in the rich world so that they can take advantage of the high productivity of those countries. And so the employers in the rich world can meet their legitimate needs for work. The main obstacle to that is political and social. This isn't an economic problem. This is a political and social problem. And we think I think that the way this discussion has to change is we are going to or is going to change, I predict, but needs to change is we need to be clear about. There are two separate questions. One question is who are the future citizens of these countries? Right. And the second question is who and under what conditions are we are we the citizens who control the polity, whether it be Germany or Japan or the U.S. or Australia, Who are we going to allow to work on our territory? Now, traditionally, we've forced those two questions to be very, very tightly linked. And this has created the labor shortage, this has created the distortion, this has created and prevented the poorest, least powerful people in the world from a taking advantage of the opportunities to work in high productivity places. And B has created a secondary disadvantage that they're being swamped by technology that we're inventing because we can't figure out the political and social means to allow them to work in our country. So solving this problem is win, win, win, win. I think that to solve this problem, we need to admit that we need an industry of people who move, people that take care of the functions it will take to create rotational labor mobility. So in addition to the vast expansion in the pathway for citizenship by migration, that will probably happen because of demography. I think we're also going to need people who move rotational. And in order for people to move politically, legitimately and well for rotational mobility, we need an industry that takes care of the five functions of recruiting. We want the recruitment to be unfair, ethically, openly preparation. People need to prepare and train for the jobs they will have placed, who will determine which what people are eligible to work in, which industries in the rich world coming from other countries protected because migrants are very vulnerable and finally returned or compliance. The compliance mechanisms we have for rotational mobility, doing it in the way we're doing are very weak, but we can build effective mechanisms, compliance. I think that's the greatest opportunity for improving human welfare that exists in the world today, and it will change the path of technology because people won't be inventing things because they can't take advantage of what the workers in the world have to offer. Thank you very much.

MATT YGLESIAS: Okay. Well, thank you both for that very much. So I want to just sort of draw this out, make a little bit more explicit what I think you were saying there, because, you know, one one view, I think of the advantage of automation is precisely that. Right now, immigration is a very turbulent political issue in almost every developed country that lots of people feel that it is bad that so many people are trying to come in and that there's then a tension where business leaders and other people are saying, well, no, like it's actually good that we have these migrants, they're meeting labor force needs, etc., etc.. And so technology automation, as Simon is suggesting, is a way of being the masters of our own destiny and saying, look, a social crisis roiling the United States and even more so at European countries is this influx of migrants. And so if we can guide technology to a place where we don't need immigrant taxi drivers because we have self-driving cars, we're now doing exactly what Simon and Iran are suggesting, that we are guiding technology to solve our problems in the world. And L.A. is saying, well, we can we can sort of develop a social technology of letting people work without turning them into citizens and addressing fears in that way. So that's that's what you're talking about, essentially, is that a guest worker type program or something like that? Well, you're giving me the hand, so what is it?

LANT PRITCHETT: Right. No. I mean, yes, very much so. And I mean, I'm glad to use the word social technology because essentially this is a question of are we going to pursue the path of technology, technology, or are we going to create a social technology that allows us to solve the problems in ways that benefit people and in ways that benefit not only the people who are in political control of the rich countries and our, you know, labor mobility partnerships as a global concern. And it's not just the U.S. that's facing this issue. And matter of fact, the demographic concerns are much more severe in places like Japan and parts of Europe than they are in the U.S. But it's a social technology, and we believe we can create a social technology that allows us to benefit people here and people from abroad in ways that eliminate the need for technology. And I think it's about solving the concerns, the legitimate concerns of citizens about order and control. Mm hmm. But the idea that order and control of migration means zero. Migration is the fallacy. We can have ordered and controlled migration that satisfies all the legitimate concerns people have about the

future destiny of who they are as a people without the same draconian limits on who can work there. That's what we're trying to separate. Yeah.

SIMON JOHNSON: So do I agree with this statement of purpose and also the aspirations of light and lamp and so on. I think there's one point that I didn't mention. You mention that I think we should also added to the mix of one of the big facts, which is we're not coming at this from a position of particular strength in the sense that the last 40 years, the automation, the digital transformation, which has been profound across the society and other societies, has tended to be unequal, I think so that as you said, we didn't we haven't experienced the mass unemployment that people were worried about in previous generations. But to the extent people were lost, middle income, middle education, middle class jobs, they got pushed down to lower income jobs. And there's relatively more crowding in that part of the labor market. So at the high end, that technology was quite helpful to people like you and me with through my tea, for example. Full disclosure. Last was the first time I ever had at MIT in a Ph.D. program. So if I seem unnecessarily deferential, that situation.

MATT YGLESIAS: A long history.

SIMON JOHNSON: That was a long time ago. But so so people people on vacation done pretty well but that I think that so there's concern about what now if it were the case of say yeah look AI's coming it's going to raise productivity in a way that is going to be shared through higher wages at the lower end. There's room for a lot more people agree with that. But if people at the lower end feel concerned or, you know, even a little bit paranoid about their economic futures, you can hardly blame them given what we've seen previously. And so and I feels I mean, we don't know the answer. And there are some important differences, including the fact that some of this is going after cognitive jobs in a way that previous digital innovations didn't. But still, I think that's cause legitimate cause for concern at the lower end of the income scale in the United States because of what we've had previously. And I think balancing that with, yes, let's bring in more migrants and they can work in the car industry, for example, How do we how do we match that with. Higher wages, living wages for people already working in the care industry. I think that those are those at the top.

MATT YGLESIAS: I mean, and those are perfectly legitimate concerns. But A, the demographic shift is going to be so dramatic. So in the article in Foreign Affairs, which has the title People Over Robots, there's going to be five. You know, I did quick and dirty calculations, but according to the Bureau of Labor, what is it? The Bureau of Labor Statistics forecasts there's going to be 5 million net new jobs in the bottom half of the U. Things that don't require a college degree, people that jobs that currently have less than median earnings. If you look at the demographic projections of native born, so zero migration, U.N. projections, there's going to be 3 million less people. So we're rapidly moving from a politics that has always assumed that jobs were scarcity to, you know, the concern of governments. And the future is going to be finding people to fill all the jobs. Okay. So I think, you know, these demographic realities are are changing, have been changing for a long time, will change for a long time. But are now here. Mm hmm. In the sense that I invented the phrase there Now for corporations. Labor shortages is a this quarter problem. It's not a ten year away problem. It's a this quarter problem this quarter. Our problem is finding enough people to work. So I think that, B, I think this U-shape is really important because everybody is. Most people's understanding is local. It's like if people at this side of the you which everybody in this room is you, meaning the high end that has mostly been benefited technology. They're thinking about their kids. They want their kids to go as far up the skill thing as they can. Right. I think the solution to the concerns of falling wages is not pushing native born citizens down into these jobs because there aren't enough of them being. People really don't want to take them. And so they're essential jobs, but which are hard to fill. And what I think the way I see your book and now I'm doing this is like economists, usually we just do this right with the demand and supply. But now I'm trying to be at nonlinear parity in my hands. But I think your book is about two things. One, how do we stop technology from exacerbating the fall of good jobs and how do we make that less nonlinear? And second, how do we really move the again, the people in the country to the right? So I think if we look at it that way, we want to stop destroying jobs. We want to upskill the way in which most jobs are, but then we just don't. In that wonderful scenario, we still don't have enough people to fill essential jobs, and we don't want automation filling those jobs, cause I think it's going to continue the trends of the past.

MATT YGLESIAS: Well, so I want to ask you a question about the, you know, changeover over time here, Simon, which is that, you know, since 1970, 1975 or so, productivity growth in developed countries has

slowed down considerably from where it was before. And as Robert Solo's famous observation, decades old at this point, that you see the computer revolution everywhere except the productivity statistics. And I feel like that's at odds with most people's understanding of the contemporary world. Right. Or they see exactly what he says and they don't pay attention to the productivity statistics. And they say, oh, technology has changed everything. But then you look at the productivity numbers and it seems like it hasn't really changed that much. And we all have iPhones and, you know, we watch streaming video and tiktoks or what have you, but it hasn't really transformed the economy, whereas changes in, you know, 1870 to 1970 really, really did. And is that because the pie is that downstream of political change or the other way around?

SIMON JOHNSON: Okay, That's a great question and a big question. Let me break into a couple of pieces. So first of all, and actually this goes back to a point not made. So in a sense alone, we already solved the problem. The word you that worries you back in the 1890s, early 1900s. Right. Because when when people move from agriculture into manufacturing, you had people moving off farms in the Midwest, moved to Chicago, worked for McCormick's Reaper company to make the machines that enabled us to replace the farms. Right. And we did that a time where we created a lot of jobs. Net. There wasn't mass unemployment. There were some cyclical ups and downs, but the secular trend was very good and a lot of immigrants came into the country. That was always it's always been a bumpy process, but immigrants were much more welcome, I would argue, then than they are now. So we know how that process works now. On the productivity slowdown, there's obviously various theories for this and we only run history. I so we don't do experiments, but most likely it's that movement from agriculture to manufacturing into cities, into apartments, building that infrastructure and a whole wave of innovation that also came around the time of World War Two. The washing machine would be everybody's favorite. Saving domestic labor, helping women participate in the labor force on more favorable terms than before. Obviously not. Not perfect. So and a big push during and after World War Two with government led R&D, figuring out that, you know, you can invent radar, you can deploy a jet aircraft, the semiconductor, solid-state semiconductor and so on. So we had a wave of consumer led and government led innovation that sort of petered out. And while you're right that the digital transformation has not boosted productivity in a way that was expected and hope for it has transformed the labor market in the sense that forms automation with globalization, with a change changing corporate culture, which became, I would say, much more antagonistic regards workers in almost entirely as a cost to be cut as opposed to a resource to be cultivated. That combination squeezed out those middle class, middle income jobs. So the transformation was not a productivity transformation. It wasn't like we got this massive bounty that can then be shared. Productivity gains were so-so, and some of the automation that was adopted had the so-so effect. So it tilts the balance between capital. Labor doesn't give you this massive dividend to be shared, but you do hollow out the middle. We've done that a bit more than other industrial countries, but a similar trend has happened in almost all industrial countries. Right.

MATT YGLESIAS: And I guess, you know, to your point, while it can sound silly, people are moving off farms to work in factories and in the factories, they're building the machines that replace their jobs on the farm. But but the point is, is that the the actual like amount of food grown went up as a result of that process. Right? That there was a surplus of greater abundance created so that people wound up with larger homes and, you know, better access to medical care and to infrastructure. And that's, I think, you know, to land. My question is, how do you paint a picture here in which, you know, people are getting more at the end of the day, right? Instead of just talking about jobs that need to be filled, this sort of like moving around on the chessboard. Because I think the difference between, you know, how you see the world, how I think most economists see the world and how a lot of voters see the world is a question of, you know, are we in a zero sum situation in which we are only redefining what we have? And people in rich countries say, well, I like being in the rich countries to one in which, you know, there are there are gains from trade. Like what? What are we going to get more of as a result of this?

LANT PRITCHETT: Well. I think, first of all, the labor mobility driven by productivity differentials, which means when a migrant move, they create a lot more product. Mm hmm. So in the sense of people moving from agriculture to make machines, their productivity in making machines meant there was more. Mm hmm. So, first of all, you're exactly right that often people think that jobs are like apples. Mm hmm. There's a given number of apples. And if I eat one of those apples, you can't eat one of those apples. Whereas the reality is when when a you know, when a person moves to the U.S., their productivity goes up, which means all of their all of their earnings are justified by their productivity. No one's giving a migrant anything. Right. This is

not about people taking away by being migrants. People add by being migrants because they move from low productivity to high productivity. A, b, I think to some extent, the kind of migration we're talking about in the future is playing defense, because if you look to the demographic future, the question is what are you going to have less of because you have incredibly fewer workers? Mm hmm. So and we're already in that dynamic. If you think about care for the aged, it's increasingly. A call to care for the aged and a decent way. And there's just fewer and fewer workers available for those jobs. So just and again, just in the care industry, there's they they forecast and again these forecasts are are contingent but almost a million person shortage of people in the nonprofessional aspects of home health care and personal care. So it's it's going to be for the citizens of the rich world. How much sacrifice are you willing to make to not have people. Right. How badly are you going to allow your grandma to be treated in order to protect your political and social environment? Right. So it's it's going to be what do we get less of because we have less people working. Right. And the productivity gains are not going to offset that.

MATT YGLESIAS: And just fill this out. I mean, somebody will will tweet at me if I say this, you know, they say, well, you know, if you need more compare workers, you know what? Why don't you just pay them more? Which you can do. But to think about comprehensively, if the share of elderly people in the population goes up, for them to receive the same standard of care that we give them today, we need more actual people to do that work. We could recruit them into it by raising wages, but those people would have to not be doing something that they're currently doing. And so if those are people working relatively productively in rich countries already, that becomes a transfer. Right. Whereas if there's a people who are working at very low productivity in poorer countries right now, you have a gain globally speaking, because there's a surplus of labor in sub-Saharan Africa, in Bangladesh and in places like that. So there's a there's a big opportunity or we could have Silicon Valley spending a lot of time trying to come up with robot home care nurses. It sounds like it seems like a challenging problem. And they could instead I mean, we have very good translation software right now, much better than existed in the past. And that can be, you know, a great facilitator to migration. Language barriers are a big problem in human society, and being able to communicate across those divides is is really useful is something we're pretty good at. There's this a lot of potential gains to be made there but it sets us back to to Simon You know, I was I was having dinner with that technology CEO the other night, a big company, not particularly in the air space. But, you know, his view is that people are too down on technology, that we have cost ourselves a lot over the past 50 years by becoming more risk averse about everything that there is sort of too much safety and precautionary principle all around the world. That software has been a kind of blessed exception to this, in which we've allowed permissionless innovation and we've come so far and done so well. And then we have people raising these kind of fears and uncertainties and they're going to drag down software to the same level that we've seen in housing, education, where all these regulatory constraints have led to cost explosion. And really, you know, when we look at the industrial revolution, it did all work out well in the end and it did just just take time for the technology to be deployed. And that if we had tried to slow down the growth of factories, that would have made the transition even even worse and even more painful. So, I mean, what what can you say what's what's a constructive historical example of these kinds of concerns, you know, making things better instead of just slower?

SIMON JOHNSON: Well, that's certainly what people in the 1840 who owned coal mines who said if you regulate child labor in coal mines, that's not just the end of British industry, it's the end of civilization. And I think we should look, most we have we have tried in this society and other societies a lot of laissez faire approaches. Most of the regulation we come to in the US, we come to, you know, after, you know, some ill effects have been manifest in Rachel Carson, I think made this point in the early 1960s that we had it was the Department of Agriculture working with industry that had promoted the use of DDT across agriculture and that had been excessive. And as a result, we've got a bipartisan consensus to be more careful. So it is certainly the case that the software industry has so far largely escaped regulation, and that includes social media and that has had some unfortunate, unfortunate consequences. What the impact of Facebook on Myanmar, for example, is well documented and with regard to exacerbating polarization and ethnic hatred and violence. And when those are brought to their attention, they basically shrugged and didn't do anything about it. So I think there are more or less responsible ways you can run these companies with regard to what's their impact on society. I think they'd be well advised not to brush off the concerns that are being brought up. I also think that regulation in the form of we're going to stop technological progress is not in the cards in this town or any any other Western capital, certainly in any discussion. I've been to Washington DC. Whenever that regulation comes up, some stuff at the back says "China", and that effectively ends the

discussion, right, Because we haven't mentioned this yet, but concern about where's the frontier, What's the competition frontier? What are the jobs or national security operations of being number one or number two? Right. That may that may well matter. So I don't think they're going to face a lot of regulation. I think we're trying to put some more social pressure on them to be responsible and to be careful and to tilt, you know, their visions and their priorities have this massive impact on technology. I think our asked to them is relatively modest compared to what what launches it'll be because Lam wants to change the global balance and that is I think, considerably more more difficult, including when you consider how this technology is going to affect a lot of low income countries. Many of those countries are poor, I would argue, because they have authoritarian systems that deliberately and intentionally keep people poor. The technology being authoritarian has becoming a lot cheaper with surveillance, which we, I believe, will develop with safeguards. I think we'll come up with safeguards. We don't have them yet. Not sufficient safeguards. I don't think China and some other countries will prioritize safeguards in the same way. So to the extent that surveillance technology comes out of this and oppresses workers in those low income countries, that the productivity gap may not widen, but the wage gap may widen. Right. And so are we comfortable trading on our existing basis with countries where this new technology being used to suppress workers and suppress wages in a way that we don't regard as acceptable in this country? I think all of these issues are fetishized, put on the table as a threat.

LANT PRITCHETT: Can I come back? Because this combines, I think your earlier both of your earlier two questions about, you know, if you look at how economists measure economy wide productivity, which is total factor productivity, it has slowed down in every major country substantially, probably. About half. The pace it was until the 1970s. And I think that's at odds with our perception because, you know, Moore's Law is how unbalanced technological progress has been. If you look at Moore's Law, the computing power has gone up by about ten to the 11th. Ten to the 11th is a unimaginably large number. An analogy is the difference between the speed you drive on the freeway and the speed of light is ten to the seventh. So technology has improved more in my lifetime than the difference between highway speeds and the speed of light. That's how big it is. But technological progress in other domains hasn't changed that much. So I just flew here for this conference. That airplane that you fly on flies at about the same speed and carries about the same number of.

MATT YGLESIAS: Slightly slower actually.

LANT PRITCHETT: Yeah. It's slightly slower actually than it did even in in the 1970s. And I think this is an important point because when we talk about the future of technology is not yet written. You can regard some parts of technology as just happening to us. I think Moore's Law kind of just happened to us. What we do with Moore's Law is our choice. But a lot of what's happening with the next stage of trying to automate jobs isn't Moore's Law. They're moving into moving physical objects in physical space, which is a part of technology that hasn't seen super rapid technological change. So we're not a ton better at a lot of human activities. You know, human activities like teaching, The average 17 year old in America comes out of high school with roughly the same skill set as measured by the National Assessment of Educational Progress as I did. That's really shocking, right? Because I remember my high school in America, in Boise, Idaho. We were not doing so well and yet. So I think there's a whole bunch of essentially human activities that have not been Moore's Law amenable. And so Moore's Law has radically transformed narrow parts of the economy that were Moore's Law amenable. But all kinds of human activities are fundamentally human, and humans are just intrinsically good at them. And so what we're now doing with the labor force shortages and the skill and the wage differentials is trying to force technology into areas that are not intrinsically or or inevitably Moore's Law amenable.

SIMON JOHNSON: It's just just a moore's Law, which obviously about how much computation you can get onto certain silicon chips. I agree with what you said from 1970, but from 1994 to 19 seventies, a lot of the growth in computation by was driven by federal research and development, including the key fact that vacuum tubes don't work well on rockets. Right. Which is why you need solid state solid state semiconductors. And that that what they were buying most of the solid most of the semiconductors in the 1960s were bought for US military and space use and well.

MATT YGLESIAS: You know I mean that that sort of state led development aspect of this is fascinating and it's way and you were also mentioning, you know, competition with China, I think, hangs over almost every kind of discussion that happens in Washington these days. China is also going through a significant demographic transition, in some ways more significant than the one in the United States. And I wonder then what your thoughts are on the implications of demographic transformation in countries like China, which while at this point not a poor country, is much less wealthy than the United States. Also, I believe a number of southern European countries have very sort of severe demographic collapse, and I'm at least not accustomed to hearing that much about the questions of sort of countries in the middle right as a potential migration destination. Are there opportunities there? Are there risks for the world?

LANT PRITCHETT: Yeah, I think we can kind of, if we crudely broke the world up into three types of places. One type of place are places that are going through an inversion of the demographic pyramid, which means there's fewer workers to old people. So again, and I say inversion of the demographic pyramid and make this hand signal. Because. Because the media often want to talk about slowing population growth. Right. But the total population is not the issue. It's the way in which population is changing. Because the way we're going to have because people say, oh, we're going to have 2% smaller labor force, the numbers like 2% smaller labor force, who, you know, 2% smaller population, who cares? But the 2% smaller population is lots more old people and lots.

MATT YGLESIAS: And if our if our cancer treatments got much better, that would speed population growth because fewer people would die. But it makes the demographic period more inverted.

LANT PRITCHETT: So so one kind of country is the super high productivity country like Europe, like Japan, like the US, that the demographic pyramid is inverting. These great these countries have the availability to develop a social technology to attract people into work with in their high productivity places. The second kind of country at the opposite end is low productivity places where the pyramid is just getting fatter. So the most recent World Bank World Development Report was on migration. They have these very dramatic demographic pyramids of Nigeria on this standard U.N. forecast. Nigeria is going to have 750 million people. Like so become like nearer. I think it's going to kind of in 30 or 40 years rival China because China is doing the opposite. We'll get to that in a minute. So that creates a huge bulge of people that are more or less willing to move because of the attraction of the higher productivity. Then in the middle, we have this weird category of countries that are already going through the demographic recovery, but they're not super high productivity places. And China is the key example. And by having a billion people, an important thing. So so that raises two things. One is there's going to be a beneficial knock on country for lots of poor countries by the fact that China just can't be the manufacturing hub of the rest of the world, of the rest of the world for the for the foreseeable future. So lots of manufacturing jobs are going to leave China because they just don't have workers for them. The second, though, is that these countries are in deep, deep trouble. Because they can't necessarily attract you know, China is not going to compete with Japan. For workers who want to move from Vietnam because it can't pay the wages of Japan because it's not as broadly a productive economy. Right. So and, you know, the the the swath of Europe that has demographic decline and integrated with the rest of Europe is in deep trouble because you've got inverting demographic pyramids for both demography and outward migration. Right. So it's not going to be a good thing. I mean, why would you want to do elder care work in Portugal if you could do it in Denmark?

SIMON JOHNSON: Exactly.

LANT PRITCHETT: Exactly. And why would you do elder care work in China if you could do it in Japan? And why would you do elder care work in China if you could do it in Australia? So I you know, I have. I just. I'm a China pessimist. I think. I think China hit its apex five years ago. So I think there are security concerns about China. But the security concerns about China that I would have is not. Oh, how do we cope with the rise of China? I think the rise of China is in our rearview mirror. I think our security concerns as a U.S. citizen. And you're not necessarily. Congratulations.

SIMON JOHNSON: Thank you.

LANT PRITCHETT: You mentioned you were born in northern, so, where all of my ancestors are from northern England. But, you know, the security concern I have for China is what happens when it implodes. What happens when all of these things catch up on it and it blows up? That's my concern. Not that China is going to dominate the future because you can't dominate the future with an inverted pyramid.

MATT YGLESIAS: So I think the the international competition question, though, also does speak to regulatory issues. Right. Which is that, you know, ideas, technology can spread from one place to another very quickly these days. I think I just saw it in your homeland. Rishi Sunak was talking about rolling out the red carpet for cryptocurrency companies who feel that they are being oppressed by the Biden administration here. And you know, what kind of global coordination do we need to have to make sort of regulation of these dynamic industries or this kind of guiding shaping possible? Or are we, you know, sort of destined to be to be hostage to whoever is willing to be the most business friendly environment out there?

SIMON JOHNSON: Well, I think it's a good question and very timely question. And certainly we've seen episodes in the past of sort of race to the bottom within well-run countries with strong rule of law, allowing finance companies like AIG financial products to operate, Yes. With less constraint turned out to be a mistake for Britain and for the world economy. I think that that, you know, so we're looking forward and we wrote the book to try and get into these discussions with people on both sides of the Atlantic. I think we definitely see space for agreement on surveillance. So there is already software available that will monitor how you move around the workplace and how you want your body language. So we'll have lines like moving his hands around, explains his colleagues. He's probably in big trouble because it's going to. But but if he gets fired for, you know, misbehavior or noncompliance or whatever, he needs to be able to say, okay, what exactly is it in the software that caused this concern? Right. So having OSHA type appropriate safeguards on the use of surveillance. Now, if surveillance is used to make delivery drivers safer and and to plan their routes better so they have less stress. That's one thing. If it's if it's being used to put more pressure on them. So they have to cut corners literally and figuratively and cause more dangers themselves. Know this. That's another matter. So I think we can find reasonable safeguards on surveillance in the workplace and in society, and that will be an industrial country, G-7 type of discussion. And I think that those technologies should be encouraged. But if you're bringing other more authoritarian surveillance to this developed in China or wherever to the US, I would suggest that you limit the patent protection of those technologies, for example. So those are fairly radical thoughts within industrial property regimes. But I think that the world will divide into surveillance with safeguards and surveillance with much less safeguard. And you should be careful which side of that you fall. And I think the, you know, the technology industry should get ahead of this. I think that this basically good natured whining, oh, you can't regulate us, we're the golden goose and so on and so forth. Well, you know, that's what the atomic energy industry said in the 1950s when the chairman of the Atomic Energy Commission said electricity be free, you know, making making exaggerated promises and saying the things are without risk is not actually in anyone's best interest. And it didn't up when you asked it. It was quite candid that there are risks.

MATT YGLESIAS: Okay. So, I mean. I just got straight ahead. But, you know, maybe ChatGPT is just looking to create regulatory moats around open A.I.. We don't know. So.

LANT PRITCHETT: I really was very surprised ChatGPT said, don't read this book. Don't pay any attention to that man.

MATT YGLESIAS: Maybe I can get some some disagreement going about surveillance, though, because. Because I feel like in terms of what what Lance is talking about, you know, rotational migration. Right. One way to maybe greatly ease people's concerns about labor migration would be to say, look, we've developed this completely comprehensive surveillance panopticon in which, you know, if you go rogue and don't it don't leave at the scheduled expiration of your visa, you're going to be found by the sort of pervasive camera system a drone is going to sweep down from the sky and scoop you up. And that's going to sound, you know, very dystopian to a certain kind of squishy, soft minded liberal. But in practice, it's going to let us have a much more liberal system of migration that creates all these economic gains for everyone. But I mean, but like the civil libertarians are going to hate that, right? They're going to say, look, it's. Better to have a small number of poorly supervised migrants than a large number of really rigorously supervised ones. And we face those kinds of disputes, you know, all the time, I think in in this sort of migration space. And it really does

seem like. Technology that that these other things could greatly improve our ability to surveil people and that that might be changed for the better.

LANT PRITCHETT: That is certainly not what I'm recommending.

MATT YGLESIAS: To be clear.

LANT PRITCHETT: I'm glad you gave me the chance to clarify that. So, hey, when we talk about rotational labor mobility, we're talking about a regulated industry. So we want a well-regulated industry. We think a well-regulated industry can be created. And it's going to have to be a global industry because it's the problem with the way in which most rich countries are attempting to do their migratory policies is they want to do it by themselves, for themselves completely from passing the law to enforcing it. Now, if you make it an industry in which actors in that industry have an incentive to work together, both on the spending side and on the return side, it will be easy to create. I feel that in that the social and corporate and again, organizational technology to make this work smoothly. So an analogy I often use is the airline industry. People fly all around the world and they fly to places in the world. They don't know places in the world. They're completely unfamiliar with the government and the laws, but they fly there because they know that the global airline industry knows if a plane crashes anywhere, a plane crashes everywhere. And so they have developed organizational technologies around the aircraft, around air traffic control, around safety standards at airports that all are brought into compliance with a very high level of safety. That's the vision we have. We can create an industry, a good industry that's regulated and that's glo that meets high global standards for how people are recruited, how people are trained, how people are placed, and how the and how the insurance of compliance with the contractual obligations are enforced. I don't think that's a dystopian technology view. That's like we have all kinds of regulated industries that are incredibly more difficult than regulating labor mobility that work well. I mean, an example I use is gasoline. One of the most dangerous and explosive substances on earth when you look at the energy released from burning gasoline, that's why we use it.

MATT YGLESIAS: Right.

LANT PRITCHETT: And yet, when was the last time you read about people dying in an accident at a gas station? So we have developed the technology to make a very dangerous substance safely, reliably, universally available. There is just no reason why we couldn't do that. Same thing with labor mobility. If we admit as a polity and as our separate polities that this is what we need to do and that this would be mutually beneficial. The people who come would benefit, the countries who send would benefit and we would benefit.

SIMON JOHNSON: I find it reassuring and it even a little charming, Matt, that you think we're not already at the point of with this technology on on the same side. I recently flew to the UK. My passport was scanned when I arrived at the airport. When I went to the gate at Dulles, they said, Don't show us your boarding pass. Just put your face in the right place relative to the camera. And when I arrived in the U.K., I went through the electronic gates there and they said, Whatever you do, do not put your passport on the scanner. Just put your face in the right place to walk into the country. All right. So I think if we don't pay attention to these to these developments and to the way technology is is used and what we give the incentives, you may well end up with that kind of dystopian. It's already certainly not as comprehensive a story as you're suggesting, but I think we want to be very careful about what we allow, under what conditions and what's appropriate and what's not appropriate, because otherwise we will fall into some forms of social control that we really regret.

MATT YGLESIAS: You know, and it is interesting, though, I had to your point about, you know, where are you saving labor at the last time that I saw like a really fast automated passport scanning thing was in Jamaica where I was like, What are you doing? It's like, you know, you don't need to be spending all this stuff in low income countries. I'm okay. We're going to we're going to move into some Q&A here, see if anyone's got a concept there, do you say?

MATT YGLESIAS: [Inaudible].

AUDIENCE MEMBER: Michael Flynn. So first, this is a question for Simon. So I want to ask you something. Thank you. I want to ask you if something is correct and if it is correct. An example to me, your whole

research program, certainly before this book, but including the book, is incredibly compelling that there's there are there are fundamentally two kinds of technological advance of labor, displacing and labor augmenting technological advances, not exogenous Imperial Japan gave up firearms deliberately, and we alter the course of technological advance where I see a lot of smart scholars closing their minds to this argument next door at AEI or in my department at George Mason. I it is when they hear we they hear his jottings we that that somehow there's a technocrat who's going to sit and and I defy the information problem that nobody knows how much tin to produce today much less and nobody knows what technology is going to be needed in ten years. And it seems to me that your message is not at all a technocratic message that says that long before and through this book, it's a it's a message about what political institutions shape where on the contract curve you emerge, and that there are many, many, many different situations that are mutually beneficial. I but but the but the but the outcome the outcome is shaped by institutions. And you mentioned success stories of coal miners or DDT. If you could flesh out a little bit more, the degree to which the best case scenario has been shaped by a bureaucrat in an office making a calculation versus a kind of political institution that led to the outcome you want. And if it's the latter, for example, for coal miners near your hometown or any other best case scenario, what what exactly was the political institution that that that gave us best case shaping of technology in the past? Does that make any sense?

SIMON JOHNSON: Well, thanks for coming, Michael. There's a copy of the book for you under Rebecca's chair right in front of you. So and I'm happy to send the book to anybody else in the audience that would like a copy. Exactly. That's that. That's the problem. It's a great question. I think that what we what we what we see. So the short version is in that late in late 19th century, the rise of countervailing power. So people who could stand up to big business, which was an expansion of the franchise and it was trade unions, those are the two big ones. But it was also the idea of a regulatory state that you could regulate food safety, for example, or you could have an antitrust idea and apply that. Those were countervailing powers that actually had a big there were an offset to what the private sector was doing. I think you add to that what we what happened sort of a ha moment in the in that in 1940, specifically in World War Two in the US, that federal government could both tap into existing scientific capabilities for national purposes and also create things like the National Science Foundation, beef up the National Institutes of Health, set, put money into the creation of science and technology that would then have big spillover effects in broadly the directions that you want to go. So those are helpful. The problem today is, of course, where's my countervailing power? Right. It's much weaker than previously. Social media is also confused people so that the light lines are not clearly drawn from the statement. And what are the priorities for government? What do we want? Where is those big general purpose investments to which to invest what exactly? So again, we have some ideas. We're trying to generate more of that. So I think that the problem is, is it's coming so quickly. There's this pace that actually no one's mentioned yet, but even the experts are greatly surprised and a little shocked by how much the cognitive abilities or the replicative cognitive abilities of AI have moved in the past 12 months. So that's coming very fast. We know we need some offset factors. It's not central planning. I mean, that's just rhetorical devices. But but those are going to be slower to develop. And, you know, stopping technological progress is never going to be a winning argument in this town or many other places. So how do we tilt at how do we bring it onto some sort of common ground on surveillance, on integrity of data or preventing plagiarism, on making sure that people who get massive monopoly profits or pay appropriate taxes or and are actually encouraged to break themselves up. That's a reasonable agenda. Those agendas, in my experience, take three, five, ten years to develop, including, if you want, 64 senators to support anything. AI is moving not at the speed of light, but much faster and faster than that. So we should therefore expect significant disturbances, including to our political system. That's not going to be a shock. I think more broadly, the issue, Michael, is, you know, the alternative to what I'm saying, of course, is why doesn't the rest of the world develop? Why don't they close the get the technologies out there? It's all open source. I've had discussions with people from Indonesia that are just the same as I have with people from a broad cross-section of society. That's the same as you have in the US. There's no knowledge gap, I think, at all. Now, the gap in protection of property rights, in what entrepreneurs want to do, what they're allowed to do and what workers are allowed to do. And I think those gaps, unfortunately, are going to get worse because the authoritarian. We will not choose. I think the authority and I believe in this country, other countries will pull the technology. China is already pulling it. This is documented towards more surveillance based on incentives that government provides. That is going to be a problem for this global. Gap issue. And, you know, so a lot of saying make migration better ordered that there's also, of course, big issues of migrants coming uninvited. Right. Which we've seen in multiple waves. And it's the problems in that countries are bad

enough. I think that you'd expect more of that, including in the US and in Western Europe. So, yes, I mean, yes to all of the above, but. Read the book, Michael, and. Discuss about the. DREAM Act.

AUDIENCE MEMBER: Okay. So I'm sorry, by the way, I'm not an attorney, so I feel like there's a lot of discussion in this debate so far not to be in this discussion about like between country inequality and then within country inequality. To me, Mr. Johnson, your book has a lot of ideas that could potentially reduce within country inequality, although potentially also global. Between country inequality and then Mr. Pritchett. You're really concerned with global inequality like between countries. And I think both of these are really important goals. How do you reconcile trying to reduce both of those types of inequalities when thinking about solutions? Because I can imagine that, for example, Mr. Pritchett, your solutions around migration might do a lot for global inequality, but might actually undermine some of the, like worker power related gains that Mr. Johnson is talking about. So how do we reconcile those two goals? With regard to A.I. policy.

LANT PRITCHETT: [Inaudible].

LANT PRITCHETT: So, I think it's important to recognize that most of the within country inequality, particularly in the US, has been driven by technological changes. The US has been quite remarkably open and has seen a pretty dramatic expansion in migration over the last 40 years. And the evidence is roughly that the impact of that on average wages or on the wage of the average American has been zero. I mean, there's a huge debate about which tiny side of zero that might be. But when you see a lot of debate, it doesn't necessarily mean there's big disagreement. So economists largely agree that the extent to which the wage changes that are the main driving force of concerns in the U.S. have not been driven by migration, have been driven by technology. So I think our kind of proposals are a win win because you can devise it so that it's both good for within country inequality and good for cross-country inequality, which is not. You know, and I want to be clear that I'm talking about controlled citizenship, immigration and regulated rotational migration. As much as I love it in my heart, I'm not talking about open borders. And so open borders might be a completely, radically different consequence of between and within country inequality. But I think for the kinds of things that are going to be politically feasible, I think it's there's lots of win win opportunities where we can make Americans lives better off without making the worse the disadvantaged in America worse off. And I think most of the politically relevant inequalities have been technology driven, not migration driven, even though we've had a lot of migration that could have caused those problems, it largely hasn't.

SIMON JOHNSON: So I so I agree with that statement. For the past 40 years, if you go back little bit further into American history, you're right, there is a potential tension, but the resolution of that is to have technological change that augments the productivity of lower skilled workers. Their wages rise as happened at the end of the 19th century in the US north in particular. So they have a they have rising wages. More immigrants come in and the social mobility available to both the people born in this country and the people who arrive subsequently. So that would be good for both of us. And I think that the missing piece there is technological change that augments the productivity and then convert converts that into higher wages, which is not about the technology. That's about the social construct around technology. That's about do you have trade unions, you have other mechanisms so that profitable firms and the people who run them feel that need to pay higher wages and so on. So I think the tension can manifest itself, and this is probably one reason we have we're a bit stuck on on immigration policy in the US and moving forward, but it doesn't have to be that way. And I think the direction of technological change can be shaped by human decisions, including arguments and discussions like this one.

LANT PRITCHETT: Yeah. Can I give an even better answer?

SIMON JOHNSON: Let's see. Was it tough to what can I say.

LANT PRITCHETT: That the better answer is that Michael Clemens, who as the first question, has with some coauthors a really interesting case study paper, because in the United States in the early 1960s, we had a program that allowed seasonal migration of people to do agriculture work. And then that got ended for political reasons, meaning not economic reasons, political reasons. And so it's a clear case study of of not having more migration, but having less migration, and they study what happened. So you might think by ending the seasonal agricultural work availability of migrants, you would have benefited U.S. workers. Zero.

Zip, zilch, nada. Benefit to U.S. agricultural workers of eliminating the possibility of the Rosario rotational work. What happened was farmers changed their technology and they changed their crop mix. So what they did was they invented they either stopped growing crops that required this seasonal labor, which wasn't good for anybody, or they changed the they deliberately researched and changed genetically the crops they were growing in order to grow crops. That could be done by machines, which again did not benefit. So this is an example and this is a really great example of you might think that the limiting migration is going to change the path of technology in a way that benefits workers, but without doing the kind of things Simon talks about. It didn't do any of that. It just again, a clear case where it didn't benefit who you thought might have been a benefit. More work, higher wages for the people doing agricultural work, but did have these endogenous, as we economists call it, effects of changing the path of technology towards more mechanized agriculture and changed crop mix so that you many things that you consume today you consume today because they can be done with machines. So the type of tomatoes you typically eat are genetically modified tomatoes to be picked by machines, and that didn't really benefit anybody.

MATT YGLESIAS: And that is a great paper. They're worse tomatoes. Right? But but it's it's it's still to Simon's point. Right. I mean, the whole technological research program in agriculture was altered by the need to invent crops that were more robust to being picked by machines because labor was scarce. If labor was plentiful, then you say maybe, well, let's let's make them tastier, right? Or let's make it so that we need less pesticides. I mean, there's there's always you know, people are always trying to optimize in a multidimensional space, and we can solve all different kinds of problems, but we probably can't solve all of the problems simultaneously. And you know what you create. We can sort of decide right on all of these bases, like, what do we want to define our goals as.

LANT PRITCHETT: Just saying, oh yeah, how happy it is that the journalist moderator says people are always trying to optimize in a multidimensional space. That just one. Might want. [Inaudible].

AUDIENCE MEMBER: Good morning, My name is Adam Darkins. Thank you very much. That was very enjoyable. I got a question for each, if I may. I agree with seems a compelling argument made and one which, irrespective of political persuasion, is going to go forward because there's such interest in it and driven by the demographics. So my question is really about externalities and how you might approach policy wise other aspects of policymaking. The first, if I may, is around the technology itself. Parent pursuant it seems to me, with technology development has been the need for energy and that need for energy has transferred. If you'd like what used to be human effort into the technology, the energy we use, how would that what you're describing is probably going to create even more need for energy in a time when there are constraints. So how would you approach not in terms of the might be nuclear fusion or some other kind of rather more sort of the thermal thing? How would you for a risk management point of view, talk to energy policy and saying in order for this to robustly take place, this is a sustainable energy policy, it's going to make sense. My second question, which, you know, again, I to the other speaker is history has a tendency to repeat itself, as we all know. How would you, policy wise, avoid creating a kind of neo colonialism with what you're talking about? Because in a sense, in the past, in order to do things, countries did go to other countries in a more colonial way. So how would you increase it politically? What kind of what kind of arguments would you have to meet to make that kind of structure work? So then my two questions.

SIMON JOHNSON: So I'll take the first one first.

LANT PRITCHETT: Good.

SIMON JOHNSON: So that we actually talk in the book about clean energy and regard as rather considerable success that over the past 20 years, a lot of use of government subsidies for research and development have have pushed the private sector to develop much cheaper solar and wind technologies. So that's actually, I think, exceeded expectations. And this is a place where, you know, a sort of arms race between the US and China, who can produce cleaner, greener technology. That's actually a good thing because whoever wins that can sell cheaper, better technology to India and they can get off coal sooner. Yep. So I think that it when there's a well-defined we have a problem. We need energy, the world needs energy, and we need to switch our energy, our electricity production away from fossil fuels towards renewables. I think that's a clear case for government led or government financed or government subsidized

research and development. So you change the playing field. But by doing that, whether or not you want to do nuclear is a different matter. The costs of nuclear, of course, have not come down. Even in China, where they've attempted to scale up the value of that technology, which is an economic consideration in what should be the priorities. But I think on on you're right, we need more clean electricity at the global level and we know how to get there and we know the technologies that need to be in the mix. So you should press ahead with that through all available encouragement.

LANT PRITCHETT: So on the second question, I think in the current situation there is very little global cooperation at all on labor mobility in the sense that every country sets its own laws, regulations, policies and the enforcement thereof unilaterally with very little concern for its consequences for the sending countries. What we're talking about in the development of an industry who most people is a global industry that I think the and it's called labor mobility partnerships, because we talk about partnerships between the private sector, partnerships between sending and receiving countries. All right. We need to move towards an environment in which the sending countries have a more seat at the table in the sense that they're participating in. What would the regulatory conditions in which we would feel comfortable sending our workers to your country? That's it's it's a cooperative agreement. Now, we're not going to get the kind of global agreement of every country recommitting to some regulatory environment because no rich country is going to put its. You know, lose control over its migratory thing, migratory control. But I see a future in which the sending countries, because of the demographic shifts, have more and more seat at the table. We create more and more of a dialog of how do we make this rotational kind of mobility better and better. So I see it being less neo colonialist than the current structure because the current structure is in the global order and post-World War two colonialism was ended. But, you know, it's a complete and total myth that we live in a globalized world. We don't live in a globalized world. We live in a globalized world. If you want to move capital. We live in a globalized world. If you want to move goods, we live in a radically and globalized world if you want if people want to move. And so the consequence of the end of colonialism was the enactment and enablement of, you know, unbelievably draconian bans on the movement of people. And so unwinding that I think, is the is a better future. And it's not a return to neocolonialism. It's a return to cooperative arrangements where countries benefit from gain what are increasingly going to be big gains from trade and increasingly big gains that, you know in the future the rich countries are going to need these workers and it's going to give the sending countries more and more power in that relationship.

MATT YGLESIAS: I think there's a lot more that can be said on climate, energy, migration, you know, tie ins and feedbacks. But I've I've gotten a stop sign. So thank our panelists here. And everybody who's asked questions has been a lovely discussion. These are, you know, really important, vital issues that that I hope, you know, we're going to be attracting more and more attention if we can spare some time from theft of classified documents and other things that are in the news on a daily basis. So thank you all. Thank you. Thanks, Brooke.

REBEKAH SMITH: Advances is a choice, and it's a choice that we as a society can control. It's that a choice that we, the people in this room and those of you online have the power to shape and control. Simon has told us that the way that this technology has shaped the choices we've made in the past have led technology to advance in a way that is unbalanced, that benefited a privileged few. And we're at the brink of making that same decision again. We're at a moment in history where we're increasingly on a daily basis, faced with the choice of are we going to continue to distort technological choices or are we going to build a future of shared prosperity? We talked about the fact that labor shortages are a this quarter problem. It's in the news every day. And so every day we are faced with the choice of automating away a job that could be easily filled by someone currently born and living in poverty around the world. So every day we're making this decision. Even just this morning, as I was getting ready for this event, I saw a news article saying that we've now invented techno A.I. embedded robots that can do eyelash extensions. Think about that. Think about the engineers time. Think about the research and development that went into that automation choice. Right. And then think about the people, the Central Americans along our southern border. How many of them could have filled that job? How many of them could have been given a new life? Right. So these are very real choices we're making every day. Even yesterday, I received a delivery from a truck driver who four months ago arrives here from Ukraine. Right. That's someone who's been given a new life opportunity because Silicon Valley hasn't yet automated away truck driving as a profession. Right. So this sounds daunting. We can choose between two different futures. We can choose the iRobot version of the world, his likes to say, or

we can choose a future of shared prosperity for those of us born in high income countries and those of us born in low income countries alike. Labor Mobility Partnerships LAMP is working to actually bring us to that future. And it's not just us. Encourage you to read Matt's book 1 Billion Americans on Practical Ways We Can Get There. I encourage you to read everything Michael has ever written, but one of my special favorites is actually Migration is What You Make it, which is about specific policy choices where we can build a well-regulated, well managed and controlled but not dopey version of migration that lets more people come into our society and allows us to choose people over robots. I see a lot of young people in the room and so I think I want to extend really an invitation that the future is in all of our hands, that this is something that you can choose to spend your career shaping these choices. And I don't want to give away, you know, spoilers on Simon's book, but I think there's one part I want to point you to at the end where he outlines three things that we can do to build movements. The first is we change the narrative. Right? So today was the beginning of that. I hope that today you've walked away with a different narrative of the role of workers, and especially workers born in low income countries and our shared future. The second is we can build alternative forms of power, so we can build we can build interest groups, we can engage corporates. In fact, I'm on my way to do that in New York today. We can engage corporates about the choices they're making around automation and where they're getting their workers from. And then the third is we can work for policy change. These are all things that we at Labor Mobility Partnerships are currently doing, but they're all things you can do. So I encourage you to reach out to me, to the speakers, continue the conversation on Twitter. And the last shuttle ends with another quote from Gloria Steinem. The future depends only on what each of us does. Every day of movement is only people moving. So I hope that today is the beginning of a movement where we choose people and invite you all to join us in that. Thank you for joining us today and we hope to continue the conversation with you.