

James: Good afternoon, everyone, and welcome. I'm Jim Poterba, and on behalf of the NBER, I want to welcome all of you to this 16th annual Feldstein Lecture. And before telling you a bit about the history of the lecture and the reason we do this, I do wanna do a very important shout-out to Rob Shannon, who is in the back of the room. And I will just tell you that if what you would like is a calm life, the task of taking on a three-week meeting, with 140 organizers, and 2,700 of your favorite economists coming to Cambridge, with everything from the CrowdStrike outage disrupting your travel, to the, you know... I don't know quite what happened to my reservation, but I think I responded on the NBER website, this is not the job for the faint of heart.

Rob, of course, has a wonderful supporting team. But from the day the Summer Institute finishes at the end of July, Rob begins thinking about what's happening for the next summer. And this is an amazingly complicated logistical arrangement. And, Rob, what you do to create this fellowship activity for the economics profession is really extraordinary, and we are incredibly grateful to you for doing this. So, thank you again. And there have been days when Rob's birthday during July has fallen on the Feldstein Lecture Day, but we didn't quite pull it off this year.

So, I also wanna welcome three generations of the Feldstein clan who are here with us today. Kate and Janet and Katie Ray are all joining us. And I'm gonna say in a moment why this is such a special event. And it also gives me great pleasure to welcome several members of the NBER board of directors, including our board chair, Peter Henry, and our vice chair, Karen Mills, and our past chair, John Lipsky, as well as John Reed and Andrew Racine, who are here in the front row. And I hope I'm not missing anybody with the light blocking them out here. If, any board members in the back that I have missed out, raise your hands or forever hold your peace.

Okay. But the history of the Feldstein Lecture is that when Marty Feldstein stepped down as NBER president in 2008, the board wrestled with the question of what would be an appropriate way to recognize and celebrate Marty's remarkable leadership of nearly three decades at the NBER? And after some reflection, the realization emerged that somehow the Summer Institute was the key place to acknowledge and remember Marty. And now, as it is, you know, 16 years ago, and longer, of course, almost approaching 50 years since Marty took the helm of the NBER, I think it's actually very important to recollect the

significant impact that he had on this organization. So, with the, you know, acknowledging that the board created this, and it's great that we have the board's presence here, and it's wonderful that we have the Feldstein family joining us, I just wanna say a little bit about Marty and his role at the NBER before I introduce Ceci, our wonderful speaker for today.

So, Marty, of course, was an extremely distinguished and impactful economist, right? Marty won the John Bates Clark Medal for his work in public finance and related fields. He was the chair of the Council of Economic Advisors. He was the president of the American Economic Association. But a very important part of his professional contribution was his transformation of the NBER. He took the helm of an organization in 1977 that was very well-respected, but reasonably small, and not, frankly, a major piece of the economics profession. It had done some really distinguished work in a number of areas. And you can all rattle off, depending on your field, you know, whether it's Kuznets or it's Friedman or it's Becker or it's Stigler, there were lots of things that happened on NBER's historical watch that were very important, but it was not connecting the economists at lots of different places.

And it's really interesting. I've gone back and looked at some of the things that Marty wrote as he took the helm. And this, I'm gonna just read from you, in 1977, this is in a comment he provided to the NBER board of directors, as he started, okay? And he got many things right, but not all, as I'll show you. Okay. So, these are just... This is Marty in his own words. "I have thought a great deal about the NBER and the unique and valuable contribution it can make to economic research in this country. If I had to summarize in a single word what I regard as the bureau's potential contribution, that word would be interaction. The bureau can provide a framework within which to achieve research goals that individual scholars could not reach alone or through other existing organizations. Scientific research in economics is generally done by a single individual," not true anymore, okay, but it was true in 1977, okay, "who work in a university department where there's, at most, one other expert in the subject. Contact with other academic researchers who are concerned with the same problem is infrequent, and often unsuited to careful collaboration or critical discussion." Now, you have to remember, this is not just pre-Zoom. This is pre-internet. This is almost pre-FedEx, okay? This is U.S. postal service, if you're communicating with your scholars in the field, okay?

So, the idea that you were actually gonna bring people together was really very important. And Marty continued: "First-rate scholars in particular fields and different universities can benefit by meeting regularly, participating in summer research groups, or attending frequent small workshops." Okay? So, the inspiration for starting the Summer Institute was this vision of what the bureau could do. So, it starts small. Okay, in the summer of 1978, Marty rented space in one of the Harvard dormitories. And, you know, in amongst the band camp and debate camp, and cheerleading camp, there was economics camp. And there with these high school kids were 52 researchers from economics, who had come to live in the basement of Quincy houses [inaudible 00:06:19] at Harvard, to meet and discuss economics for a part of August. Okay.

And of course, to the chagrin of their families, what we discovered was that there were many economists who would prefer hot and steamy Cambridge to the nicer life on the beach or on a lake during August, and come and talk about the latest developments in panel data and public finance and labor economics. And the 1978 experience was such a great success. And I am actually very glad that we have one participant from the 1978 Summer Institute here with us, and it's Hank Farber, who's here in the second row. So, Hank, I think we need a special shout out to you, because it was labor and public finance which were the two fields that got started. And the next year, there was international, and it went from there. Well, Marty actually had a preference for small, intimate gatherings like this. That's the other part he got wrong, okay? It turned out that the economies of scale in this overwhelmed the small, intimate interactions. And from the 52 researchers in 1978, we've, of course, now come to 2,700 people in person, another 1,100 online, and an event which is now certainly one of the high points of the economics calendar during the year.

And what Marty discovered, recognizing that people really did like to come to these interactions, right, we've found this again and again, most recently as we've come out of the pandemic, you know, if you go to the NBER YouTube site on a Monday morning, and you look at the program meetings that were happening the week before, you'll discover there have been, I don't know, 450 views of these things. So, we don't exactly know who's binge watching the NBER meetings over the weekend, but they are cut from the same cloth of the folks who decided to come to hot and steamy Cambridge in August, back in 1978. So, the reason we have the Feldstein lecture is to remember the key contributions that Marty made to this organization and to the economics

profession more generally, through his activities at the NBER. And the board was trying to find a way to showcase the kind of research that Marty loved, which was policy-relevant, and ideally done by someone who was interacting both in the policy community and the scholarly community. And with that guidance, I am absolutely delighted to welcome Ceci Rouse as our Feldstein lecturer today.

Ceci has excelled on both of the dimensions that I just described. And if anything, it's really just hard to believe that she's managed to fit all of the things I'm about to tell you into one career, and do them all with such exquisite competence. So, Ceci was a Harvard undergraduate and a graduate student, and she's also had almost every role you can imagine at the NBER. She was a graduate student who had a desk at the NBER back in the day, working with her advisory team of Larry Katz and Claudia Goldin and Larry Summers. She went on to... And her early work on the economics of education earned her immediate respect within the profession. And, you know, depending on whether it's vouchers or community colleges or student loans or the time-honored estimating the rate of return to education, Ceci's done it all, with a range of incredibly interesting datasets, and with extraordinary achievement along the way.

She's also found time to look at, substantively and scientifically, issues around gender bias, in both the broader economy, and many of you know her celebrated paper with Claudia Goldin on blind auditions for orchestras, but also within the economics profession. She's turned the lens inward, to try to understand and work, you know, what we can do better to try to improve both the gender and other dimensions of diversity within our field. So, Ceci's been a distinguished administrator within the university setting as well, serving as the dean of public affairs and international relations at Princeton for a stint. She's also been very active in the public policy sphere, serving as a researcher at the National Economic Council in the Clinton administration, as a member of the CEA in the Obama administration, and as chair of the Council of Economic Advisors in the Biden administration.

And, along the way, of course, Ceci drew the joker from the pack, because her time as CEA chair was March of 2021 to February of 2023, which some of you may recall was a little bumpy for the U.S. economy. And some of you may recall, was a bit disturbed by an external shock that kind of took the global economy down along the way. So, when Ceci and I began the conversation

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about whether she would be prepared to join us today, I said, you know, this is a great moment for us to hear the lessons that, you know, you've drawn from managing through, as CEA chair, this very exciting and important time for the U.S. and the global economy. Ceci went from her carrel at the NBER back in the day to serving as a representative of Princeton on the NBER board of directors, and stepped down from our board when she took up her role at the CEA.

And of course, she, today, has a new job, which is president of the Brookings Institution, which is somebody most of you probably don't follow the rankings of think tanks in the global, as I do. And I have to say, year after year, and it, kind of a little dull, and she probably knows this, right, Brookings has always ranked as the number one think tank in the world for its research, not just in economics, but in international relations, and political science, and of course, its incredible influence on policymakers in the U.S. and abroad. So, Ceci now has taken on this really very impactful position, which enables her to touch, with a staff of nearly 400 professionals at Brookings, many different aspects of research and policy analysis.

So, we are incredibly happy, Ceci, that you've made time to come and join us today. I am delighted to welcome you to the podium as this year's Feldstein lecturer, and to let you tackle the question of lessons from the pandemic. Thank you.

Cecilia: Okay. [inaudible 00:12:46] Well, thank you, Jim, for that very gracious introduction. It's an honor. A little intimidating to be here today, but thank you. And it's really great to be here with you, Kate, and Janet. And I've just met Katie Rae as well. So, Jim, my time at the bureau goes back before my graduate days. I was an undergraduate RA for David Bloom. So, I wrote my undergraduate thesis on a, wait for it, a CPT. So, many of you who may not know what that is, it's a dedicated, gigantic word processor, with the most gigantic floppy drive. And, you know, I attended some of the bureau sessions at Quincy House back in the day. And I truly owe my love of economics to the many friends and colleagues I've had at the bureau. It is truly a special place. And, you know, as you pointed out, Jim, that is really due, in large part, to Marty.

So, you know, I learned a little bit of public finance with him. I'd see him around the bureau. But, you know, I was also a research assistant to him, just

for briefly. But I'd be sitting in his office, you know, listening to Martin Feldstein, with his insights and his brilliance, and listening to his guidance and instructions. But I'll confess that I was really distracted by the many cartoons he had on his wall from his time at the CEA. Now, my favorite was, he was in a skiff, rowing in one direction, and the others were in the other direction, and Reagan's yelling, "Feldstein." I couldn't find that one, but I found a couple of others. And so, one, I just love the humor, and I was distracted by that. But the thing that all of these cartoons reflect, and that I so admired about Marty, was that he was willing to speak truth to power, when that power was the president of the United States. He understood that, you know, a decision-maker has to be, hear from all sides, has to hear... They have advisors for a reason, and they need to hear what their advisors really have to tell them, and then they're gonna go off and make their decision.

So, I have one more slide here. And so, you know, I followed this, so I'm not gonna presume to, you know, match up to Marty as chair of the CEA. He really was amazing in that role. But I can tell you the number of times, and my staff will tell you it was probably more times than we really would like to admit or that we should say publicly, the number of times I would say to my staff, "You do not have to write or say anything that would cause you to give back your PhD." We have our personal integrity. You cannot say something that you do not really believe you can back up with your own understanding of economics, the theory, the empirical evidence, what it might be. Decision makers, especially any decision that's gonna reach the president's desk, is gonna be complicated, and economics is gonna be one of many, many factors. It will not often be not the winning factor. But, we should say what we have to say, and understand that the decision is gonna be a complicated one, and that we need to be effective advisors in that way.

So, that's the way I thought of my role at the CEA, and I truly took my inspiration from Marty. So, Marty was appointed as chair of the CEA during a different period. We were recovering from a period of high inflation, and had just come out of recession. So, I was appointed during a different crisis. So, I'm gonna do a little bit of a wayback machine, because the one thing I seem to notice that we all have is a little Monday morning quarterbacking going on here. So, let's just try to think back to where we were in January of 2021, if not before, because I actually think all of this goes back from before. So, the first thing I would just like to really point out, you know, as Jim had pointed out, we



had this pandemic, and let's just think about how fast this pandemic came upon us. So, there's actually a laser. So, if we go back to, you know, February 29th, that's when the first death from COVID was reported, right? We saw these are reported deaths, which means it was probably levels were much higher. The first vaccines were only administered in mid-December. When Biden took office, which was January 20th, we had about 460,000 deaths that were recorded.

So, that was a very quick increase in deaths. Vaccines became fully available for all adults, although we did not know how quickly they would be able to get, we'd get shots in arms. This is all by way of saying is that this pandemic still had much more to tell, and we did not know what the end was going to look like. So, we knew we had vaccines. They'd been, the first ones administered mid-December. We didn't know how effective they were actually gonna be in reducing transmission. We didn't know how long immunity would last once you had immunity. And we didn't know how quickly we'd be able to administer them and actually get shots into arms. It turns out the distribution was a huge challenge. One of the things that the Biden administration did, for example, is they started to understand that if you go to barbershops in black neighborhoods, that's where you can reach a lot of people. Now, you know, that's not just your typical, if we just go to the local, you know, library or the local school, we can start to administer. Those institutions don't exist in many places.

So, the administration had to get very creative. All this is by way of saying is that there was hope that the end was in sight, but we didn't really know when that would be, and what it would look like. Okay. So, then, if we go back to the crisis, so, you know, so, the federal government responded, but they were responding under a lot of uncertainty. So, if you go back to, again, February of March. So, remember, do we wear masks? Don't we wear masks? Remember, we were first told not to mask. Then we were told that we had to mask. Do we need to wash our groceries or not? Don't know, right? There was a lot that they just didn't know about this virus. And what did we see...? What we did understand pretty quickly is that we had no natural immunity, so the public health people said, "Stay home," and stay home we did. So, in March and April of 2020, about 300 million Americans were under stay-at-home orders. So, you can see the impact that had. Flights were ground to a halt. And you can even see a year later, they still hadn't gotten fully back to where they were. And I take this just as an illustration of how we just stayed home.

And then, two, you know, we had essential workers who needed to go to work, but those who could work remotely were asked to do so. And if you look at the fraction of workers that were working primarily from home, that tripled between 2019 and 2021. And so, this is even, you know, a year later, a year into the pandemic. So, very quickly, we had a big response to this pandemic. So, just for, you know, other fun things that we saw as a result. So, when you stop, interesting things happen. So, gas prices dropped to the lowest they had been in real terms since the early 2000s, so less than \$2 a gallon, in April 20... Remember those days? That was really nice. Gasoline prices plummeted because no one was driving. And sadly, although it was good for a moment, we had the biggest year-over-year drop in CO2 emissions. That year-over-year drop was two gigatons, which is 2 billion metric tons, which was the largest one-year drop in emissions, because we were simply not moving.

So, none of this lasted, because once we started moving again, gas prices picked up. And you see, the airlines came back, and emissions, sadly, have come back as well. But for a moment in time, we were frozen, which had profound impacts on our psychological well-being, but that's another talk, and I can't give it, but I really do believe that that's an interesting aspect as well. So, this led to some unanticipated changes in our economy. So, we saw that the S&P 500 dropped precipitously, but then regained, I think, faster than many of us expected. And then an aspect that we will be talking about for some time is we saw that people switched from consuming services, which is the blue line, or the bottom line, Hank, and consuming durables. And so, this is the fastest switch, it's not the only switch, but it's one of the fastest shifts, going from services to durable consumptions, that we've seen in the United States.

So, if you're wealthy, you might think, like, we got rid of the personal trainer, got a peloton, right? That was kind of what we got. And since things have to be produced, and things have to be shipped, and shipped long distances in certain cases, we had the infamous supply chain constraints. So, this recession caused some fundamental differences than what we had seen in many prior recessions. So, what this is a graph of is the New York Federal Reserve's global supply chain pressure index. And what it does is incorporates the global transportation costs, delivery times, manufacturing supply chain components. The y axis is standard deviations from the average value, which is set at zero. And so, if it's below zero, what you have is some excess capacity. And if it's above zero, you've got constraints. So, when you look at the Great Recession, you saw



some volatility here, but what you saw is that there was some slack capacity, the supply chain. And look at what happened during the pandemic. It skyrocketed. So, this hasn't been measured forever, but you can see it's the highest recorded.

And just to put some real-world context on this, so, the cost of shipping from China to the west coast of the United States was about \$1,300, shipping a container, was about \$1,300 in February of 2020, and that skyrocketed to \$20,000 in February of 2021. So, for a few months, the cost of shipping a container was 1,000% higher than it had been pre-pandemic. Other challenges. Remember the used cars? I don't know. We bought a used car during that time. That was a challenge. Paid a lot for that. Commercial real estate, which we are still recovering from, plummeted. So, there were quite a few challenges that this presented for our economy.

So, in this talk, I want to take away and talk about three, and then there's a bonus lesson that I'll get to at the end, lessons that I took away, from the CEA perspective, for economists. This is for economists. I'll have some, you know, ideas for research, others for economists who wanna think about policy, and for those who are also trying to understand what happened. So, the first lesson is, in a crisis, policymakers can't let the perfect be the enemy of the good. The second is we could have done a lot better if we'd had better data and more infrastructure, better public sector infrastructure. And the third is that crises do provide great opportunities for learning new insights about an economy.

I'm gonna do this through the lens of the fiscal response to the pandemic, UI, which is a system in sorely need of love and attention, and what we might be learning about labor markets in the wake of this. Okay. So, the first is the fiscal response. And the lesson is, "In a crisis, policymakers can't let the perfect be the enemy of the good." So, we're gonna go... Once again, I'm gonna keep going back to just how fast this all happened. So, if you look back, UI claims are typically, and right even before the pandemic hit, there were about 200,000 initial UI claims a week. By the end of March, they had skyrocketed. So, it was, like, on just March 7th, or the beginning of March, it was 200,000 a week. A couple weeks later, it had skyrocketed to 2.9 million, and it reached a peak in April of 6.1 million claims. That is 10 times the number of initial UI claims than at the peak of the Great Recession. Look at the speed with which that happened.

So, policymakers thought, "Oh, my goodness. People are now unemployed. They still have to pay their rent. They have to pay their bills. What about the businesses? We need to support this economy." So, you know, you kind of wish that our policymakers could act this quickly on a good day, but in a crisis, on March 18th, so, this was really early, they passed the Families First Act. That was \$192 billion. So, that was COVID research. That makes sense. Enhanced UI. Health funding, right? We knew we were gonna need to support our public health systems. Then we had, 10 days later, the CARES Act, which was \$2.2 trillion. That's the largest fiscal stimulus in history. And enhanced UI, we had the PPP loans and EIDL, which I'll talk about in other components. And then subsequent to that, we had the Coronavirus Response and Relief Supplemental Appropriations Act, which we all forget about, but that was December 27th of 2020, which was \$900 billion. And then we had the American Rescue Plan, which was \$1.9 trillion.

So, policymakers went big. And the question is, why the big response? So, a lot that was on the minds of many policymakers was, one was concern about just, you know, the short-term loss of, people having job loss, and the sharp contraction in consumption, given that consumption is two-thirds of GDP, what that was gonna do to our economy. But also, there was a lot of concern about the risk of scarring, should this downturn be prolonged, and take quite some time for the labor market to recover. And what was on the minds of many people were the three recessions before the pandemic recession. So, this is the employment-to-population ratio. It's indexed to the peak from the previous business cycle. And so, this is, the first is the recession that was in 1990 to March 1991. These are NBER dating recessions. So, that took about 32 months for there to be recovery. Then in the early 2000s, that took about 46 months for a full recovery. And then we have the Great Recession, which took over six years.

So, the concern was there would be this big contraction, people would lose their jobs, and it would take quite some time for the labor market to recover. And in that time, we have people who are out of work, they're losing their identity as being workers. Their job skills are deteriorating. And then we also know just the impact of job loss, right? I'll refer to you, you know, just for references, right, the jolly volume edited by Alex Moss and Dave Carr, which has a lot of papers which reflect on this. But we know that people who lose their jobs, like, their wages never fully recover. It takes a hit on their employment. If you're a

young person entering the labor market, it can have a permanent impact, or for quite some time, an impact on your wages and employment as well. Not to mention, when you have job loss, you know, the impact that's been even demonstrated on the children of the workers that lose their jobs. So, that was a lot of the concern of policymakers, and they felt that they needed to move quickly.

And, there was a lot of concern that in the Great Recession, policymakers hadn't responded largely enough. So, in the Great Recession, we had the American Recovery Act. I often confuse the Rs in these two acts. And not that I'm proud of that. But the American Recovery Act, which was about \$2 trillion, and that was the largest... So, that was the largest stimulus at the time. And you saw how long it took for us to recover from that recession. And so, they went much bigger, for a total of \$4.6 trillion. Add to that, you know, so, that was a lot, that, add to that the concern about the uncertainty of the length of the crisis, a view, a political calculation, that we wouldn't be able to go back to Congress, should it be necessary, should the pandemic... we didn't know when the pandemic was gonna end. If we needed to go back, could we go back and still get stimulus? So, everybody went really big. And so, then, if you add to that what the Federal Reserve was doing to keep credit flowing, because that was another lesson from the Great Recession, that credit markets matter a lot, for keeping the economy going.

All right. So, that was the impetus, and that was the rationale. And so, the question becomes, was it worth it? So, I'm gonna give you two reasons, possibly. I mean, this is gonna be work that you all will do for quite some time, right? Possibly, one cost, and then how we can start to think about it. So, first of all, I've added now the employment-to-population, the labor market recovery in the pandemic downturn, and you can see it was faster than in the prior three recessions. In fact, it was faster than any recession since World War II.

So, one, you know, it was largely because the vaccines turned out to be much more effective than we anticipated. Turns out they did a pretty good job of reducing transmission. Omicron was a bit of a [vocalization 00:30:34] out of the left field, and that was gonna happen with a virus, but more or less, we were getting a handle on the economy. And two, there was this huge public sector response. The fiscal response, the monetary response, there was a lot that was supporting the economy. So, one could argue, well, that may have helped with that. Two, if you look at our real GDP output, compared to other developed

countries, this is work from my colleague and now classmate, Gian Maria Milesi-Ferretti. So, this is looking at their pre-crisis trend for each country. So, that's normalized to zero. And you can see that the U.S., and this is Q3 2021, which is before the Russian invasion of Ukraine. And so, you can see the U.S. is just under 2% below its pre-crisis trend, and that's doing a lot better than other developed countries.

So, you know, one could argue that we were spared the loss of trillions of dollars that our neighbors, our peers experienced, that we avoided because of all of the support. But of course, we do know that we got a spike in inflation. So, you know, why did inflation spike? Again, you all will be telling us for years, but the two large explanations are all of that fiscal monetary response and the supply constraints. I suspect it's a bit of both, but it's far from clear that, as it was alleged at the time, not that I'm bitter, that the federal response was irresponsible or misguided. I personally think that for now, it's looking as though the benefits outweighed the cost, as inflation is coming down, but we're not back down to the Federal Reserve's target. And so, this is gonna be something that time will tell. But at the... So, I'm not declaring victory here. Game's not over, but that's how I would assess it at the moment. But importantly, this was decision-making under a lot of uncertainty. Was this perfect economic decision-making? Probably not. But was it good enough? Well, that's gonna highlight how we could have done better, which is my second lesson. So, the first lesson is I personally think it was probably good enough, but I also think we could have done a lot better if we had better data infrastructure, if we had had more infrastructure in our public sector more generally.

So, quite frankly, right, if you think about the public sector, at the start of the pandemic and still today, we had the federal data, if you think of the computing infrastructure, if you think of the people. It just wasn't up to the task. So, like, as example, let's look under the hood. So, under the CARES Act, we had these brand-new programs, which were meant to support employment on the job. The PPP program, the Paycheck Protection Program, which were forgivable loans to small businesses, those with fewer than 500 employees. And it was [inaudible 00:33:36] to help them make payroll, pay their rent, etc. And then you have the Economic Injury Disaster Loan program, the EIDL, which were low-interest, long-term loans, which were, again, meant to assist with keeping people on the payroll. These were meant to be paid back over time.

And UI was expanded to include gig workers, part-time workers, freelancers, independent contractors, the self-employed, people who are not typically covered in our unemployment insurance system. So, these were designed on the fly, because, you know, we didn't have systems in place that would already allow us to support workers on their current jobs. We didn't have... So, we had to invent these new programs on the fly. All right. So, how did that go? Well, on the pro side, about 40 million people received UI benefits, almost a million firms received PPP loans, almost 4 million received EIDL loans. That was all to the good. However, David Autor and his co-authors have estimated that they were wildly, the PPP loans, for example, were wildly inefficient, that it was at a cost of about \$200,000 per job-year that was saved for PPP, which is about... PPP. Yeah, that's the right number of Ps. Which is about twice what those workers were paid typically, about \$100,000. And there was substantial fraud. So, if you look in the UI program, so, there's always some fraud in UI, but the excess fraud in the UI program was about, the GAO estimates between \$55 billion to \$200 billion in fraud. This is just a central estimate. This is between \$1 billion and \$135 billion. If you look at the EIDL program, the estimated fraud's about \$130 billion. And if you look at the PPP loans, about \$63 billion in fraud, which is about 10% of the total loans that were paid.

So, these were not well-targeted, and there was a lot of fraud. Why did we get the fraud? Because we, workers, and those who applied, they couldn't verify identities and the creditworthiness of the borrowers. They had to move so quickly, they had to forego some of the usual background checks, not that they were up to snuff anyway, and other procedures. Some of the computers were old, working on COBOL. They were understaffed. They were relying on workers that were not skilled. And we know that we've got a lot of data privacy issues. We've got a lot of data systems that don't talk to one another, which is also hampering the ability to verify identities. And if you look at the UI program, we added on \$600 a week. Where did \$600 come from? That was the average amount that you needed to add to get a replacement rate in UI up to 100%. Turns out that meant that most UI recipients were getting replacement rates well above 100%.

So, that might have been a feature rather than a bug for some people, but it meant that we were being... it was not well-targeted, it was not precision economic policy-making. In comparison to our EU neighbors, where they also had fraud, because this was all done so quickly, even their pandemic response

generated some fraud. But, so, if you look at the EU area GDP, that's somewhat comparable to the U.S., larger population, the amount of fraud that was estimated there was on an order of magnitude less than that we had here. So, we were relying on a public sector that just wasn't up to the task, and in which we hadn't been investing in.

So, to make this point even clearer, I wanna just drill down a little bit on UI. So, UI was created in the 1930s, in the Social Security Act. Hasn't really been much reform since then. Despite the fact that we have got major changes in our workforce, we have not been making... the way that we fund UI has not been updated. And the variation by states means that there's wide variation across the country in who's eligible and who's not. And so, it's just not kept up to the job that it was really created for, which is to allow for some consumption smoothing, and to help workers transition from one job to the next.

So, what has gone wrong? Or, what went wrong during the pandemic? So, one, we had a lot of state variation. So, some state systems were actually, you know, in much better shape than others. But there was huge variation at the state level. As I mentioned before, you know, some systems were working on COBOL. There were some states in which workers can't even apply using a portable device, which many people do. So, in 2020, the GAO estimates less than 50% of the states had modernized their systems. UI is underfunded. So, UI tax applies to wages below a cap. In 1937, that cap applied to about 97% of all wages. Today, it's about 25%. Which means that our UI system just doesn't have the revenue in order to make the kinds of investments it needs to make. So, aware of these problems, tucked into the American rescue plan, there was \$2 billion for UI modernization. DOL managed to spend about a billion of it. And then, last June, when we had this little debt ceiling problem, Congress was looking for some ways to say, like, we got something for it, so they rescinded a billion dollars of it. So, we still have a ways to go in making the kind of modernization, just the kind of technology to keep UI up to snuff.

And then, UI has not kept up with our labor markets. So, we've also got a problem that we've got a decline in reciprocity rates. So, this is the fraction, you know, of people who are unemployed who are actually covered by UI. I've smoothed this with three-year moving averages, just to smooth it out. So, you can see back in 1950, just under 50% of workers were covered by unemployment insurance, and that that has fallen to under 30%. So, who's not covered? If you quit, if you were fired for cause, if you're a student, if you're

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self-employed, if you're a gig worker, if you're a contract worker. You also, in many states, you have to meet minimum wage earnings requirements, and you might have had to have some time on the job. So, what happened is you can see a little bit of variability. Oh, wait. I don't mean to do that just yet. So, during this time, there was challenges in the UI financing, so a lot of states tightened their eligibility. And in this time, since the Great Recession, we don't fully understand that, but one explanation may be that a lot of workers just aged out or they timed out of UI, because, remember, it took a long time for the labor market to recover.

And two, states may have also tightened eligibility in order to preserve their financing. But three, we've also had some other changes in our labor market. So, this is from a paper by Larry Katz and Alan Krueger, which looks at the rise of alternative work arrangements. So, they went back to 1995 and 2005. So, alternative work arrangements, and these are typically not covered by UI, you have independent contractors, on-call workers, temporary help agencies, and workers provided by contract firms. This is the total. Not a huge change between 1995 and 2005, but you can see a five-percentage-point increase between 2005 and 2015. You can see one of the big increases is workers provided by contract firms. In fact, UI... So, that's been a huge increase. So, DOL has just actually issued some regulations, where they're trying to tighten up the definition who's a contract worker, in order to cut down on what they call misclassification. But this is especially important because even since 2015, we've had a rise of gig work, which is just another modernization of our workforce. So, this is from a NBER working paper by Andrew Garin and co-authors, which shows the rapid rise of gig work in our labor market.

So, there are two lines here. So, the blue line with the squares represents workers where there was any online platform economy income. So, gig work income. And then the red line with the diamonds is more than \$500, or \$600. So, before here, they sort of diverge. They converge here because, in the tax forms, the gig platforms are only reporting workers that have a stronger attachment. But you can see this tremendous rise. Back in 2012, there was almost no gig workers that were being reported, whereas if you fast-forward to 2021, it's about 5 million workers, about 3% of the workforce. Pew Research has some research that suggests it may be as big as 9% of the workforce. So, this is a large change in our labor force. For about a third of workers who

engage in gig work, they report it as their primary income. For almost 60%, they report that it's a central component to help them meet their needs.

So, these workers are not covered by our UI system. This is not the only place that it's a challenge. They also do not necessarily get health insurance. This is known. But this is a place where our whole benefit system, which relies on employment, where we get our benefits through employers, has not really evolved. The Affordable Care Act is an attempt to do that on the health insurance side. And actually, Jon Gruber has a proposal that he put through, and I'm gonna say Brookings working paper, as a Brookings brief, where he proposes something similar on the UI side. Others have proposed portable benefits on UI, but we need to address this. This is a place where our UI system has not evolved to keep up with our labor market. Okay.

I would be remiss, just because of where I am, if I did not point out another area where we need more, better investment in our public infrastructure, which is in federal tax enforcement. So, this is work that's been really highlighted by Natasha Sarin and Larry Summers, and Nate Hendren, which really illustrates the cost of not making these kinds of investments. So, on the left, you have the percentage of returns that are audited by the income of the recipients. And you can see a steady decline in audit rates for those making \$500,000 or more, with a really steep decline since 2015. In contrast, the audit return more than pays for itself for these wealthy individuals. So, if you look here on the right, it's the audit revenue for the cost of conducting the audit. And, one, it means that you're getting a dollar for each, you know, each dollar that it costs to conduct the audit, you get a dollar in return. But you can see for the top 1%, it well more than pays for itself, and yet that is not where we are putting our auditing dollars.

So, these guys were pretty influential. And in the Inflation Reduction Act, there was money set aside for the IRS. And GAO has just estimated that the IRS has already brought in more than a billion dollars in additional revenue, as a result of the investments that they've been able to make, in recouping back taxes of millionaires. And they've also reduced wait times by about four minutes, for those who call in. So, with investments, this is one way we can help make our federal system more efficient, but we have to be investing in the infrastructure to do so.

Okay. My last lesson. Crises can provide new insights about our economy. So, this is a pattern which I'm just gonna be quite...I put out there. I discussed this

at a talk I gave at the Boston Fed last fall as well, because, I know, I, for one, was not anticipating this result back in early 2021. And that is that we've seen income compression through this pandemic. So, just to illustrate this, this is a chart from Autor, Dube, and McGrew, where they have divided the distribution into three occupational terciles, and doing the wage relative to January 2020. So, that's indexed to 2020. And what you can see is before then, the three terciles were rather trending together. The lowest tercile was making faster gains, but they were largely trending together, but that since the pandemic, you've seen that the lowest tercile has [inaudible 00:46:28] in contrast to the bottom two terciles. You can see a little bit of bump up here at the end, but really, especially the top tercile has seen real wage losses. I did not expect this myself. As I said, we were worried about scarring. We were worried about a weak labor market recovery, and all the things. But this compression was surprising to me. The Gini index, I would...mimics this. It's the lowest it's been since 1993 as well. So, we haven't seen this compression in decades. So, why might this have occurred?

So, I'm gonna just tick through a few explanations that I think are not likely, and then just leave you with, you know, some thoughts for further study, that many of you are already doing, but that I'm intrigued by myself. The first is that, you know, is it that we've seen a catch-up in human capital skills for those who are the lowest-skilled? And I'm just gonna say that's rather unlikely. Right, human capital acquisition takes some time. At the post-secondary level, we know that enrollment fell, with the onset of the pandemic, and it really hasn't recovered. If you look at younger kids, we had learning losses, so that goes in the wrong direction. What about increases in state and local minimum wages? You know, not likely. Minimums haven't increased at all in real terms. Many of them were indexed to inflation. Twenty states still have minimums that are indexed, that are at the federal minimum wage, which hasn't changed, still at \$7.25 an hour. So that means that they've lost in real terms. So, the increases in wages are unlikely to explain that increase at the bottom tercile.

What about unions? I think that unions... This may be one we're studying for a little while. It's not union, being a member of a union per se right now. So, union election petitions were up in 2022. They've increased even more in 2024, and win rates have ticked up to 79%. So, we know that there's a lot of interest, there's a lot of activity. But union density has continued to decline, and it's had a historic low at 10%, in 2023. So, it's not unionization per se. On the other

hand, the threat effects may well be at play here, and I personally wouldn't rule that out, but I wouldn't say it's a direct impact. So, what might have happened? Okay. So, the pandemic recession only lasted two months. Employment was back to about 5% in September of 2021. We know that with all the generous pandemic support, we had the great wall of savings. So, households had a lot of savings. They didn't have a lot of places to spend it. They were given a lot of support, which likely increased reservation wages. And at the same time, what did we do? We took a different tack than many of our peer countries, which is that our way of supporting people, aside from PPP and EIDL, was largely to support people through unemployment insurance, which basically says, "You lose your job, and we will support you."

In contrast, in, like, New Zealand, France, Germany, and all these other countries, they followed what...and I love this, job retention schemes. We have to call it a scheme. We might call it a plan, we might call it a program. But Europeans call it a scheme. So, they follow job retention schemes. If you look at New Zealand, France, and Germany, over a third of their workforce was paid to be on their, to be retained at their employer, and they were paid through their employer, even though they weren't going to work. PPP, EIDL were somewhat designed to do that. We do have a formal system in the United States, which we call Short-Time Compensation. It's through our UI program. It was something we tried to actually enhance in the Obama administration. States have to take it up and implement it. You know, there are a few states that have taken it up, and you saw some state variation in using short-time compensation. But in the pandemic, the most you saw in the U.S. was 5% of UI claims were through Short-Time Compensations, which is where workers can get the unemployment insurance even if they're still considered employed, and a worker.

So, we took the tack of we're gonna break up this employee-employer relationship, and have people rematch when the labor market then healed, and people were ready to get back to work. And as a result, we saw historically high rates of vacancy. So, for, like, 15 months, we had 1.6 vacancies posted for every unemployed worker, and we had historically high rates of quit rates. People quit in tight labor markets. A lot of these, I think Ryan Michaels has estimated about two-thirds of the total quits, at least as measured in the CPS, this is from JOLTS, were employer-to-employer. So, people quit in tight labor markets because they feel they have some confidence to do so. So, both of these were evidence of a very strong labor market, where people had, again, the

resources to search more intensely for maybe a better match, maybe a more productive match. But I think, you know, it also reflected that they were not happy with their jobs. I had a technical term, but it's not suitable, since this is being recorded.

So, if you put it together, we relied on UI rather than job retention schemes. We had very tight labor markets, where workers then...and, you know, a lot of demand for workers. So, it gave rise to more bargaining power for workers. So, is this just evidence of Okun? So, on the right is a figure from a paper by Stephanie Aaronson and co-authors, where it's an, you know, Okun basically hypothesized that when markets reach full employment, that the lowest-paid workers are gonna gain the most. As they are both drawn into the labor market, they have better labor market jobs, and they can get better jobs that are vacated by those who move up. So, in this figure here, this is full employment at zero. And so, as the labor market gets tighter, you can see that it's red hot. So, you see that the gap between college-educated workers and non-college-educated workers narrows in comparison to when you have a colder labor market. So, is this just evidence of Okun? Which really can exist in a competitive labor market, and it's just evidence of workers having a lot of opportunity to search? Or are we learning that maybe there might be some labor market imperfections?

And so, this raises, you know, the role of search, as you might find in a Diamond-Mortensen-Pissarides model. We've got a range of indeterminacy, and wages and workers are searching. Or, what I'm even more intrigued by is evidence of market power. So, Arin Dube and David Autor and McGrew, in that paper, they put together evidence that maybe this is evidence of greater monopsony. I mean, Dave Card and his AEA, and his, I guess, actually, it was in the Nobel address, right, goes through a lot of evidence on the role of monopsony. Or, Anna Stansbury and Larry Summers have a paper where they argue it's not quite monopsony, but it is some evidence of worker power. But in any event, it suggests that we don't just have a perfectly competitive labor market that's at work here.

So, three lessons. In a crisis, we can't let the perfect be the enemy of the good. We need more data and public infrastructure if we do wanna do better economic policymaking. We can learn lots of new things about our economy. And really, many important questions remain. So, the final lesson is that crises provide full employment for economists. So, thank you.

