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Fireside Chat:

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P R O C E E D I N G S

MR. PATNAIK: Hello, and welcome to this fireside chat of the Center on Regulation and Markets at the Brookings Institution. My name is Sanjay Patnaik, and I'm the director of the center. In our series of fireside chats, we explore important topics related to modern day markets and regulations, through one-on-one conversations with regulators, business executives, and academics.

Today, it is a real pleasure to welcome Katya Klinova, who is the dead of AI labor and the economy at The Partnership on AI. At The Partnership on AI, she focuses on studying the mechanisms for steering AI progress towards greater equality of opportunity and improving the working conditions along the AI supply chain. In this role, she oversees multiple programs, including the AI and Shared Prosperity Initiative.

Prior to The Partnership on AI, Katya's graduate research focused on examining the potential impact of AI advancement on the economic growth prospects of developing countries. She worked at the U.N. Executive Office of the Secretary-General and at Google in a variety of managerial roles. She also has degrees from Harvard University, Rostov State University, The University of Reading, The University of Thessaloniki, and The Universidad Carlos III de Madrid. Thank you so much, Katya, for being here today.

MS. KLINOVA: Thank you so much, Sanjay, for having me. It's a real pleasure to join you.

MR. PATNAIK: So, you work in a really interesting space, right? Artificial intelligence is one of the fastest growing fields and really fastest paced in technologies that we see nowadays. And so, I'm curious because you are an expert in the field. What do you think are the most exciting opportunities for AI technology that you see on the horizon?

MS. KLINOVA: I am truly excited about AI. I have to say I don't love the name AI, but that maybe we can come back to that. But I think the potential is just huge, and the hope is that it's going to raise productivity, raise prosperity in our society, that it's going to make a lot of jobs safer, less, you know, less physically taxing, more gainful, more dignified. But that -- for that to happen, we really need to change the approach and think about workers in the economy as co-creators of AI, as sources of ideas and progress there, and not as costs to cut.

MR. PATNAIK: That's very interesting. Can you explain a little bit more what you mean by that point, and like how would you kind of like view AI as a supplement to work with in the current economy?

MS. KLINOVA: Right. So, AI, it really is a technology that it -- nothing is predetermined about it. It's still, in some sense, in the early days and can be used in many different ways, and you can use it to try to automate as many tasks that workers are doing as possible, and you can use it to compliment the human labor.

And what we're seeing a lot now is that AI is frequently used in the workplace to surveil workers, and especially that applies to low-wage hourly workers. And that surveillance, the collection of data happens, sometimes, workers don't even realize that it's happening, and it's really prevalent. And workers do not hold, you know, any kind of IP rights or any way to profit off of that data that is then being used to feed the algorithms, to train the algorithm that can replicate their jobs or be used to automate those jobs in the future.

So, we really need to shift gears and think about that and how the labor law needs to potentially evolve. Do we need to recognize workers who generate useful data for algorithm as producing knowledge in IP and something that is then being reused across the economy? How do we give credit for that and for the know-how?

MR. PATNAIK: That's a really important point, especially kind of like -- because when we look at AI or the new technology, right, which is pretty broad, I think a lot of the laws and regulations and policies we have in place have not really kept up with the pace of technology, right?

MS. KLINOVA: Completely, yeah, so much -- it's such also an exciting time for regulation, really. I can watch how the new ideas come up there and the regulatory innovation. But, yeah, there is just so much work to do on that front.

MR. PATNAIK: And so, going back to your earlier point, I'm curious, why don't you like the term AI? What would you have instead, rather, being used?

MS. KLINOVA: Yeah, you know, I guess, like, I'm not waging a war against the because I don't necessarily have a very good alternative proposal, but I really agree with what Kate Crawford says. It's neither -- technology is neither artificial nor intelligent. And I think the term AI can feed that self-

aggrandizement that the field is really plagued by. It's not -- I don't like the term artificial because there is so much of human labor that goes into producing AI, into labeling the data, into creating good enough data sets that the models can be trained on. And that work, very often, is hidden and really not given credit and the dignity that it deserves because there is a little bit of a perception that if you admit that there are -- there is a little army of humans who label the data that's -- that is fed into your algorithm, somehow, your algorithms are now less artificial, and somehow that's bad, right?

So, we should depart from that, and we should recognize the work of people who are often all around the world, and they're working not in tech jobs that are super well paid and enjoy great benefits, but they're working through platforms in which they're paid per task. Often, that per task payments, they do not adapt to a living wage. They lack benefits, they lack recognition, to the degree that tech workers are what we traditionally think of as tech workers enjoy. So, we really need to broaden our understanding of who contributes to the quality and the creation of this technology.

MR. PATNAIK: I think that's actually a really interesting point that you don't hear too often, right, because I think, as you say, AI's always being built as this wonderful great breakthrough, but it's only as good as the people that are working on it and that are training it, right? And so, you already mentioned one of the potential issues, right, like, the loss of, like, the role of labor is not being acknowledged in that case. What other risks do you see with AI technology, in your view, that might be some of the largest risks that we face?

MS. KLINOVA: So, from my perspective, I -- what keeps me up at night, and what I work on, on a daily basis, trying to think about, is how do we prevent AI from deepening inequality, both within countries but also between countries, and reversing the gains in economic development convergence that we've seen over the past few decades that happened because, really, when you think about it, the path to growth has been through capitalizing on the access to large labor force in global cells and the competitive wages of that labor force.

Now, if we are moving towards a production where labor is less relevant, we're diminishing that main comparative advantage that has opened the doors for many lower-income countries to grow. And that should be, you know, a big source of concern for us. And then, even within rich countries, within high-income countries, we need to be thinking very carefully around job polarization that

has already been happening pre-AI and how AI can now just accelerate it and have gains occur to people in a few select professions with select STEM degrees and shareholders but have a -- really a lot of people potentially left behind by that “progress.”

MR. PATNAIK: I think you’re bringing up an interesting point because even if we look at manufacturing in the United States, right, often times, in the political debate, trade is being blamed for it, but when we look at the numbers, actually, more than 80% of any job losses in manufacturing have occurred due to automation, right, and not because of trade. And so, that is something really important because, often times, I think it is very easy for politicians to blame trade, blame foreigners, right? But who wants to blame a robot, or who wants to blame technology because it’s innovation? And so, I think that’s a very difficult tension here to navigate.

MS. KLINOVA: Yeah, exactly. I think this is the moment when economists are, you know, pointing to that, that this is not all globalization --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- that technology has played a major role in what happened with the labor market, with labor demand. Labor share of the income has been going down over the past few decades, right, like, and that is happening against the backdrop of hauling out of middle-paying jobs. So, really, the prosperity has not been being shared, neither from globalization nor from technological programs. And so, how do we make sure that, going forward, the gains that AI brings about are shared equitably? It’s a real challenge. It's not going to happen “automatically.” We really need to be making careful choices, both in regulation and there is a lot that companies, themselves, can do to make sure more people get to benefit from this.

MR. PATNAIK: And so, you mentioned the impact on labor. What other major economic impacts do you see of AI, going forward?

MS. KLINOVA: So, the -- you know, you can go, depending on how dystopian you want to go, right, like, in -- on a very maybe dystopian front, how do we think about the potentiality for perfect price discrimination, that AI could enable by observing consumer behavior, by knowing exactly where my willingness to pay is, for different things, in being able to price me, individually, exactly at the level where I would pay, like stripping consumers from that surplus, right, like where they really get all their benefit, why

-- from the difference in between what you would be willing to pay and what the price is. So, if you can now perfectly price discriminate everyone, that all of that surplus is going to go to the producers, and that would be a major challenge to the economy. Right, like, and it's kind of like right there, and the slightly dystopian is also the algorithmic collusion on the pricing. These are all things that we need to be careful about thinking. But then this is -- this is not happening right now, right, like, where we hope that this is not happening.

What is happening, very much, is the surveillance that I already mentioned, over workers, over consumers, and what that leads to is that the risks and the costs are borne, more and more, by workers, the ones that they used to be borne by the employers, themselves. There is this new, really beautiful report out of Data & Society, called Constant Boss. I highly recommend it to check out. And it describes how, you know, this algorithmic schedule, for example, you know, AI being able to predict how many, you know, customers you're going to get in your store and being able to dynamically schedule workers, depending on that consumer demand. That can result into like, you know, like a sudden short notice, cancellation of your shift, or just your shift being cut short, and then you go home, and this is the cost that is now borne by workers, cost of a risk of a slow day for a business. It used to be borne by the firm, themselves, very techno workers borne it. So, these things are making an economic impact and will impact on people's livelihoods. They're happening today. And the regulation isn't -- is just not there to take care of it.

MR. PATNAIK: I think you bring a really important point, which is the surveillance, when you talk about it from the company perspective, the surveillance of workers. But I think another area we see is that a lot of authoritarian regimes are using AI for mass surveillance, like for social credit scoring, which is really getting very dystopian, if you think about it, right? And so, I think you also have the potential of these systems to undermine democratic societies, which we really see through the proliferation of deep fakes, of misinformation that is rampant in political campaigns. How do you think we can safeguard against some of these negative implications of AI and especially safeguard our democracies against kind of like the pernicious impact of those?

MS. KLINOVA: Yeah, so, The Partnership on AI, that I work for, actually, that very, very first report that was put out before my time, just when the NGO got started, is around criminal justice, and

it put out 10 requirements for systems that are deployed, that are making decisions over people's lives, what they need to satisfy. And like, at the time of writing, no systems that were being deployed were satisfying all of these 10.

And it really is important that we look very carefully at what is being deployed on people, how these decisions are made, the surveillance that is being deployed, obviously. The recent European regulation --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- also talks about when you can and cannot use facial recognition and limits strictly the number of cases when it can be done, especially in the public space.

MR. PATNAIK: I think that -- I think the last point is quite nice to elaborate on because if we look at the -- around the world, I don't think there is almost any regulation in this sphere, in most countries. But the EU has now come out with a new framework where they plan to strictly regulate some AI systems, including banning AI for mass surveillance, in social credit systems, and, as you also mentioned, facial recognition technology, especially as compared to some of the technology that is already being used on a very large scale in China. What is your view of these regulations from the EU that is coming out? I'm sure you have studied them. And do you think the U.S. should follow a similar path, regulating similar activities?

MS. KLINOVA: So, the EU regulation, you know, I think it's a thick 100 pages, more even, right, like, and it -- I think it -- I'm not going to pretend that I have thought about all the implications of that regulation. And I think it's going to be something kind of like a little bit of a discovery road. I think the intention of it was to put out minimum requirements of it. So, they, in some sense, like, limited their own scope, and, you know, it is difficult that we just got to acknowledge that is really difficult to build future proof regulation and to be one of the first movers in the space, right? As a business, you might enjoy the first mover advantage. As a regulator, you don't have the luxury of learning from someone else's experience.

I was really glad that they put the use of AI systems within employment context, within the workplace, as high-risk and mandating disclosure requirements, transparency requirements, and what they call, I think, assessment, just like assessment of compliance. Now, what are these assessments are

going to look like, that's really where the devil is, right, how you're going to assess these systems. They're calling for standards there. And a lot of these standards, I think it will be beneficial if they were international, internationally recognized, and created. There's a lot of input from the workers, themselves, who are on the receiving end of all of these systems. But for now, this is to be figured out.

What I think the proposal doesn't do, and that maybe has been their intention because, you know, you cannot cover up, but what I wish I saw there is the discussion on how do you empower workers. So, beyond giving them information about how decisions about their promotions, termination are made by algorithm, so, like, what is taken into account, what is not taken into account, how do you give them power in the workplace to negotiate over that, to dispute it, to have recourse, right, because you -- bosses have always been wanting, since Industrial Revolution, to observe their workers closely, but workers, at least, could argue with their boss --

MR. PATNAIK: Right, that's true.

MS. KLINOVA: -- around their decision. Now, who do you argue with? And it is a step in the improvement direction, that, at least, workers are going to know a little bit more about how the decisions are made because, right now, this is just a source of -- this is a source of insecurity. You know that your time of task matters, but you don't know exactly how it matters. You don't know exactly how long you can take, I'm sorry, a bathroom break and, like, when it's going to become a problem. Then, you see some of your colleagues being terminated because of that. Of course, that just creates insecurity. It creates an anxiety. It makes job quality go down. So, improving on the transparency is a step in the right direction. It's not enough, though, to empower workers to contest it.

MR. PATNAIK: And I think that it goes back to an earlier point you made, that just really a lot of these systems, nowadays, are just black boxes, right, and we don't know how the arguments work in the background, what the different factors are in that come into there, and I think I agree with you, that the transparency is really critical here, especially in these early stages, before the technology gets so advanced that it's very difficult to impose regulations exposed. And so, I want to stay a little bit on that point, on AI and labor, right? As you had mentioned earlier, there are many observers that are concerned that AI could eventually displace low-skilled workers and even some high-skilled workers, right? We are seeing automation in finance industry, for instance, with algorithmic trading and things like that. And so,

to what extent has this already happened? And how might the impact of this AI revolution on labor be different from that of previous technological revolutions?

MS. KLINOVA: I'm going to answer this, your question, and then I'm going to explain how it gets misconstrued a lot. So, have we seen technological unemployment, the unemployment that we would confidently attribute to technology? The answer is no. Before COVID, unemployment in the United States was at its lowest, historically. Then, all the unemployment that became -- came after that, obviously, is attributed to the COVID fallout.

MR. PATNAIK: Yeah.

MS. KLINOVA: Now, should that give us -- should that convince us that there is no problem? And should we now just like calmly rest? No, because exactly to -- to our question just before, the discussion that had we about globalization and technology, we have been seeing labor share of income going down. We have been seeing polarization of jobs. Jobs for people without college degrees have been stagnating or even declining in real terms, for people without high school degree, in the last four decades or so. This is, like, this is unprecedented because the economy has been growing. The income per capita has been going up a lot, in the last four decades, but people have not shared in on that. So, what does it mean? Like, what is it? It's underemployment. So, it's the level of labor demand going down because of globalization and because of technology and making jobs worse, less well-paid, less quality for, really, large swaths of populations and workers. And also, there is also a very well documented, now, by a recent paper by (inaudible) and co-authors. They are looking at online vacancies since 2010, and they are looking at -- they are separating out industries and firms that are AI exposed. And they're seeing that for -- especially for firms that pretty AI exposed, they are hiring more of people with AI skills, and their vacancies of no -- in non-AI roles are going down.

So, on net, you know, because of other processes in economy, we were hoping these people are still finding jobs elsewhere. But we are seeing lowering labor demand for groups of workers who are not in these AI jobs. So, they'll -- see, the very long answer to your question is, yes, we have been seeing the impact of AI on skills, on labor demand, and on displacement of jobs or making them worse. So, it's really -- sometimes, you don't see it in the aggregate unemployment statistics. But you see it in wage growth, you see it in the labor share of income.

MR. PATNAIK: So, what is the solution, then, to it, right? Because I think, like, if we look at displacement of workers, or as you say, like, maybe underemployment, or like a low-wage point, especially on the -- in the unskilled side, we have seen that, even for some time, even without AI, right, when the computers were introduced, or even when we look at, like, advanced robotics, if we look at Germany as a good example, where a lot of the workers had to be retrained, and they've -- I think they've made the transition quite well from increasing their industrial robots in car manufacturing, etc. And then another point related to this is, often times, there are jobs that we probably would want to automate, right? I mean, there are jobs that are very dangerous, that are dirty. You don't want to become a coal miner and send your kids down there, right, if you can actually maybe automate it. But what is the solution, then, to help those people that are affected through this transition, or to find a way to, like, all share in this new technology, while still providing a way for those unskilled people with low education to find a job in life?

MS. KLINOVA: Great question. This is the --

MR. PATNAIK: Million-dollar, right?

MS. KLINOVA: -- million-dollar question, much, much more than that. So, of course, reskilling is really, really important, and we need to get much better at that. We need to understand two things about reskilling. One is we cannot just expect workers to bear the cost of it. It's costly.

MR. PATNAIK: Yeah.

MS. KLINOVA: It's not free to spend time on that. And second is if the overall labor demand does go down, continues to go down because of technological progress, it's not going to be enough to reskill people because you kind of -- you're trying to keep reskilling people, growing population, there is population still growing, for fewer and fewer jobs, fewer and fewer new jobs, right? So, like, that's a -- that's a losing race. Like, that's a losing proposition. The numbers are just not going to work out there. So, you either then move to a place where -- and, okay, let me back up, actually, and say that, indeed, there are some job that you would want to automate because of the quality of them today.

But the question is when you're automating jobs, are there new opportunities in the economy that are being strung up because of that productivity growth that you are creating? Are you creating enough of a productivity growth to create more jobs elsewhere in the economy? Because, very often, what we are seeing right now and what economists are calling so-so automation is the kind of automation that

displaces jobs, for real, but the productivity growth that comes from it is miniscule. So, they don't create new jobs elsewhere in the economy, new tasks for humans, that come because, now, something is -- and this is how it would work, ideally. Some jobs are automated. Something becomes easier to produce, cheaper to produce, or higher quality.

MR. PATNAIK: Right.

MS. KLINOVA: So, people now buy more of that. And there are, like, other roles that you hired, or, you know, this is now cheaper to produce. Consumers pay less for this. So, their income is free to buy more of something else. And this -- in this something else, there are now new jobs.

Now, if you've automated some work, but you didn't make your product better or you didn't make it cheaper for the consumers, you just like look at it as, you know, as a capitalist, a little bit of that shaved labor cost, you didn't create any new jobs elsewhere in the economy, so, these displaced people now competing for the same amount of jobs with all the other people in the economy, right? Like, so, you are creating actually a downward pressure on the work. And this is what the so-so technology does. And this is the -- going back to your question on what should we do? We should try to discourage that kind of use of AI because that's a really -- what they call sad use of AI. We can't be using AI to create massively more productive ways to run the economy. And that will be benefiting a lot more people. You know, the other kind of parallel proposal that people really like and talk a lot about is, well, why don't we kind of like let AI run wild, and it's going to generate a lot of gains for a really small number of people, but then we tax that and we redistribute out, and we sort of like just support all of the population that has lost their jobs or cannot be retrained because there are just no new jobs --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- for them to be retrained for. We support them through a UBI or something like that. And, you know, I, personally, have absolutely nothing against UBI. I think, especially in a country that has barely any social safety net, it's very important to have some floor and support for people when they go through whatever they -- they're going through in life. You know, different things can happen, just like having that support is very important. But I think we need to be very realistic about what the society would be like and whether you can really resolve the kinds of issues that we're talking about through just redistribution. And I think it's enough to walk down Market Street, in San Francisco,

and see the kind of inequality that this city is experiencing --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- to understand that it's very hard to solve it just with the distribution. The city budget for one homeless person goes up every year, and it's -- the city's still struggling to tackle this really difficult issue. So, we need to -- aside from thinking about redistribution and taxes and UBI, which are all very important and I truly support that, we need to also be thinking about how do we proactively direct technology to by design, be benefiting more people, be creating jobs, be creating these productivity gains, that are creating good jobs in a broader economy.

MR. PATNAIK: And I think you raised an important point, right, which is quite ironic, if you look at California, San Francisco, especially, which is the hub for the new technology, they have a huge problem with homelessness across the state. And it's usually a very progressive state.

And I think one issue that people that advocate for UBI always forget is for people having a job, it's not only having the income, right? It's having purpose, having an identity, having some pride that they can actually achieve something. And I think if you take that away, that will not solve a lot of those issues. And I think that is, in my view at least, that is often really ignored when people talk about UBI. They, as you say, they build it as this great solution to all new technological advances. I don't think it is. I think people need some purpose in life, right? They need to be able to, like, work towards something. And I think that will be difficult if they just get the redistributed money, right?

MS. KLINOVA: And they -- in the political also -- there is a political aspect to that, is can they -- can a democratic regime be secure and stable, if you have a very, very powerful economic elite --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- that holds keys to a large share of your production capacity, and then the rest of the population is supported through only transfers. Like, is that a stable political regime? And this is not something that a lot of countries have gone through to generate, to generate a very confident answer that it is.

MR. PATNAIK: I agree, and I think it has the danger of -- we truly already, I believe, we see anyway already, in countries that are not democratic, but I think we also see, to quite some extent, even in democratic countries, like the United States, where we have what economists call rent seeking,

right, where, like, very powerful companies and industries are even shaping laws and regulations to perpetuate some of the economic share that they can and increase it. And I think that really leaves out the people that are not as well connected or are in this interest that are not as well connected. And there's a big literature on it, on interest group politics, that kind of like shows that. And I think AI has the potential to accelerate that, quite significantly, right? So, my question, then, is, so, you have some real interesting ideas in your partnership, which I don't see in many other places being raised. One of them is you talk about directing technological change in support of what you call shared prosperity. And you suggest this is being done correcting economic policy distortions, by trying to empower workers and influencing kind of like the visions of the next generation of innovators. So, can you explain a bit more these ideas? And also, what I'm really curious about is how would you implement those? Right, like, who is supposed to direct the technological change, without interfering in the marketplace, without interfering with innovation, which is very critical for prosperity, going forward.

MS. KLINOVA: Yeah, thank you for this question. I can probably talk for hours about this. So, let me try to make it a lot shorter than that. So, I'll start from the end. How would implement directing technological change? We actually just, two days ago, put out an agenda with a proposal on exactly that. It's a shared prosperity initiative agenda. And so, what we are calling for is -- think about environmental carbon emission reduction targets. So, now, every respectable company puts out something like that. They commit to reduce their environmental footprint.

So, we are calling for companies, who want to say about themselves that they're building AI that benefit all, to move beyond principles and to commit to measuring and disclosing the impact on the availability of good jobs in the broader economy that they're making. So, it would be shared prosperity targets, kind of like carbon reduction targets. You can think of yourself as new jobs possibly because there are, now, a growing number of companies that are marketing themselves as we're augmenting people, we're augmenting workers, so, we're complementing. And some of them do.

And some of them, what they're doing in practice is they're observing workers to help them and to, you know, suggest tips for them, how to do their work better. But they're observing workers there, collecting all of this data to automate them later, or to make, you know, to make exportation and overreach by their employers easier. So, it's not really augmentation. It's kind of like very exploitative AI,

really, and for companies that are genuinely trying to complement humans, they would want to differentiate themselves, and to send a credible signal, and to say, this is our impact, this is how we are measuring it, and we are disclosing it. So, we are a good jobs positive company on that, as opposed to a destroyer of good jobs. So, what --

MR. PATNAIK: So, you're saying these are the voluntary standards, or are these regulatory standards that will be applied to everyone? And how would you measure that? Because I would imagine, from an economics perspective, it's very difficult to measure your impact of your technology, as one company, in the rest of the economy, right. How would you actually quantify that?

MS. KLINOVA: It is difficult. And this is why we wanted to share is as an open agenda and invite people to collaborate with us on defining the targets, and what exactly needs to go into measurement, and, like, where do you stop, when you're tracking down the domino effects that the technology is producing in the economy. Like, at what stop do you say, okay, this is far enough, in terms of what is really in the direct influence of a company, and we should not count it within, you know, their impact, kind of like you can think about it as Scope 3 Emissions. It is when, you know, at some point, you stop counting your emissions because this is far enough in the chain.

MR. PATNAIK: Yeah.

MS. KLINOVA: But the carbon footprint is an approximation. So, at some point, people just, you know, they're making the choice about what they count as their own carbon footprint and what they don't. So, here, we would need to be making the same choices of what do you count as your direct economic impact on the jobs, and what do you not? But, you know, it can be used both as voluntary targets that companies take up, but also for regulators. So, imagine you're a regulator, and you want to encourage the kind of AI that is supportive of good job creation, the kind of AI that really boosts productivity in economy, but doesn't do it through exploitative overly surveillance prone ways. You need the way to differentiate between the sad AI and the so-so technologies and the brilliant AI. How would you do it? Like it's the same -- by applying the same logic, right? And then, the companies could take up targets like that and who disclose their -- they're sending a very credible signal that you can check, as a regulator. And your policies around taxing or just like in general, you know, trying to discourage certain types of -- in technologies and supporting different types can now be based on that data and that

measurement and not only an empty promise to be augmented humans.

MR. PATNAIK: Okay.

MS. KLINOVA: And then, you know -- sorry, yeah, go ahead.

MR. PATNAIK: Yeah, no, go ahead, please.

MS. KLINOVA: And to your bigger question of economic incentive distortions and ideas of innovators, this is like -- this is such an important conversation to have because these are things that really influence the direction in which AI is going. And there is such a popular inotrope saying that technological progress is unstoppable and this is just coming upon us, and sometimes regulators get a little bit, I think, inundated and overwhelmed with all of these messages coming from Silicon Valley because, you know, and frankly, they're very self-serving. You know, from the point of view of technology interpreters, if you are -- just kind of like remove your role, and you say, well, this is just happening, and this is going to come to you. So, you better prepare, as a regulator, and you better prepare to give people upskilling programs, to give them UBI.

Then, there is, like, no responsibility on you, as a company, to do anything differently. But it's not true. The direction of technological change is in the subject to people's choices. It's a subject to the economic incentives. So, when we tax capital a lot less than we tax labor, we incentivize the investment in this automation, even if -- even when it's not as efficient, comparing to the human workers, because it's now subsidized by the -- the effective tax on labor is 25%. The effective tax on capital is around five%. It's a huge disparity, right? So, like, when you're doing a calculation of what you should invest in, you end up investing into more machines and more automation because of these distortions, right? So, we need to be mindful on -- about this.

Similarly, you know, even things that do not seem to relate directly to technological policy choices end up influencing a lot. So, if technology is developed in rich countries, which are, by and large, aging, and those countries limit the labor -- limit their labor mobility rules and immigration rules, they end up with labor shortages, and you read, you know, AV, autonomous vehicles, reports and proposals, and they all mention how there is a huge shortage of truck drivers in the U.S., and it's mounting, it's growing every year.

MR. PATNAIK: Yeah.

MS. KLINOVA: And, you know, you could issue hundreds, 50,000 visas for people to come and drive trucks, or you can pour billions of dollars to automate truck driving, and then eliminate -- close that shortage, yes, but also eliminate 3.6 million of U.S. truck drivers, and the jobs of truck drivers around the world, where those formal sector jobs are really needed scarce. And, you know, the truck driving is maybe not the best example here because you could be having their -- some compensatory benefits that are very important around road safety and things like that. So --

MR. PATNAIK: Right, yeah. There's -- a lot of people are advocating for it.

MS. KLINOVA: Yeah, so --

MR. PATNAIK: And I think there's something to it, given the high number of deaths that we have on the roads every year.

MS. KLINOVA: Yeah, I agree. So, like, you can be making that calculation and being like, yeah, we're going to lose these jobs, but we still want to do it, and we still want to encourage and support that technology because of these gains. But, you know, there are other technologies that are being developed because of the labor shortages around nursing and care, for example, and there, you really need to ask, like, is this -- like, is this what we should be trying to do, or should we issue more visas, you know, and bring people to do the care work that we don't have enough people to do, and not try to automate a lot of these jobs, not only domestically, but truly around the world. Because once you -- once you've made -- technology knows no borders. And once something has been developed here, then you fly into -- you fly to South Africa, you go into McDonalds and you see a self-order kiosk, that is powered by AI, and you're like, what is it doing here? The unemployment in South Africa was 29%, before COVID, before COVID.

MR. PATNAIK: Yeah.

MS. KLINOVA: But once the company made this acquisition --

MR. PATNAIK: Of course.

MS. KLINOVA: -- in California, where, like, they just deploy it, 130 countries, right, and that is just what's happening.

MR. PATNAIK: And so, I think, I mean, there are a lot of things that I want to unwrap here. One is I agree, I think when we look, for instance, something like in a care setting, and I think

Japan is facing that, right, because they have extremely restrictive immigration policies and a very aging population. So, rather than let immigrants, they are trying to develop robots to take care of their elderly, which I think is, to be frank, quite, quite concerning because, I mean, I don't think you want anyone to take care of your aging parents or grandparents, right, that is a robot and it's not a human person. It's just that connection that is still missing.

But the other question I had is when we look at like how to direct this technological change, one problem I see with that is you would have to have perfect foresight, as a regulator, or whoever is in charge of kind of like giving those incentives of what the different consequences of technology will be and what the future demands will be, and that's just impossible, especially given how fast-paced all the technology is developing. For instance, let's take smartphones, right? If we had tried to predict what smartphones are going to do, how they really work, it would have been impossible. No regulator has that information. Often times, they're actually way behind the technology. So, how would you -- would you make sure that you don't stifle innovation, right?

You don't try to cut off. Maybe there is an innovation that would eliminate jobs, right, and on average, maybe in the short-term, not create more jobs, and then you say, no, you should not pursue this. But then, actually, if you had pursued the technology, there would have been a usage, maybe, like, two, three, eight years down the line, that would have actually created new opportunities. I don't think you can predict that, right? How would you address that? I'm really concerned about stifling innovation and, like, cutting it off or peeling it off before it actually leads to somewhere.

MS. KLINOVA: Yeah, no, completely. You're right. Like, it shouldn't be some heavy-handed approach there. Two things I want to say on it. One is when, as a government, as a regulator, you think that you're just not getting in the way and you're not regulating. You're letting technology develop its own course on its own pace. It's not -- you're not actually -- you are not actually not present because your choices around tax policy, around immigration policy, around other policies -- still direct innovation. And so, where we are now is that they're directing innovation into excessively -- excessive levels of automation, levels of automations that are beyond socially optimal. So, when you think you might -- you are not making choices and you are not intervening, you've actually made some choices, and they are acting, they're not -- they're not neutral. So, that's why.

MR. PATNAIK: That's an interesting point. So, you can think about it in a way of kind of like having a core set of principles that maybe when you develop different policies, like tax policy, like immigration policy, you look at those secondary effects, primary and secondary effects, to make sure maybe it's just the right policy. Are there discrepancies, like you mentioned in tax policy, between capital and labor, before, right, that would lead to that, or is there a way that you level the playing field and then you see where the technology actually really goes?

MS. KLINOVA: Completely. And then, secondly, it's not -- I'm definitely not calling to ban automation or anything like that, right?

MR. PATNAIK: Yeah.

MS. KLINOVA: What you're trying to do is tip the scale of it. You are trying to go away from excessive automation that dampens their demand for labor, year after year, and makes it lower, and lower, and lower, making it harder for you, as the government, to help the society adjust to that. So, that --

MR. PATNAIK: How do you measure that? What would you say -- who determines what's an excessive level of automation, right, because that's very hard to say, I would say?

MS. KLINOVA: Yeah, that -- that's exactly the big question that we're trying to tackle. This -- it's -- it is difficult, but what you're -- what you want to look at is, okay, what are the compensatory -- fine, you're eliminating some tasks and some jobs. What else? What else is this technology doing? Is there -- is it creating an effect elsewhere in the economy that I -- by how much are you raising productivity? Can we expect that there is going to be a contribution to productivity growth? And then, beyond that, what is the impact on the quality of jobs in the economy? Like, are they -- is this the kind of innovation that makes workers less powerful, and it strips their bargaining power within the workplace, and that pushes the risks on them? Right, like, so, you can start to differentiate some of the -- there are going to be some more obvious cases when it's -- it's the kind of technology that just lets capitalists shave some labor cost, but really does not do much else, or, you know, it -- there is also the -- beyond automation, there is the labor shifting or labor -- pushing the labor on actual consumer. You know, what was a paid work, like a cashier checking you out, now, you go into a grocery store and you are investing your own time to check you out, or --

MS. KLINOVA: That's true.

MR. PATNAIK: -- you call your bank, and instead of talking to an agent, you are talking to a robot and navigating through tons of menus, you know, over and over again. This has been done --

MS. KLINOVA: You're right. It's probably less efficient from an economic perspective because it --

MS. KLINOVA: This is not efficient.

MR. PATNAIK: -- because it's being borne by the customer, in this case, right, instead of the company.

MS. KLINOVA: You're -- the cost is borne by you, and --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- not only you're paying for this with your own time, but you are not creating something else. You know, your --

MR. PATNAIK: Very true.

MS. KLINOVA: -- comparative advantage is not in talking to a robot. You are productive in your own work. You're not doing your own work while --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- you are doing all that. Right, so, there are some of these cases that will be -- would not be so, like, on a, you know, in a gray zone, in terms of understanding their impact on the economy, and at least, those are the ones that can be more actively discouraged, and the obviously good and brilliant ones that can be more actively encouraged.

MR. PATNAIK: I think that's a really great example, actually, to hang it on, right, because, as you say, let's say, let's take the automation self-checkout, right? I never understood the concept because the only thing it does is it really puts the cost on me, as a customer. I suddenly have to spend the time doing something that I don't want to do, right? Then, just the firm -- the firm really kind of like reduces the cost for itself. So, it's a negative externality. I like that example. I think that -- that makes clear to a lot of people, like, what kind of like way you're talking about and directing this.

One question I had is if we -- if we think about the use of AI, and this is actually from the audience, also, that came up, right now, at, like, AI rollout, worldwide, right, so, the EU is coming up with

some rules, the U.S. probably will come up with some policies, but then there are countries, like Russia, China that really don't care, and they use AI, and they will develop AI, in any direction they want, with probably very little safeguard. We already see that in China, right, with the social credit scoring system, which is very dystopian from a privacy perspective. How do we reconcile that, right? How do we make sure that democracies, maybe, don't put too many rules in place that make us stay behind? And then, those countries that are just pushing ahead, with no guardrails whatsoever, come up with innovation for AI that we can't keep up with. And that goes for the military realm, as well, right? I mean, if you look at some of the developments already, the Russian Army wants to already deploy some of their AI weapons systems in their tank units. It's something that is, I think, really difficult, given the divisions we face in the world, today, right?

MS. KLINOVA: Yeah, that's right. And I think, you know, I would be really wary of an AI race, be also wary of using a potentiality of an AI race, or a rogue government doing something really bad, as an excuse for democratic governments to also pursue those dangerous directions, right?

MR. PATNAIK: That's right.

MS. KLINOVA: So, there's going to be someone who is the leader, who is setting the norms, and striving for something for really beneficial uses of AI, for humankind. And that is powerful because, look, top AI talent is scarce. So, they know that people are competing for them. Firms are competing, but also countries, in who they want to work for, and what kind of goals they are pursuing is important. So, I think there is really an important role for the U.S., for the EU to play to be those beacons of developing AI for the benefit of humankind, and not to threaten someone who might be a bad or rogue after because that's the way to attract idealistic talented people to work for you and get ahead in these really important applications.

MR. PATNAIK: That's a very interesting point. I think that we have seen some of that in the U.S. already, right? I think we have seen a couple of controversies at Big Tech companies, in the U.S., where employees have very different views and perspectives than the management and said, for instance, no, we don't want to invest in certain military technologies, or work for that, or things like that. So, I think that's a good point because I think especially the young generation that's coming up cares much more about that. So, if you think about talent acquisition and retention, this is a key point for a lot of

companies that the government should keep in mind.

MS. KLINOVA: Yeah, yeah. There is new paper by Bob Walsh and -- on the preferences of AI talent, in terms of what country they would like to live in.

MR. PATNAIK: Oh, interesting.

MS. KLINOVA: And U.S. is on top, right? So, U.S. should really prioritize making sure they stay on top. They have this great advantage now. It's really a big deal.

MR. PATNAIK: Yeah.

MS. KLINOVA: You know, and then whatever growth China is pursuing, but, you know, if people working there do not want to work on these goals, then they're going to be left without the best people, right, like -- and that's -- that's a big competitive edge. But, obviously, of course, right now, these immigration restrictions for AI talent are also really difficult to navigate. So --

MR. PATNAIK: Yeah.

MS. KLINOVA: -- the U.S. is a little bit shooting itself in the foot by not letting all of these talented people who want to work there.

MR. PATNAIK: I actually agree with you. I think -- so, we just published an article, today, actually, about how the U.S. can attract more entrepreneurship and international entrepreneurs with the immigration system because now it is very difficult. And so, we are turning away a lot of talent that might come here for studying, and then they cannot stay afterwards. And if we look --- I mean, if we look at some of the major large companies in the United States, I think the number was like 40% of those were either founded by immigrants or their children, so, it's a competitive advantage. That's an interesting point.

I think what I really love about the conversation today is it -- it's just such a complex topic that weaves together tax policy, inequality, immigration policy, and then technology. And I think, unfortunately, often times, our political system is not set up to deal with a lot of these complexities, in a comprehensive systematic way, right? And that's what I'm concerned about, that people are just -- they're very short-term oriented, the political actors that we currently have, right? And a lot of times, they go for short-term fixes, like you said. Okay, let's maybe go for a UBI or more welfare payments. But they don't look at the bigger picture, and so, I think it's really important that organizations, like yours, are

thinking about these topics, in a more comprehensive way.

MS. KLINOVA: We're trying, yeah, and it's -- yeah, you're right. It's just like the nature of the electoral process. You are thinking about your next election, and so, four years is your time horizon, and what we're talking about is much longer term than that.

MR. PATNAIK: And I think we need -- what I've felt sometimes is we don't really have kind of like a lot interactions, I think, between the policymakers that are making the regulations and then the tech world, right, the VC world, the Silicon Valley. There has been increasingly more so in the last couple of years, but I think, often times, these technologies just grow, and grow, and grow, and then policymakers are behind, at least in the U.S. I think the EU is a bit more proactive. So, I think it's really important kind of like to improve those interactions and to see kind of like what can we actually develop, in tandem with the technology, on the policy front, to make sure that these guardrails are put in place.

MS. KLINOVA: Completely, yeah. And, you know, the -- so, the regulation that EU put out, they worked first with the high-level expert panel, and all the people there were from the industry, and this was just a great model because the work was transparent. The recommendations of the panel were transparent, and it's not some kind of lobbying, you know, by tech companies that is happening behind the scenes, but a way to leverage their expertise, in a transparent way. I think it's -- it was well done, for this, to them.

MR. PATNAIK: Well, I would like to thank you because we are at the end of our talk today. But this was really interesting, and I wish you and your team good luck in working on this very important topic for the future. And thank you for your time today.

MS. KLINOVA: Thank you so much. It was a real pleasure. And thanks so much to everyone who joined us online.

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the

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