Ep. 12 Productivity Puzzles podcast transcript

The Links Between Productivity and Pay

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Host:

- **Bart van Ark**, Managing Director of The Productivity Institute and Professor of Productivity Studies at The University of Manchester (BvA)

Guests:

- **Anna Stansbury,** Assistant Professor of Work and Organization Studies at the MIT Sloan School of Management (AS)
- **Larry Mishel** Distinguished fellow at Economic Policy Institute in Washington DC (LM)
- **Andreas Teichgräber** Researcher at the Centre Economic Performance at London School of Economics and a member of the Programme on Innovation and Diffusion (AT)

BvA: Do productivity gains always end up in our pockets, in terms of more money, unfortunately not but there have been important differences over time and between countries. Why? We're going to find out, welcome to Productivity Puzzles.

BvA: Hello and welcome to the twelfth episode of Productivity Puzzles, your podcast series on productivity, brought to you by the Productivity Institute and sponsored by Capita. I am Bart van Ark and I'm a professor of Productivity Studies at the University of Manchester and I'm the director of the Productivity Institute, a UK-wide research body on all thing's productivity in the UK and beyond.

Great to have you back as an audience and today we're going to talk about a topic that I think we all find important, as much as we would like to take about productivity being important for sustained economic growth, another key question is, how much of those productivity gains actually make it into our pocket, or more generally, do productive firms pay better money or even more generally, does a productive economy raise the incomes of a typical worker.

Well, at the Productivity Institute, we invited several scholars from the United States, Canada and the UK to help us understand why productivity does not always make everyone better off. There are studies who were published in December, in the International Productivity Monitor, which is a journal that the Productivity Institute, edits together with the Centre for the Study of Living Standards in Canada. You can download those articles from our website at producitivty.ac.uk or simply go to the show notes where you can find the link.

Today we have three of the authors with us, to talk us through their results, how and why has the link between productivity and pay changed over time. What are the key drivers and I'm also going to ask what can we do about it, what policies can we implement to change this and also if productivity

doesn't always lead to wage growth, what if we turn it around, are companies that pay better also likely to be more productive companies?

So, I have three great guests today, setting us up for a really good discussion. Anna Stansbury is an Assistant Professor of Work and Organization Studies at the MIT Sloan School of Management and she is in the core faculty of the MIT Institute for Work and Employment Research. Her research focuses on topics and labour and macro-economics, particularly on issues to do with inequality, power and institutions in the labour market. Her paper on productivity and pay in Canada and the US was co-authored with Larry Summers and Jacob Greenspon at Harvard University. Anna, welcome.

AS: Thanks so much for having me.

BvA: Larry Mishel, is a distinguished fellow at the Economic Policy Institute in Washington DC, of which it was the president from 2002-2017. In the more than three decades that he's been with EPI, he built it into a research organisation focused on labour markets and living standards in the US. Larry co-authored all twelve editions of the State of Working America, a book that former US Labour Secretary, Robert Reich says, remains unrivalled as the most trusted source for a comprehensive understanding of how Americans and their families are faring in today's economy. Larry, good to have you on the show.

LM: Happy to be here, Bart, thanks for doing this.

BvA: And last but not least, we are joined by Andreas Teichgräber. Andreas is a researcher at the Centre Economic Performance at London School of Economics and he is a member of the Programme on Innovation and Diffusion, called POID. Andreas is a co-author with John Van Reenen at London School of Economics in the decoupling of productivity and pay in the UK. Andreas, thank you for joining us.

AT: Great to be here.

BvA: So, let's start at the obvious place, has productivity and pay drifted apart, the common sentiment out there that, is that it has but what do the numbers actually tell us. Larry, in your work, you make a very useful distinction of three sources of decoupling between productivity and pay, first a smaller share of income from investment and productivity going to labour and therefore a larger share going to reward capital and raise profits. Second, an increase in inequality meaning that some people get a lot more from productivity than other people and third, that there is a price increase in the stuff that we consume, that is higher than the price increase in the stuff that we produce, something that we call a terms of trade effect on economies. So, Larry, how has this played out for the US, just give us a few numbers to gage the size of the issues in the United States.

LM: Well, thanks Bart and what's nice about this symposium and the international productivity monitor is that the divergence is taken seriously as a thing, there is nobody really questioning it, in fact we all use pretty much the same data. I should note that my decomposition you mentioned was pioneered by Andrew Sharp and the people at the Centre for the Study of Living Standards in Canada, so, I'm just applying some methodology to what they developed.

Well, here's the thing, the gap between productivity and the median compensation growth, the typical worker, grew about one percentage point a year between 1979 and 2017. That accumulates to a thirty-three percentage point gap, in contrast there was not much divergence in the 1948-1979 period, so we're looking at something that really sabotages the growth of compensation for the typical worker in a new way, since the late 1970s.

Now we've been publishing something like this since 1994 and we've evolved how we measured it but just to be clear to everybody, this is about the total economy, it's about output, net of depreciation and when I say there is a forty-three percentage point diversion over four decades, I am excluding that related to the different price inflation of output verses consumers, just to not have that be a way for people to dismiss it.

So, net productivity grew 1.36 per cent, compensation median 0.38 and a gap of 0.99. Translated into dollars, medium compensation was roughly twenty-three dollars in 2017 and it could have been thirty-three dollars in 2017 without a divergence. That's a ten dollar an hour shortfall, so that's very meaningful, that's a big, big BFD as Joe Biden would say and the important part about this is that we know that even when you look at all three factors that you mention, it's almost all determined by the inequality factors, the loss of labour share, the growth of wage inequality, especially since the year 2000, 91 per cent of the divergence is due to those inequality factors.

BvA: So, Anna in your paper, you make a comparison between the United States and Canada and as Larry has said, the US numbers and the data are very similar, so I guess the picture is pretty much the same for the US but what is the story on Canada, is it more like the US or is it perhaps a little bit more like the UK, as we will discuss with Andreas in a minute?

AS: So, I think there are two really interesting points to draw out in terms of comparing the US and the Canadian experience, as Larry outlined, in the US, there has been this very large divergence between the growth rate of productivity and the growth rate of real compensation for the median on typical worker, driven mostly by inequality in labour income and also partly by a decline in the labour share of income. In Canada, you see that trend and that pattern happening, in a similar way and over a similar timeframe.

So, you see that from about the 1970s, perhaps the late 1970s, there has been a divergence in the growth rate of productivity and the pay of median or typical workers and most of that divergence, again has been driven by this growing gap between median and average or typical and average compensation, which is a rise in labour income inequality as the incomes of higher income workers pull away from the incomes of workers in the middle of the distribution.

But there has also been this small decline in the labour share of income in Canada or this divergence between average compensation and productivity growth. So, the kind of big picture pattern and timing is very similar but the second fact that is interesting is that the scale has been very different, the widening of inequality in Canada has happened less than the widening of inequality in the US, so that gap has grown less quickly between productivity and median or typical compensation in Canada.

In fact, what that mathematically has been driven by, if you look at the US and Canada, since 1976, median compensation or compensation of typical workers which we measure slightly differently in the two different countries has grown at about the same rate, in real terms, in either the US or in Canada, since about the late 1970s. What's differed is that productivity growth has been much faster in the US than in Canada. So, that inequality between productivity and the median worker has risen much more in the US, not because the median worker has done worse in the US but because the pie has grown faster.

So, there has been more that could have been redistributed to the median worker and was not. Whereas in Canada, productivity grew more slowly, median compensation grew at the same rate, so inequality didn't grow as fast, the divergence didn't grow as fast but the broad pattern looks similar.

BvA: So, very quickly, because for us, we know what we mean when we talk about the difference between median compensation and average compensation but for some of our listeners, it's perhaps important to understand why it's important to think about the difference between those two?

AS: Absolutely, great question, so median compensation is the compensation that the worker in the absolute middle of the income distribution, so you line up everyone in the economy according to their income and the middle person is the median. That is an interesting measure because that helps us get at, what the experience is like, as a proxy, for the bulk of middle income workers in the economy. Average is taken when you add up all the incomes and divide them by the number of people and the reason that average does not necessarily move with median is, if the incomes of the very richest people are growing very fast, that pulls the average up but doesn't necessarily pull the median up.

So, when we look at average pay numbers, what we might be seeing, is just a rise in income for the very richest workers without any improvement for the typical people in the middle and that's why that is the median average.

BvA: Yes, it's a really good measure of inequality right, if you give a few people a lot of money and the rest get nothing, the average may go up a lot but the mean doesn't. So, there was a fourth paper in the international productivity monitor by Andrew Sharp and colleagues which in contrast to the US, where the gap between productivity and pay widened, in Canada, it actually narrowed a fair bit over the last decade or so.

AS: Yes, that's a great point, so the timing in a more fine grain sense has differed somewhat. In Canada, the period over which median and typical worker compensation, particularly diverged from productivity was really the eighties and nineties and in recent years, that growth rathe comparison has been pretty similar. So, the growth rate of productivity verses the growth rate of the median, there is still a gap, it's still diverging but it's less than it was in the past.

BvA: That's interesting, because it basically means that it doesn't have to be always the case that this gap is just growing and growing over time, it can actually reverse. Now Andreas, let's go to our home turf of here in the UK, both you and I are in the UK here, in your paper with John, you also find some decoupling but again not nearly as much as what was found in the United States, right?

AT: Yes exactly, just to give you an idea of what we are doing in our work, we look at the period from 1981 to 2019 and just focus on the UK and we also look at the decoupling of…so in our basin and analysis, we look at the decoupling of labour productivity and the typical employee's pay, so median wages, we have to look at wages because in the UK, it's what we talked about earlier, Anna and Larry said, compensation, it's a bit difficult to measure. So, in our baseline, we look at the pay and we find that there has been substantial decoupling of labour productivity and median pay in the UK up about twenty-five percentage points over these forty years.

So, this is definitely also a big divergence, although my sense is that it's not as big as in the US, quite important perhaps to notice also that most of this gap has occurred in the beginning of the 1990s. So, in perhaps more recent years, it has actually grown at a similar rate, although very slowly, both productivity and median wages. What we do in our work, we decompose this difference to see where it comes from and basically exactly of what we've heard about, the US and also Canada is the largest chair can be explained by this inequality component.

So, if you take average verses median wages, Anna has just explained this very nicely, the difference here we find 60 per cent of these twenty-five percentage point difference between labour productivity and median wages

can be explained by this average who has this mean divergence. So, mean wages have grown much more, the ones that affect people at the top of the income distribution. Another important factor in the UK, we find is that if we go one step further, we compare average wages with average compensation, so for the average, we actually have data for compensation and then we find there is also a huge divergence which has come up in the beginning of the 2000s and this is basically driven by rising non-wage…what we call non-wage compensation.

So, a lot of employers have started to put a lot of money in pension contributions and everything, so this has gone up a lot recently in the UK. So, there is some divergence and one might think that this is actually not a big issue because, for example, pension contributions, the employees will get it at some point in time, so it's actually good but we are bit worried that these pension contributions go only to a very small part of the workforce in the end. So, this is actually a very interesting point about the UK.

BvA: That's a great point and indeed we may talk a little bit more about it later, one very important difference between the UK and the US and perhaps even Canada is that UK productivity growth rate itself has been quite a bit slower, as we've talked about in previous podcasts. So, wage growth or compensation growth was more aligned with productivity in the UK, it was basically also productivity that was significantly slower.

AT: I mean definitely, if you look at it since the financial crisis, in our work, we have some, I think, some nice graphs which illustrate this basically, it's just you see, it's almost like a kink in the graph that basically the labour productivity in the UK, it's almost flat since 2007 and the wages are basically a very similar rate, have grown at a similar rate. So, this is the major problem in the UK.

BvA: So, different issues in different places, so let's deep-dive a little more into this Anna, I thought in your paper, there was a really interesting distinction that you were making between something you called divergent and delinkage. So, take us a little further into this argument and how the US and Canada differ in this respect?

AS: Yes absolutely, so we make this distinction between divergence and delinkage in order to try and get a little bit at the counterfactual question of what would have happened if productivity growth had been faster or slower and therefore maybe to try and shed some light on what will happen in the future if productivity growth remains slow or speeds up. So, the divergence is the fact we've all been talking about and undebatable there's been this big growing gap between the rate of growth of productivity and the rate of growth of pay of typical workers.

But you can almost think of two ends of the spectrum of how this gap might have arisen. One end of the spectrum set of views that we call complete delinkage is productivity growth is happening but it just doesn't affect the

pay of median or typical workers. That pay is determined by completely separate factors and all of productivity growth, whatever rate of growth productivity is, that's claimed by high income people or shareholders and it has no relevance to the pay of typical workers.

At the other end of the spectrum is what we call complete linkage, which is the idea that higher productivity growth passes through to higher pay for typical workers in a one-to-one sense, so a percentage point higher rate of growth of productivity leads to a percentage point of a higher rate of growth of pay. But at the same time, a whole lot of other factors may have been pulling down compensation growth, even as productivity was growing and acting to pull up compensation. So, the net outcome was that median pay didn't grow very much but that was the net outcome of two kinds of countervailing forces.

BvA: So, how does that play out then, between the US and Canada?

AS: We see that for the US, there is a pretty tight relationship over the horizon, either since 1948, if we look at the pay of production in unsupervisory workers or since 1973, if we look at median workers, between fluctuations in the rate of productivity growth and fluctuations in the rate of pay. So, our essential estimates suggest that a one percentage point higher rate of productivity growth is associated with about a point six to point eight percentage point higher rate of growth of pay for median workers.

So, there is not this one for one relationship but we can't rule out one for one, our standard areas are quite wide and the essential estimate is that it does matter and what that suggests to us is these other factors in my other work, I work on declining work on bargaining power could be a big factor. These other factors of pulling work are paved down, this productivity growth is too basic.

In Canada, the picture is a bit more nuanced and in Canada, we find smaller co-efficient for average compensation and for the compensation of typical workers and our measure of hourly paid workers in large sectors. That could suggest that the linkage is weaker in Canada, that productivity growth isn't acting as much, to push up pay growth as it in the US or it could suggest to us and one factor, we explore is that perhaps that since Canada is more open economy, there's less of that link that should be expected to begin with.

BvA: Very interesting, so Larry, does this align with what you found in your work, so there is actually a pretty good relationship between productivity and compensation growth in the US but it's really the delinkage that is the key issue?

LM: Well, I hate to be in disagreement with Anna, who I admire so much and have learned so much and have looked forward so much to all that she is going to continue to contribute. But I do disagree and I'm not even sure of

this idea of linkage is even a useful idea, the idea that we can look at the increments of productivity growth and how much that benefits workers on average, who are at the median. Basically, I don't think it's a worthy exercise for policy guidance and I do disagree with the empirical claims that were made in the paper that this is tantamount to one to one correspondence, I think it's far less.

So, let me go over that, just for a second, we're being asked to judge productivity policies by how much do workers benefit from the incremental gains in productivity and I think somehow, we can separate growth policies from redistribution of policies that empower workers. But this is too abstract to be useful in my mind, any particular policy that is going to operate in both dimensions, growth and distribution, for instance, lowering unemployment, I think will increase growth but it will also lower inequality.

I'm not sure what the set of policies are that are distributionally neutral but pro-growth and how important they are. But let's just go to the empirics, I mean I don't think we want to go over the tables in the papers but in my view, even the idea that the average worker, including the top one per cent, gains about two thirds of the incremental growth in productivity is quite damming because in all the years I've been involved in economy policy discussions, the presumed assumption is that there is a one-to-one gain.

So, if there's not, then I think people are obligated to be pro-growth and pro-redistribution at the same time and you can't separate that but this is especially true for the typical worker. If you look at the results for the typical worker, it's like oh point three, oh point five and in the most recent decades, zero. So, I just don't see the value of…okay, my advice to those people who are productivity experts want to be pro-growth is that you need to couple your policy agenda for pro-growth, pro-productivity, with agenda that links the gains to that of a typical worker, if not, then people like me are not going to be supportive and I don't know why the typical worker should be supportive.

BvA: Anna, what about Larry's comment that the distinction between divergence and the linkage is too abstract from a practical policy point of view?

AS: Yes, thank you Larry, I think we agree on the end point and maybe get there in different ways and in our paper, we do make the point that our results suggest that pro-growth policies are important but not sufficient, that the divergence that we've seen makes it very clear that productivity is not a sufficient condition for the pay of typical workers to grow. But I think it is important to emphasise that what I see our results as suggesting is that productivity slowdowns really matter for ordinary workers as well.

We are in the middle of a big productivity slowdown now, in the US, even more so in the UK, as Andreas emphasised and the idea that productivity growth still does act to increase the pay of typical workers, even as other factors are pulling them down means that if productivity remains slow and

we don't tackle those other distributional factors that are pulling them down, the outcomes will be even worse.

So, in some sense, I see this is emphasising the need for both pro-growth and pro-distribution policies in order to maintain that linkage but also reverse that divergence. I do think…I mean I think there is a lot of policies that can be pursued that are both pro-growth and pro-distribution at the same time and there is a lot of evidence of things like promoting equitable access to education, for example and rectifying health inequalities and tackling various social inequalities will increase our total productive capacity.

But there are some policies that don't have an obvious distributional link that could be important for productivity growth, things like physical infrastructure, things like promoting RND and investment. I think those kinds of policies, where we have evidence that they support productivity growth, we have reason to believe that they will help, in my view, the pay of average people as well.

BvA: We will talk about these policies a little bit more, we're heading into a break but before we do that, Andreas, you've been following this discussion on the divergence and delink issue, I haven't particularly looked at that indication of the UK but what are your thoughts when you hear this discussion, that you would apply to the UK?

AT: Yes, I mean as I said earlier, so basically on our paper, we only looked at this, more like this divergence story and we clearly see some divergence of productivity and median pay in the UK but as you said, we haven't really looked at this delinkage hypothesis. But I think still, in our data work, we found some quite interesting patterns, I mean it's a lot of speculation that is very important to emphasise, but for example, if you look at, I think it's the end of the 1990s, where you actually see strong productivity growth in the UK and strong wage growth, suddenly after a flat wage at the beginning of the 1990s, this coincides with the New Labour years. I mean it's a lot of speculation but basically in the New Labour years, you had more proworker policies.

So, for example, in the UK, you had the introduction of the minimum wage and other proworker policies, so it might be…I mean this might be one thing where also what we just talked about, this pro-growth and typically worker policies that is something like a minimum wage can basically let the typical worker benefit from the productivity growth. So, this might also explain why, for example, in the UK, we don't see as much divergence as in the productivity and pay as in the US because the UK always had quite a good minimum wage, they always increased the minimum wage.

BvA: Yes, and indeed we will talk a little bit about that after the break, about to what extent raising wages, whether it's through minimum wage or in general can surely play a role, by basically turning the thing around and not just

looking at how productivity ultimately goes into wages but how wages can actually help to increase productivity. Now before we do that, however, let's take a quick break to hear about what else is happening at the Productivity Institute.

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The UK's regional productivity divide is stark by international standards. To investigate why, the Productivity Institute commissioned a gender setting deep-dive into productivity across all English regions. And the devolved nations of Wales, Scotland and Northern Ireland. Led by our eight regional productivity forums, these insight papers provide unique analysis of the UK's longstanding productivity puzzle and will be published alongside an easy to read executive summary. Together this research highlights where local and national policymakers can make a positive difference to productivity in their area and help to contribute towards increased living standards and wellbeing everywhere. Make sure you follow us on social media @tpiproductivity on Twitter and on LinkedIn to find out when the insights for your region of the UK are published.

BvA: Welcome back to my discussion with Anna Stansbury, Larry Mishel and Andreas Teichgräber on productivity and page based on some papers published in the International Productivity Monitor, which you can download from our website or just go to the show notes and you can find the link. Now before the break, we had a pretty good discussion on decoupling and why it happened to a larger extent in the US than in Canada and the UK but also some of the subtleties around the causes and the possible policy solutions.

So, let's now dive a little deeper into some of those narratives to help our listeners to understand the complexity of how productivity and pay are related and Andreas, I really want to start with you here because it seems that in the UK, if we broaden our perspective on just compensation of salaried to our waged workers, to all compensations including our self-employed, there is quite an interesting story emerging here.

A big part of the decoupling in the UK seems to be coming from an especially weak growth in the compensation of self-employed. It's that group that has seen a pretty rapid increase in their shares, 12 per cent of the workforce in 1981 in the UK and in 2019, it was 16 per cent. So, talk us a little bit through that story, what happened to the self-employed or the causes of that recompensation because that seems to be a key issue for you now?

AT: Yes, that's a very good point, so the analysis I talked about earlier, so the decoupling number, they mostly included or only included employees but if

we include the self-employed, the picture actually gets a bit worse. So, this is why we separate between employees and self-employed because of some data issues. So, you have to imagine measuring the income of the self-employed is quite a tricky task, so for example, if you run your own business, then you get the income, the profits from your business and you have to…it's a bit tricky to basically distinguish between labour income which you could label as wages and what is capital or capital income, for example.

Whereas for employees, it's very simple, you just look at your wage bill and you see what your wages are but when we carefully distinguish between them and carefully compare the self-employed income and employee income, we actually see a very big divergence of these two income services. So, the self-employed have done much worse than the employed, especially since the beginning of the 2000s. So, since then, basically or if we take the whole time period from 1981 to 2019, we see that the average employee income or compensation has grown by about thirty percentage points more than that of the self-employed.

So, this is really a striking difference, so the self-employed have done much worse than the employees and so this is, I mean quite important because as you said, the self-employed now make up a way larger share of the total employment in the UK than say twenty or forty years ago. So, up from 12 per cent to 16 per cent and when we zoom in, we zoom into the beginning of the 2000s time period when the self-employed have done especially, particularly bad, we find two quite striking things.

So, within the self-employed, we see that there has been a rise in the number of what we call, solo self-employed, so we divide the self-employed into two groups, the solo self-employed, these are, say an uber driver who just drives his car but doesn't employ another person and then the so-called non-solo self-employed, who run a business but do not employ other workers. These non-solo self-employed, their share in total self-employment has increased but these people earn way less than the non-solo self-employed.

So, this really drags down the average self-employed income and these non-solo self-employed people, on average, also earn substantially less than employees. So, really if you get more of these people in the workforce, like the average income will decrease and at the same time, what is also very interesting is that for both these self-employed groups, we see a decrease in the average number of hours worked. So, I think this is a decrease of about 20 per cent over time since the beginning of the 2000s, so this also really drags down the average income of the self-employed. Here it is more like the question, there is a voluntary choice or is it people who like to work more but can't work more, this is a key question.

BvA: To some extent though, self-employed are people who actually should not be self-employed but just in the workforce, I know that from the Netherlands

that this is a similar issue, a huge increase in the number of self-employed, basically because of changes in labour market regulations that push people out of the regular workforce into self-employed. That's what's happening here as well, to quite some extent, right?

AS: I mean yes definitely there are certain policies that are definitely pushing people more towards self-employment, if we take a very recent policy change in the UK, it has been…I think it is actually due to being in April, I think, the increase of the national insurance contributions. So, actually this is a text change basically, which proportionally affects employees more than the self-employed, so this will potentially drive people more into self-employed. So, it's really about policy change.

BvA: Larry.

LM: Just to say what the situation is in the United States, contrary to popular imagination, self-employment has not really grown much in the last twenty years, for people on their main job, there has been some growth of GIP workers but they're primarily very part-time and mostly people who have a regular job as well. So, that in some ways, I guess, diverges from the experience in the Netherlands and the UK.

BvA: Another key issue in the whole debate here, and this is where I want to go for you for, is this whole issue of technological change in automation, right, so the thought here as well, okay one reason why this really is simply happening is that the technology becomes more biased against skilled labour and therefore we're beginning to see that the workforce doesn't really benefit as much from it as it used to be. So, this is just the nature of the technology that we have to live with it, what's your take on that?

AS: I think there are a few different aspects to distinguish here and I'm sure Larry will talk a little bit more about these issues as well, one is are we talking about the increase in inequality within labour, within workers is this average median divergence, for example, or are we talking about the decline in the labour share of income, relative to capital. So, if we just talk about the decline in the labour share of income, so the decline of the share of income going to workers, the increase of share of income going to capital earners.

I think it's possible, in theory, that that could be caused by automation and technological change but my read is that it seems less likely than it's been having been caused primarily by other factors. The reason for that, one interesting fact is that the decline in the labour share of income has been much bigger in the US than in many other countries. Whereas all countries have presumably been similarly exposed with forces of automation and technological change.

So, a priority that suggests to me that factors that are causing the decline of the labour shared income in the US, must be more specific to the US

context and that's a motivation fact behind other work that I've done with Larry Summers, that argues that the decline in worker power broadly construed is actually the major factor behind the decline in the labour share.

BvA: But the fact that you see a stronger decline in the labour share in the US, could be the result of the technological impact, in fact being bigger in the US, right, so if you think about the greater dominance of the tech sector and the presence of superstar firms and there is also this story about larger mark-ups which seem bigger in the US than in other countries. So that could be related to this.

AS: So, that's quite possible, if you decompose the decline in the labour share by sector, if you're looking since the eighties which is where the decline in the labour share in the corporate sector began, it's basically all in manufacturing. So, if you want a technological explanation, it has to be a manufacturing explanation over the long period. It's possible that the US had more automation and technology than other countries but if you look at this speed of introduction of things like robots, countries like Germany were well ahead of the US. So, it's definitely possible and as we look ahead or to the more recent years, the tech sector is something that was not a big factor in the eighties, nineties, early 2000s but is a big factor today and that dynamic might be changing.

BvA: Now Larry, we know that you don't quite agree with that technology story and that you think that there is really other stuff going on, so take us a little bit through your favourite factors that you think are driving this and why you don't think technology is really the key issue here?

LM: Well, we label the divergence to be wage suppression, that's because we think it's the result of conscious policy decision, acts of omission and commission that have disempowered workers individually and collectively. We set out to measure the impacts of six areas of policy and quantify their effects on the growth of the median wage and compensation. We find that the three major factors can explain themselves, 55 per cent of the wage suppression and divergence, that is the excessive unemployment we experienced because of, well the act of policy that didn't care about workers. Second the erosion…

BvA: Let me ask you this, because here we tend to think that unemployment in the US is actually pretty low.

LM: Well, if you look over the last forty years, it was definitely much higher than whatever you think the net root was, especially compared to the earlier decades and we had very deep recessions here, some of which were consciously great, like in the early 1980s and we had a recovery from the financial crisis that was rather slow, which was basically due to fiscal austerity in the States and otherwise. So, there is basically a thumb on the scale towards worrying about inflation or not worrying about growth and having unemployment.

We find that the excess of unemployment itself, using standard Phillips curves estimates alone, lowered the median compensation by ten percentage points. It's a single largest factor, there is also the erosion of collective bargaining, something that Anna and Larry Summers has also looked at and finds very similar results that have lowered median compensation by around seven percentage points, around twelve percentage points if you look at a typical male and corporate globalisation maybe another five or six percentage points.

We looked at three other types of factors, the erosion of labour standards, the imposition of employer type agreements like forced arbitration and non-competes and what's called fissuring, the domestic outsourcing. We can quantify some of the elements of those, an additional 20 per cent of the wage suppression can be explained. So, we can actually quantify about three fourths of it, of wage suppression, there are other factors we couldn't quantify.

So, we believe that this is a result of policy decisions and I want to just urge listeners, they can go to the paper and find a wealth of information about a wide array of policies and how they affected workers. Just on one thing in particular, I've been debating this for forty years, all of the metrics that people use to say that automation creates wage inequality and that were levelled in the 1990s and 2000s, if you look at them over the last twenty years, none of them are present, there's not much of a growth in the college wage premium, the so-called job polarisation of technology doesn't exist between 1999 and 2012.

So, there are people who want to make a case for automation, if they want to be consistent, they can and the people who made those arguments are people I respect and people smarter than I am, Larry Katz, David Water, they don't make that argument for the last twenty years, at least vocally, explicitly. They haven't really said technology and automation hasn't created inequality but they're not really out there talking about that anymore. So, I think we have to…this is a very hopefully interpretation, I'll just end here, if policy is what created the divergence, then policy can create a greater linkage to make sure that growth benefits the typical worker.

BvA: No that's right, I mean if policy made it worse, it can also make it better and I want to go back to this issue about bargaining power, I mean it's the decline of unions which is one measure of declining bargaining powers everywhere, in the UK or Canada or the US, it's two different degrees, perhaps but as we talked earlier about Canada, for example, Andrew Sharp made this point in his paper that he thinks that actually bargaining power improves a little bit. So, what it is that actually changes the balance of bargaining power over time?

AS: So, it's definitely this decline in bargaining power which happens to different degrees across different countries. I think there is also an important intersection with technology, as we've been talking about and with institutional architecture that is key to think about. So, for example, it seems indubitably the case that if technologies are invented, that substitute more easily for some types of workers than others, this alters relative market demand and supply for different types of workers. I think this idea of skill-biased technological change is a compelling one to think about how technological change can and has affected pay.

But there is also an intersection between technological change, institutions and bargaining power. So, if the bargaining power institutions are those that are also subject to be eroded by that competition or technological change, if it's easy for a company to substitute its workers with machines and that means the workers lose bargaining power and lose formal collective power, that intersection can also be a policy choice. Whereas if collective bargaining is, for example, negotiated at the sector level or at the national level, there is less scope for individual firm level changes or dynamics to impact worker's overall collective power.

So, I think there is an interesting distinction across countries, zooming out even from the US, Canada and the UK, which is countries that have had enterprise level, union bargaining systems, have seen much steeper declines in the collective bargaining coverage than countries that have had sectoral national, regional collective bargaining systems. So, this interaction between big global trends like technology and globalisation, institutional architecture and collective bargaining is, I think very important.

BvA: I wonder what's better for productivity, Larry, collective bargaining of bargaining by individual firms as were used in the US?

LM: Well, before I get into that, let me just say, there is skill-biased technological change is an ongoing process and it's been ongoing for two hundred years. So, the question about whether automation is leading to wage suppression or bigger wage inequality is whether there is more of it or whether the bias has changed and I haven't seen any evidence for either one of those. So, I also think that an automation explanation, they always overlook the top one per cent. The growth of the top one per cent is a huge deal and no-one is given an automation explanation of that unless you think CEOs are benefiting from automation.

So yes, I think collective bargaining is relatively neutral with regard to growth and productivity, it's very favourable to sector role and industry-wide collective bargaining. I think the decline of unions in the United States has a lot of very specific country policy factors and it makes the erosion of worker power stand out.

BvA: Alright, well look, we need to wrap up and I always hate to say that because there is so much to talk about but I don't want to let you go before I put one

very specific policy or business solution to you that might potentially work. So, if there is decoupling and in particular delinkage, one solution could be to just turn things on its head. So, instead of saying, productivity should cause wage growth, maybe we should just let wages increase and then it will incentivise productivity and that's not a completely ludicrous idea, there is in fact, some economics literature that points at a mechanism where higher wages provide incentives for companies to invest in training and innovation because you get a higher return on your most costly factor.

So, a real option in situations such as in the UK, for example, where we have low-level traps of low skills, low wages, low productivity and raising wages could be a path to breaking the deadlock. The risk of course, is that companies might then want to save on labour and the automate even faster, raise productivity but the distribution would then become even more tricky.

Now Andreas let me start with you there, so you already talked about minimum wages as one mechanism to do this, so how do you think about this thought about maybe wage growth has to be leading here, rather than following?

AT: Well, I think it's a very nice idea but if you look at the long-term, I don't really think this would really work, so I think it's more like we need strong productivity policies to increase productivity and alongside this, to have policies that let workers benefit from it. I think what you've just said there, the minimum wage in the UK is a very good example or a good test. So, I mean minimum wages have been increased over the last twenty years in the UK and this has been really good in distribution grounds, so it has probably lowered inequality a bit, although we see it has increased a lot in the UK as well.

But it has also not really led to additional unemployment or something because we have imperfect competition in the labour market. But at the same time, it has not really led to big productivity increases either, so I think it's really not that you can just take the minimum wage to increase productivity but more like you need it as a policy aside to let people benefit from the productivity growth.

BvA: Larry?

LM: I think that we should think about this at the economy level, not at the firm level. I think there is something to the fact that, especially the United States, the really miserable job quality and low wages in the service sector has removed a lot of incentives for firms to invest at capital and improve technology et cetera. But I want to call attention to some other version of, I think what you're talking about and that is that there are pro-growth policies like lowering unemployment that could be pro-productivity.

I don't think we should just think of that pro-growth as just productivity and so in fact, I think we would know, if we want to look at the trends of wage

growth for the typical worker or even on average, the fluctuations in unemployment are far more important, I think. Because we've got low unemployment, we're seeing wages grow very fast now because job openings really surged. So, I think you could push on productivity all you want, I'll sign up, I'll endorse anything but sign me up for full employment and worker pound.

BvA: Anna, the last word is yours?

AS: I'm hopeful and sceptical and the hopeful part comes from the idea that I think is quite compelling that in many sectors of the economy, it's possible for firms to operate in a high road or low road equilibrium and the high road equilibrium is characterised by high investment in the workforce, in terms of training, highly productive work system and production design which includes the use of technology and automation as well as thoughtful design in other ways, low employee turnover and pay. Or the lower equilibrium, which is the opposite, workers are high turnover, relatively expendable, relatively substitutable, similar skills, little investment in skills, little investment in automation.

The big question for me is, how can we shift firms from one equilibrium to the other and if the lever to shift is increased pay in firms, will then figure out the technology, the production systems and the training to increase productivity, we would have a huge, exciting opportunity on our hands and not trying it, seems like a big, wasted opportunity to me, whether it works and how much it works, is an open question. But the other thing I would say is, I think it's good if high wages make companies automate faster, automation is what gives us productivity growth, is what grows the pie and the reason that it's a problem that we're talking about distributionally is because we haven't figured out a good system to redistribute the gains.

So, if we have high wages, leading companies to automate and we make sure that those workers are not thrown on the scrapheap, that's the best of all worlds for me.

BvA: Great closing comments, let's just experiment with this and figure out what works in an economy that's changing so quickly and so rapidly with new technologies, that's really important. This was a fantastic discussion, always too short time but Anna Stansbury, Larry Mishel and Andreas Teichgräber, thank you very much for joining us and hope to speak to you again at some other location.

AS: Thanks so much.

AT: Thank you.

LM: Thank you very much.

BvA: Our next episode of Productivity Puzzles, which in fact I promised to you before but just took a little bit more time to put together, that one will be on business start-ups and productivity. During and since the pandemic, we have seen a surprising large number of new business registrations in various sectors of the economy, it's not a pure UK phenomenon, we have seen this in other countries as well but what are these start-ups, will they survive once the economy gets really past the pandemic and how can we leverage the opportunity to make these businesses more productive for the future.

We now have our speakers from Be the Business and the Office of National Statistics lined up, so watch out for this next episode. You can sign up for the entire Productivity Puzzle series through your favourite platform, to make sure you also don't miss any future episodes. If you would like to find out more about upcoming shows or any other work by the Productivity Institute, please visit our website at productivity.ac.uk or follow us on Twitter and Linked In.

Productivity Puzzles was brought to you by the Productivity Institute and sponsored by Capita and this was me again, Bart van Art, at the Productivity Institute. Thanks for listening and stay productive.

**End of transcript**