

Tim Phillips [00:00:00]:

So welcome to VoxTalks Economics recorded live at the PSE-CEPR Policy Forum at the Paris School of Economics. My name is Tim Phillips. And in this episode, can we finally estimate the effect of inflation on relative prices? We all learn that high inflation creates price distortions but it is impossible to observe that effect directly. Until now, perhaps. Klaus Adam of the University of Mannheim has just presented a cunning method which claims to identify those elusive price distortions. How did he do it? He's here now to show me his working. Klaus welcome back to VoxTalks.

Klaus Adam [00:00:53]:

Well, pleasure being here, Tim. Thanks for the invite.

Tim Phillips [00:00:55]:

This is one of the things that we learn about inflation in economics that it distorts relative prices when it's very high or very low. Why in theory does that happen?

Klaus Adam [00:01:06]:

Right. That's an important question. So I think it's a fact of life that a range of prices simply doesn't adjust very frequently. And so economists refer to this as prices being sticky. And if the nominal price is sticky but the price of other goods on average keeps moving because of inflation, then this will change the relative price between the sticky price and all the other goods and that induces a drift in how expensive this particular good is whose price doesn't get adjusted. And the question is, of course, is this drift a good drift that's justified by some economic fundamental or not? And most likely if inflation is very high it's going to be not a good drift. And that is one of the facts that is happening. And of course, anticipating this when setting prices, say you're in a very high inflation environment. If you anticipate this effect then you will want to guard against it. So if there's very high inflation, you know you're going to become much cheaper over time as long as you don't adjust your own price, you will choose upon resetting a very high price. And as a result we get deviations from fundamentally justified prices or price distortions.

Tim Phillips [00:02:19]:

And we've slipped into saying when inflation is very high and so very high or very low compared to what?

Klaus Adam [00:02:28]:

Yes, that's actually an excellent question. So for every product there is perhaps a price, a

relative price and a trend that that relative price should have over time, say because of productivity progress. If you become more productive at producing a certain product at a very fast rate then the price of that product should go down relative to the other products. Say you should become cheaper at a 2% rate per year because your productivity progress is 2% faster than everyone else's on average. Then you should have a 2% relative price decline and then the optimal inflation rate would just be 2% because inflation would do the job of adjusting your relative price, so and then everything is then relative to that 2%. You should ideally, based on economic fundamentals, become 2% cheaper, then higher than 2 is too high lower than 2 is too low.

Tim Phillips [00:03:25]:

Relative prices change all the time because of perfectly reasonable changes in the economy, the production process, that sort of thing. So why really do we care so much if inflation changes relative prices?

Klaus Adam [00:03:39]:

That's right. So there are a lot of legitimate reasons why prices should change and relative prices in particular, relative demand, scarcity, costs of production, other things. The point we're making is that these fundamentally justified relative price changes are perfectly fine. The distortions that we identify or that we seek to identify come on top of those, okay? So they are additive to the other price changes that are fundamentally justified, but they don't have any fundamental reason to occur except for inflation perhaps not having the right value and prices being sticky.

Tim Phillips [00:04:17]:

In the real world, you can't measure this distorting effective inflation, can you? Can you explain why not?

Klaus Adam [00:04:25]:

Yeah. So it is a very difficult concept to speak about price distortions because what we see is the actual relative price of a product but it is distorted relative to some hypothetical concept, the efficient relative price, which of course is very hard to measure unless you have very detailed information, say on the firm's cost side. So there are certain very limited expenditure categories where you can measure the cost side very well, say in supermarket, in retailing, where you see the purchase prices and all that of a supermarket chain, but other than that, in these very specific environments, you wouldn't be able to see that. And that's why it's very difficult to speak about price distortions because you wouldn't know immediately relative to what you should measure the distortion or how you can identify it.

Tim Phillips [00:05:15]:

So previous research, it's gone down this road some way, hasn't it? I got the impression that it hasn't got very far down this road. What's it been able to accomplish?

Klaus Adam [00:05:25]:

Well, I mean, there has been a lot of efforts undertaken trying to first measure price dispersion because that's not a trivial way. In particular, measure it during periods also when inflation was very high, which used to be a time that was very far in the past, like in the 1970s. Of course we are now back, but the microprice data for last year hasn't yet come out. Researchers have gone back to the archives of the statistical agencies and they dug out and basically brought into electronic format those micro prices in order to see whether price dispersion in the 1970s when inflation was very high was actually higher than it was, say in the 90s or 2000s when inflation was very low. And they found that the opposite is true. Inflation came down over time from the 70s all the way down to the 2000s, but price dispersion actually went up big time. Okay, that is not very strong support for inflation distorting relative prices. But then one must say that this is price dispersion measured over very long periods of time, like 20 or 30 years even longer and a lot of other things have changed over that time period. It's perfectly reasonable to assume that more products are around now than they have been in the 1970s. Product differentiation increased, possibly the market power of firm, we have evidence on that, has become more dispersed. And as a result of that, prices become more dispersed for reasons that have just nothing to do with inflation.

Tim Phillips [00:07:02]:

We know something about the dispersion that's for reasons got nothing to do with inflation, you're identifying the dispersion that's got everything to do with inflation. And so we come to the difficult bit. How do you do that?

Klaus Adam [00:07:16]:

Right, we ran across this because we were in the business of computing optimal inflation rates for the UK economy.

Tim Phillips [00:07:24]:

Yes, we spoke about this before.

Klaus Adam [00:07:25]:

Yes, we did a podcast about the optimal rate of inflation a while ago. And in the course of that we ran across a phenomenon that we actually started then to look at differently and started to

exploit for understanding whether or not inflation actually does distort relative prices in the way our models predict. And the key insight is that we can use variation in desired relative price trends to see whether inflation does what it's supposed to be doing. So we basically follow the relative price of a product over time, of an individual product over time, and then we measure the dispersion of the price around that trend. And we can do that for all kinds of products. And then the key insight is that the relative price trend, the trend that we measure, is a measure of the optimal inflation rate of that product. So if the price falls by 5% of a product over time, that product's ideal inflation rate would be 5%. And because all those relative price trends differ in the cross section of products, we get variation in the optimal rate of inflation in the cross section of products and we can see actual inflation and therefore compute a gap between actual and optimal inflation. And that gap, according to the theory, should predict the variability around the trend. Okay? And that's the insight we exploit. And we actually check whether the gap between the relative price trend of a product and the actual inflation predicts variability around that relative price trend and we find very strong support. We have more than 1000 expenditure categories that we look at and we find in 95% of them we get statistically significant evidence in favor of this mechanism.

[Voiceover] [00:09:20]:

We last spoke to Klaus in February 2022 about his research into the optimum inflation rate and why it might be much higher than 2%. Listen to the episode; A Positive Inflation Target for the Euro Area.

Tim Phillips [00:09:42]:

That's ingenious, but it requires an awful lot of very detailed data. Whose data are you using here?

Klaus Adam [00:09:50]:

Yes, so we are using the microprice data that is underlying the construction of the UK consumer Price index. And it's the microprices that the Office of National Statistics collects in the UK in order to compute inflation and that's of course very high quality data and it allows us to strip out things like sales prices to make sure that these effects are not driven by discounts and things like that. We can also look at what has price dispersion done over time in the UK and compare that to what has been documented already for the US. And actually also in the UK, we find very strong increases in the cross sectional dispersion of prices over time. And using our method we can decompose this. What of that increase in the cross sectional dispersion is due to inflation and what is due to other factors that may have to do with production costs, product differentiation, but also market power. And we find that 99% of the increase is actually not related to inflation. So that is confirming the prior that the long run trends in price dispersion just haven't anything to do with inflation. Which should sound intuitive because of price ticking, this is a short run phenomenon. How can it have lasting effects on price dispersion?

Tim Phillips [00:11:06]:

It's very interesting that now you have this method, you can just apply it over and over again on different data for different questions. What sort of questions are you asking? What have you been able to find out?

Klaus Adam [00:11:18]:

One thing we looked at does, for instance, in the UK, variation in aggregate inflation increase inefficient price dispersion or not? And that's an important thing to know because it tells us something about the optimal inflation rate. If with an increase in aggregate inflation inefficient price dispersion increases, then this is an argument for keeping inflation low and this is indeed what we find. A theory could actually produce the opposite relationship. It depends on where the actual and the optimal inflation rate lie. But we find that an increase in inflation has led to a pretty strong increase in price dispersion in the UK. This is in the period prior to the current increase, the substantial surge in inflation that we have seen.

Tim Phillips [00:12:05]:

One thing that we can be pretty sure about is actual inflation at the moment, especially in the UK, is not optimal for anything really. Can you do anything to compute the welfare losses that accumulate from these price distortions that are caused by this level of inflation?

Klaus Adam [00:12:27]:

Yeah, so one can do that, but that requires additional assumptions. So we can first of all compute relatively easily without additional assumption, what would be the optimal inflation rate for the UK, given the relative price trends we see? And there you arrive at numbers like two and a half, 2.8% perhaps. That is the rough range between two and 3%. It has gone up a little bit over time because relative price trends accelerated. Now, in order to compute what a deviation of inflation from this rate would entail in terms of distortions, you would have to know a lot about what sort of inefficiencies are already present. Even if you have optimal inflation, and we know there are, because some firms charge high markups and others don't, and that's not good for social welfare. So we can compute a lower bound. And assuming that the prices are all efficient, if inflation was right, and then we're going to get a lower bound on the welfare losses, and then it's going to be a function, the welfare loss is going to be a square function of the gap between actual inflation and optimal inflation. And that means the further away you move, the costs of deviations rise quite radically and can actually become quite significant.

Tim Phillips [00:13:44]:

It's a real lesson in what you can do when you have this sort of granular level of detail. This

amount of data that you've got here. Does it ultimately tell us anything that we don't know in policy terms? Everyone's working to bring inflation back down again. Does it give us any insights into anything that we could do at the policy level?

Klaus Adam [00:14:06]:

It could tell us, should we still be okay with our inflation target? Because it's probably going to be very costly to bring inflation down all the way to 2%.

Tim Phillips [00:14:18]:

Yes. Yours does suggest that the inflation target at 2% is a little low now.

Klaus Adam [00:14:23]:

That's right. And this is an argument that doesn't even take into account other factors why it may be too low, such as a lower bound constraint. So the fact that nominal interest rates can't drop below zero. I understand that central banks don't want to talk about this right now because they're concerned with bringing inflation down. It's not a good time to talk about raising the target. But we have written papers before the current inflationary surge that suggests that maybe the target was a little low to start with.

Tim Phillips [00:14:49]:

Klaus, it's always fascinating talking to you about the detail in the work that you do and how you're managing to create new knowledge about something that's very important in all of our lives at the moment. Thank you very much for talking about it today.

Klaus Adam [00:15:02]:

Thank you. It was a pleasure. Thanks.

Tim Phillips [00:15:14]:

The paper is called Inflation Distorts Relative Prices: Theory and Evidence. The authors are Klaus Adam, Andrey Alexandrov and Henning Weber, and you can get this as a discussion paper from CEPR. It is DP 18088 if you want to find it that way.

[Voiceover] [00:15:36]:

This has been a VoxTalk recorded at the Paris School of Economics CEPR Policy Forum, 2023. If you like what you hear, subscribe. You can find us wherever you get your podcasts, and you can listen to clips of past and future episodes when you follow us on Instagram at VoxTalks

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