Markus' Academy with Emil Verner
Unedited Transcript
03/23/2023

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00:06:05.520 --> 00:06:09.810
Markus Brunnermeier: So welcome back everybody to another. Webinar organized for Princeton for one here

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00:06:09.830 --> 00:06:14.020
Markus Brunnermeier: worldwide. We are very happy to have email one of with us from Mit Hyen.

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00:06:14.600 --> 00:06:15.440
Emil Verner: Hey, Marcus.

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00:06:16.370 --> 00:06:27.490
Markus Brunnermeier: Good to have you. We will talk today about that that inflation channel and the analysis on the German hyperinflation and inflation from 1919 and tonight to 1923.

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00:06:27.930 --> 00:06:38.530
Markus Brunnermeier: And before I start I would like just to make an opening statement briefly, and give the poll results. You generously contributed to the Webinar.

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00:06:39.390 --> 00:06:52.350
Markus Brunnermeier: I just it. What's important that the hyperinflations are very, very important periods, and really to ambush, call it the hyperinflations are the laboratory of monitor economics. So these are really important periods where we can learn a lot about inflation.

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00:06:52.610 --> 00:07:17.430
Markus Brunnermeier: Of course this assume some linearity. There might be some nonlinearity. We will learn today about this to things might change between inflation and hyperinflation. But you know there's a very important work on this hyperinflation for many authors, and I just listed here 2 classic papers, one by solutions where he's, as that is the end of 4 big inflations, and the German hep inflation was one of these 4 big inflation periods.

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00:07:17.660 --> 00:07:20.660
Markus Brunnermeier: He emphasized very much the physical monitor into action.

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00:07:20.790 --> 00:07:33.200
Markus Brunnermeier: and also the political capability needed to stop the inflation. But once you have a political capability on the fiscal side combined as an evidence for national expectations, you can actually bring inflation down.

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00:07:33.920 --> 00:07:43.700
Markus Brunnermeier: Who did you on Bush actually studied it, too, but he focus more on the effects market, and we will, you know, also touch on the Fx market as well. The foreign exchange market briefly as well.

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00:07:44.690 --> 00:07:51.220
Markus Brunnermeier: Now for your poll questions. I think we had 5 poll questions for you. The first one was.

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00:07:51.440 --> 00:08:02.810
Markus Brunnermeier: Did people anticipate, you know, in 1919 to 1923, and Germany. Whether inflation, you know, will, comes and will be so high will be translating into hyperinflation.

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00:08:02.890 --> 00:08:12.510
Markus Brunnermeier: and the first thing is No; they were surprised at any time when inflation was actually going up further and further. That's what 27 people thought

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00:08:12.800 --> 00:08:14.820
Markus Brunnermeier: partially they anticipated it.

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00:08:14.930 --> 00:08:32.520
Markus Brunnermeier: But at first, but the people learned over time. That's what 67 people thought. and yes, anticipated it widely 5. So the maturity really thought the partly anticipated it, and I think you might be surprised what the actual, what email will tell us in a few minutes.

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00:08:34.520 --> 00:08:40.549
Markus Brunnermeier: And so what was the fundamental cause of the inflation? Was it high money growth? Was it? Physical deficits

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00:08:40.740 --> 00:08:50.640
Markus Brunnermeier: was an exchange of appreciation. So other shocks and people said very much. You know it was money growth up to 55%

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00:08:50.640 --> 00:09:03.650

Markus Brunnermeier: and fiscal deficits for 22. That's you know, contrary what Tom Sergeant just mentioned previously in the previous slide exchange rate only 2% of attributed to, and other shocks. For example, the First World War.

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00:09:03.680 --> 00:09:08.430
Markus Brunnermeier: 22, so 55, 22, 2, and 22.

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00:09:09.380 --> 00:09:14.910
Markus Brunnermeier: What are the the third question was, what are the main expansionary channels of inflation?

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00:09:15.110 --> 00:09:24.040
Markus Brunnermeier: It was it that the real wages. the client. because potentially of which stick in us? Or was it redistribution to what stats us

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00:09:24.130 --> 00:09:31.280
Markus Brunnermeier: and the answers you gave us was 58, but versus 43. Percent. Okay, so we will then argue.

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00:09:31.440 --> 00:09:34.800
Markus Brunnermeier: You know, our email will argue in a very particular direction.

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00:09:34.820 --> 00:09:47.700
Markus Brunnermeier: The fourth question was. What are the main contractionary channels of inflation? Was it the source of mis allocation, price dispersion that could not trust the prices. or was it financial instability leading to a credit crunch

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00:09:47.910 --> 00:10:02.520
Markus Brunnermeier: increased uncertainty over some other reasons and the answers were 31, 35 27% and 6%. So essentially it's between the first and the second, and then uncertainty is also the contributing factor.

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00:10:03.290 --> 00:10:14.290
Markus Brunnermeier: And finally, given that we have high inflation right now. Of course, you would like to know what's a good hedge against high inflation, even hyperinflation with stocks, bonds, commodities, real estate, or others.

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00:10:14.370 --> 00:10:18.420
Markus Brunnermeier: and the answers were 12% stocks are good hatch

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00:10:18.710 --> 00:10:37.680
Markus Brunnermeier: bonds 0 because they're not going to get that. Nobody had to be with anything. To that commodity is 33% and real estate 55. So people thought real estate would be the most people thought real estate is the bad head best hatch against inflation. You might be surprised about this. 2 of the email tells you

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00:10:37.680 --> 00:10:39.020
Markus Brunnermeier: what really happened.

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00:10:39.190 --> 00:10:48.840
Markus Brunnermeier: So with this, I pass on the floor to email the virtual floor, and we're looking forward to your presentation, and please ask questions as I come along

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00:10:50.420 --> 00:10:51.770
Markus Brunnermeier: once again an email.

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00:10:51.870 --> 00:11:06.190
Emil Verner: Thank you very much, Marcus. Yeah, it's a pleasure to be with you, and a pleasure to be presenting this paper, of which I'm. I'm. Part of a really great team. So this is right. Work with with Marcus, as well as with a sergio. Korea, who's at the Fed Board deaf unlock? Who's at the New York fed?

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00:11:06.210 --> 00:11:19.280
Emil Verner: And Tom Zimmerman, who is at the University of Cologne, and because of our co-authors affiliations, we should just say that the views here do not necessarily represent those of the Fed Reserve Bank of New York or the Federal Reserve Board.

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00:11:19.310 --> 00:11:23.050
Emil Verner: Okay. So with that disclaimer, let me jump right in

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00:11:23.220 --> 00:11:32.750
Emil Verner: in this paper. We're we're trying to think about how inflation especially very high inflation transmits to the real economy what the relevant channels are.

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00:11:32.980 --> 00:11:42.320
Emil Verner: And in particular, we want to think about the role of a financial channel that we call the debt inflation channel that operates through firm financing frictions.

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00:11:42.490 --> 00:11:50.790
Emil Verner: So the debt inflation channel is related to old ideas that go back to at least to James and and Irving Fisher, and it operates as follows.

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00:11:51.120 --> 00:11:53.170
Emil Verner: If you have unexpected inflation.

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00:11:53.200 --> 00:12:01.340
Emil Verner: then in the presence of nominal debt contracts, this is going to lead to welfare distribution to net nominal debtors benefiting these debtors.

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00:12:01.520 --> 00:12:05.790
Emil Verner: Now, if these debtors are financing, constrained, then the increase in their net worth

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00:12:05.810 --> 00:12:18.170
Emil Verner: may relax that financing constraint give them more liquidity; that they can, for example, use to invest or to hire more workers, and that can have real effects, increasing output by relaxing these financing constraints.

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00:12:18.200 --> 00:12:31.810
Emil Verner: So we want to think about what the role of this debt inflation channel is relative, for example, to the new Keynesian channel that operates through price and wage that has received more attention in the literature on the transmission of inflation to the real economy.

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00:12:32.180 --> 00:12:46.230
Emil Verner: So what we're gonna do in this paper, is, as Marcus already already said, is we're going to use the German inflation of 1,919 to 1,923, as essentially a laboratory to study how really high inflation transmits to the real economy

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00:12:46.610 --> 00:12:48.330
Emil Verner: through this debt inflation channel.

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00:12:50.000 --> 00:12:59.330
Emil Verner: So the German inflation is one of the canonical events in monetary history from an exchange rate of 4.2 marks, the dollar in 1,914,

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00:12:59.370 --> 00:13:10.490

Emil Verner: The mark ultimately depreciated to 4, point 2 trillion marks to the dollar by the end of 1,923. So trillion that's 10 to the 12. So this is a massive depreciation.

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00:13:10.570 --> 00:13:29.410
Emil Verner: and this is an episode that generations of economists have sought to understand in order to try to better get a sense of what are the fundamental causes of inflation, as well as its macroeconomic and distributional effects. So Marcus already referenced some of these studies, and and here are some of the other important studies

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00:13:29.730 --> 00:13:37.190
Emil Verner: in in this literature. We think that there's several appealing features of this setting in order to think about these questions.

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00:13:37.250 --> 00:13:49.550
Emil Verner: So first I'm going to argue that inflation was largely unanticipated at the outset of of of of the inflation, so we can think about this as an unexpected shock, at least from the beginning of the inflation.

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00:13:50.050 --> 00:13:53.550
Emil Verner: Second, the massive increase in the price level

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00:13:53.640 --> 00:14:01.290
Emil Verner: puts this debt inflation channel into sharp relief, because it leads to very large changes on real balance sheets

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00:14:01.300 --> 00:14:03.340
Emil Verner: through these nominal debt positions.

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00:14:03.710 --> 00:14:11.990
Emil Verner: And third. our innovation here, one of our innovations is going to be to bring newly digitized data, especially newly digitized micro firm level data

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00:14:12.030 --> 00:14:33.000
Emil Verner: which is going to let us disentangle mechanisms, I think, in in more detail, in more granular way than what the previous literature could do. So let me just summarize our 3 main findings before getting into the details. So first we're going to start by showing some aggregate evidence on this debt inflation channel

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00:14:33.030 --> 00:14:43.780

Emil Verner: in particular. What we see during the German hyper inflation is, there's a massive fall in leverage of non financial firms in particular, leverage falls by about 50%,

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00:14:43.870 --> 00:14:50.220
Emil Verner: and similarly, interest expenses as a share of total firm expenses fall by a similar amount, about 60%.

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00:14:50.520 --> 00:14:55.580
Emil Verner: And a consequence of this is that because real debt burdens are eroded so much

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00:14:55.660 --> 00:15:08.060
Emil Verner: there's a massive decline in bankruptcy so bankruptcy is declined by over two-thirds, suggesting that this redistribution to these firms that had a lot of debt reduce the incidence of financial distress.

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00:15:08.520 --> 00:15:18.450
Emil Verner: Next, to try to kind of get a little bit sharper identification of this debt inflation channel. We're going to go to the firm level and look in the cross section of firms.

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00:15:18.760 --> 00:15:21.660
Emil Verner: and what we'll show is 2 things. So first

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00:15:21.790 --> 00:15:30.830
Emil Verner: show you evidence of redistribution. In particular, the firms that have the most net nominal exposure to the inflation by having higher leverage.

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00:15:30.910 --> 00:15:42.950
Emil Verner: They're the ones that see the largest increase in their book and market equity values relative to firms that have lower leverage, and these are also the firms that see the largest decline in their interest expenses.

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00:15:43.010 --> 00:15:51.300
Emil Verner: as you would expect, but sort of consistent with this idea of redistribution to the equity holders of these firms and and from from the bond holders.

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00:15:52.100 --> 00:15:57.420
Emil Verner: And not only is the redistribution, but this redistribution is associated with real effects.

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00:15:57.590 --> 00:16:07.230
Emil Verner: so the firms that benefit the most from the inflation through their ex anti- leverage positions. They are the ones that grow the most in terms of their employment during the inflation.

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00:16:07.350 --> 00:16:22.330
Emil Verner: And actually, this effect accounts, for in sort of a partial equilibrium sense. 75% of the overall increase in employment during the expansionary phase of germany's hyperinflation so we we argue that this is a quantitatively, potentially quite important effect.

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00:16:22.920 --> 00:16:39.900
Emil Verner: And third, we're going to also think about this nominal by looking at the behavior of wage and price setting throughout the inflation at at different levels of inflation. And what we'll see is that the frequency of wage and price adjustment is increasing with inflation, so as inflation rises.

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00:16:40.810 --> 00:16:50.850
Emil Verner: Wages, for example, are set at a higher and higher frequency, faster and faster, so that they essentially become flexible. Once inflation becomes very, very high above 100%.

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00:16:51.100 --> 00:17:00.710
Emil Verner: And what this suggests is that this debt inflation channel that we're documenting can be active, even if prices are are flexible in line with some theory I'm going to discuss.

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00:17:01.670 --> 00:17:06.170
Emil Verner: So let me just give kind of one slide of just kind of a conceptual framework for how we.

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00:17:06.200 --> 00:17:19.050
Emil Verner: how how we're thinking about this. In the paper we write down a very kind of simple, a model, just to organize our thinking. I'm not going to go through that. I'm just going to give kind of the key intuitive takeaways that I think are useful for organizing the the discussion.

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00:17:19.339 --> 00:17:25.800
Emil Verner: So we want to think about. How does inflation from money, finance, government spending transmit to real activity?

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00:17:26.119 --> 00:17:30.120

Emil Verner: We're going to have a simple model where firms issue nominal debt?

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00:17:30.310 --> 00:17:34.860
Emil Verner: They can default on this set. They're potentially financing, constrained.

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00:17:35.330 --> 00:17:37.960
Emil Verner: and there might be some.

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00:17:38.460 --> 00:17:45.260
Emil Verner: We introduced it in the form of a menu cost. So with this simple framework. We have 3 predictions.

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00:17:45.430 --> 00:17:55.380
Emil Verner: So first, if you have unexpected inflation, then you're going to reduce real debt burdens for these firms, and that's going to reduce the incidence of bankruptcies.

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00:17:55.830 --> 00:18:08.360
Emil Verner: Second, what we call the debt inflation channel, this relaxation and financing constraints that comes from the increase in networks for these firms that's going to increase output. If these firms are financing, constrained.

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00:18:08.900 --> 00:18:22.560
Emil Verner: And not only is it going to increase out, but this effect is going to be especially strong for firms that have relatively more long term debt, as a share of of of total debt, because this long term debt is going to be less re-priced during the during the inflation.

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00:18:22.820 --> 00:18:36.150
Emil Verner: and third. we can look at the interaction between nominal rigid and this debt inflation channel. What we find is that when there's low inflation. Then inflation boosts output by reducing the the real wage.

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00:18:36.480 --> 00:18:39.970
Emil Verner: However, once inflation becomes very high.

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00:18:41.670 --> 00:18:48.990
Emil Verner: Workers, you know, decide to readjust their wages, or they bargain for for more wages and wages, then become essentially flexible.

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00:18:49.090 --> 00:19:05.440
Emil Verner: and what that means is that once wages are flexible, the only way in which inflation can have real effects is through this financial channel that we call the the debt inflation channel. So when you see a radical switch from one to the next is like a regime change, or is it a smooth transition, you know.

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00:19:05.680 --> 00:19:09.480
Markus Brunnermeier: Is there a threshold where they were switching out of flexible wages?

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00:19:09.630 --> 00:19:16.710
Emil Verner: Yeah, it would depend on the assumption that you have on how, how how wages are set kind of in our simple framework, where there's a menu cost

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00:19:16.750 --> 00:19:24.870
Emil Verner: when inflation is, is relatively low. Your optimal wage is still close to the actual real ways that you have.

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00:19:25.010 --> 00:19:28.450
Emil Verner: and then it switches. So once inflation becomes very high.

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00:19:28.630 --> 00:19:41.400
Emil Verner: then, all of a sudden, with inflation, your weight, your your actual real wage, goes very far from your optimal real wage. And so then you decide to switch. So there's kind of this a threshold switching. But of course it would depend on you

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00:19:41.440 --> 00:19:42.760
Emil Verner: the specification

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00:19:42.870 --> 00:19:47.730
Emil Verner: of of of the wage setting process, and we'll have some empirical evidence that that suggests

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00:19:47.760 --> 00:19:51.680
Emil Verner: that this kind of menu cost model prediction seems to be consistent with the

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00:19:52.380 --> 00:20:09.960
Markus Brunnermeier: and concerning you know, you can not just prices and wages every day, as it happened, but you could also index it so that just automatically do you have a You know evidence whether there's indexing or

not indexing going on, and you can even switch to a total economy Tolerization it is.

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00:20:10.020 --> 00:20:18.420
Emil Verner: yes, exactly. And we know from from other inflations, if especially in Latin America, the dollar dollarization became widespread. So

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00:20:18.630 --> 00:20:21.260
Emil Verner: on the first part, in terms of indexation.

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00:20:21.340 --> 00:20:30.430
Emil Verner: wages did become index to the cost of living index for public employees in 1,923. So that was kind of in the hyperinflation phase

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00:20:30.570 --> 00:20:40.740
Emil Verner: before. That Wages are not index, but they're set by by by collective bargaining between firms and and unions. And you kind of see this race where wages are always trying to keep up

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00:20:40.760 --> 00:20:47.280
Emil Verner: with with prices. So there is an explicit indexation for most of the inflation in terms of price setting

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00:20:48.310 --> 00:20:59.380
Emil Verner: technically foreign currency, pricing as part of the capital control laws in Germany was legal, so it was illegal. So you couldn't explicitly set your prices in in dollars, as firms would like to do.

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00:20:59.460 --> 00:21:03.510
Emil Verner: But what happened as inflation became very high. Is that effectively?

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00:21:03.540 --> 00:21:08.330
Emil Verner: There was exchange rate based pricing. So firms would look at the exchange rate.

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00:21:08.380 --> 00:21:18.750
Emil Verner: you know, every day, and then they would set their prices based on that on that exchange. So the exchange rate became a very important anchor for how prices became became set.

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00:21:19.260 --> 00:21:28.750

Markus Brunnermeier: And there's one more question, what about this intimidation in an environment of high inflation? Didn't people pull out the money from the banks and cut off the financing for the firms?

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00:21:28.990 --> 00:21:34.090
Emil Verner: That's a great question. Yeah.

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00:21:34.510 --> 00:21:51.910
Emil Verner: The so one answer is, that's actually a kind of a follow up project that that we're working on. So we hope to be able to say more about that soon. But we see right now, based on the data and reading. The history is that in the first phase of of of the inflation. As I'll talk about people, Aren't expecting

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00:21:51.910 --> 00:22:11.270
Emil Verner: kind of more, more, more and more inflation. And so depositors keep their money in the banks, you know, even see term term deposits. Then, as inflation, you know, rises, it gets higher and higher, and people all of a sudden, you know, essentially become very scared that the at the mark is gonna completely collapse. Then, you see, deposits flow out.

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00:22:11.270 --> 00:22:26.260
Emil Verner: and there is kind of a credit tightening credit. Crunch and firms complain about what sort of a shortage of a financing for for working capital, and that sort of happens in the second stage of the inflation which i'm going to get into here in in the historical background.

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00:22:27.100 --> 00:22:36.000
Markus Brunnermeier: And perhaps when you, as you go through this more on my question, it's like, do you see a lot of indexed bonds, or that instruments developing afterwards.

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00:22:37.660 --> 00:22:45.330
Emil Verner: So in terms of the data on bond. So we've we've collected some of that data before the inflation. There's no indexation

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00:22:45.830 --> 00:22:53.420
Emil Verner: of of bonds. Then what happens is by late 1,922 1,923 Once inflation becomes hyper.

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00:22:53.530 --> 00:23:10.650
Emil Verner: You do see that firms and and local municipalities, for example, start to issue bonds that are indexed to different commodities. So gold, or even you see things like rye index bonds and energy companies

issue bonds index to the price of electricity, so that becomes more more widespread.

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00:23:10.670 --> 00:23:12.950
Emil Verner: But it's a relatively small share of.

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00:23:12.980 --> 00:23:21.010
Emil Verner: of, of, of of of intermediation, just because intermediation sort of deteriorates a lot during during the but you do see this.

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00:23:21.120 --> 00:23:23.390
this desire to go toward

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00:23:23.440 --> 00:23:24.880
Emil Verner: to go toward indexation.

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00:23:26.650 --> 00:23:28.110
Emil Verner: Thanks, great.

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00:23:28.250 --> 00:23:38.860
Emil Verner: So let me just provide a a little bit of historical background, just so that we're all on the same page. And and because this is quite important for understanding the the empirical analysis that we have.

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00:23:38.960 --> 00:23:43.730
Emil Verner: So the roots of Weimar, Germany's inflation lie in in World War. One.

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00:23:43.870 --> 00:24:01.530
Emil Verner: So Germany abandoned the gold standard at the start of a of World War, one in August of 1,914, and they finance their their more spending through deficits, they're less able to rely on external bond issuance than compared to. For example, the the Uk. So they have to do more

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00:24:01.530 --> 00:24:10.030
Emil Verner: the deficit finance spending finance by domestic loan issuance, a lot of which ends up being bought by the Reichsmunk.

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00:24:10.360 --> 00:24:14.080
Emil Verner: but interestingly, inflation in Germany during World war. One

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00:24:14.150 --> 00:24:24.680
Emil Verner: was not much larger than, for example, inflation in the Uk, and it was similar to inflation in France. What, where the divergence really happens is in the post war period.

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00:24:24.800 --> 00:24:26.360
Emil Verner: starting in 1,919,

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00:24:26.410 --> 00:24:39.010
Emil Verner: and in this post war period there's 2 broad phases of the inflation that that I want you to think about. The first is the high inflation phase which runs from the World War, one armistice, so that's November of 1,918

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00:24:39.080 --> 00:24:42.760
Emil Verner: to June of 1,922. During this phase

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00:24:42.890 --> 00:24:49.020
Emil Verner: inflation expectations are relatively anchored, and the economy is doing quite well.

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00:24:49.220 --> 00:25:03.250
Emil Verner: Credit is, all is is is available, and you sort of have the expansionary phase of of of of the inflation. The second phase is in the hyperinflation phase that's, when inflation exceeds 50% per month

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00:25:03.320 --> 00:25:16.510
Emil Verner: that's ushered in in the summer of 1,922, with a series of of events, including the assassination of the Foreign Minister, as well as conflict over Germany's World War, one reparations and that runs, from.

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00:25:16.530 --> 00:25:20.860
Emil Verner: as I said, July, 1,922 until November of 1923,

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00:25:21.840 --> 00:25:29.610
Emil Verner: in terms of the broad, important factors. The literature sort of put emphasis on different different key factors for understanding the inflation.

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00:25:29.920 --> 00:25:40.880
Emil Verner: It's quite clear that fiscal factors were very important. So first, the large and initially uncertain reparations imposed on Germany at the Treaty of Versailles played an important role

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00:25:41.070 --> 00:25:51.980
Emil Verner: and beyond reparations. Germany, for for significant parts of the of of the inflation ran large non reparation deficits as well because of quite large

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00:25:52.020 --> 00:26:00.660
Emil Verner: social spending. Yeah. once inflation then got going, the fiscal side deteriorated through this. What's sometimes referred to as the Tanzi effect

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00:26:00.710 --> 00:26:14.680
Emil Verner: a collection l. So that once inflation was high. When the Government, you know, went out and and collected taxes, the real value of those tax collections would be quite endogenously, quite low because of high inflation, and that increased the the deficit. Further.

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00:26:15.240 --> 00:26:34.090
Emil Verner: other researchers put a lot of emphasis on the political Economy dimensions in particular, the fact that the Weimar Republic. There was a well, relatively, you know, fragile republic, and so politicians lack the political will to raise taxes and cut spending because they didn't want to disturb the social piece because they were afraid of

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00:26:34.090 --> 00:26:41.480
Emil Verner: of, of of, you know, essentially even rev revolutions. Beyond these fiscal and political economy factors

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00:26:41.530 --> 00:26:55.980
Emil Verner: there was massive monetary expansion, because the Reichs bunk accommodated the increase in spending by discounting government, and later also commercial securities very very freely, and they kept the discount rate very low for most of the the inflation.

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00:26:56.400 --> 00:27:07.370
Emil Verner: And then, finally, I just want to mention there's also a tradition that emphasizes the balance of payments dimension, which is related to reparations here. The argument is that large reparations

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00:27:07.460 --> 00:27:26.070
Emil Verner: that had to be paid in foreign currency. It required Germany to go out and procure for foreign currency and sell marks, and that led to a foreign exchange appreciation which fueled domestic inflation through the Exchange rate channel. So I think the all of these, all of these stories

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00:27:26.070 --> 00:27:28.260
Emil Verner: have have a fair bit of truth to them.

140
00:27:28.790 --> 00:27:37.110
Markus Brunnermeier: So I can ask. Just during the First World War inflation, you said that fairly low. Was it because of price controls? So what role did Guys controls play?

141
00:27:37.250 --> 00:27:47.210
Emil Verner: Yes, there there was a fair bit of of price controls during during World War one. And so some of the inflation that happens after the war is also in a way kind of pent up

142
00:27:47.410 --> 00:27:51.580
Emil Verner: inflation. That comes because

143
00:27:51.590 --> 00:27:55.210
prices were being controlled, and the the economy was in large part

144
00:27:55.290 --> 00:28:13.800
Emil Verner: controlled. But interestingly, the inflation doesn't really accelerate until after the summer of 1919. So 6, 7 months after the end of World War, one with the Treaty of of of Versailles. That seems to be kind of a key shifter in terms of of of inflationary dynamics.

145
00:28:15.440 --> 00:28:21.900
Emil Verner: So inflation expectations are are obviously going to be very important. I think the first point to mention is that

146
00:28:22.190 --> 00:28:33.990
Emil Verner: prior to World war one in Germany, based on you know data that we have inflation had been very low, so on average, from 1,870 to 1,914 inflation averaged at about 0 point 7% per year.

147
00:28:34.240 --> 00:28:54.830
Emil Verner: Germany was on on the gold standard, and the highest rate of inflation was 6% per year. So people just hadn't lived through a very high inflation. Then there was high inflation during the war, so the price level increased by a factor of 3. But many people sort of attributed this to the shortages of the war, and not necessarily to monetary expansion and and fiscal deficits.

148
00:28:55.030 --> 00:28:58.410

Emil Verner: And so what this meant was that in the post war inflation

149
00:28:58.770 --> 00:29:09.850
Emil Verner: there was actually expectations of mark appreciation that were very widespread. This is extensively documented in in in narrative, historical research, for example, summarized by Kindle Burger.

150
00:29:09.890 --> 00:29:24.940
Emil Verner: many people were speculating that the mark would actually recover relative to the dollar into the pound. So there's even a famous story of John Maynard came losing about half a 1 million pounds in today's money, speculating that the mark would actually recover.

151
00:29:25.450 --> 00:29:32.650
Emil Verner: You also see evidence of this expectations of mark, appreciation and of low inflation in the forward exchange market.

152
00:29:32.790 --> 00:29:40.140
Emil Verner: So this figure here on the right shows the forward exchange premium of Marx per Sterling. From when this forward market opened

153
00:29:40.150 --> 00:29:49.010
Emil Verner: in early 1,921 through this hyperinflation phase. And what you see is that up until the summer of 1,922,

154
00:29:49.130 --> 00:30:00.100
Emil Verner: the mark is the mark. Forward rate is actually the premium relative to sterling, suggesting that you know people are not expecting a big depreciation of the mark during this time.

155
00:30:00.350 --> 00:30:07.590
Emil Verner: Then this flips in June and July of 1,922 because of this turmoil over reparations.

156
00:30:07.630 --> 00:30:19.050
Emil Verner: And then you see that expectations become unanchered and the forward premium turned into a large a a a large discount as market participants start to expect. Further, I appreciate.

157
00:30:19.080 --> 00:30:28.190
Emil Verner: And that's sort of in line with the narrative evidence that after June 1,922, there was a flight from the mark. Yeah. And so kind of consistent with

158

00:30:28.230 --> 00:30:34.150
Emil Verner: this discussion we had before about credit conditions because of of these expectation. Dynamics

159
00:30:34.260 --> 00:30:51.030
Emil Verner: In the first phase of the inflation bank credit was sort of largely available. Banks maintained deposits they were able to keep lending, but after the summer of 1,922 credit conditions became very, very tight and external financing became essentially impossible.

160
00:30:51.880 --> 00:31:01.300
Emil Verner: Another important point. I just want to make about the so it was the also team transitory. So it was a transitory expectations.

161
00:31:01.400 --> 00:31:04.070
Markus Brunnermeier: In a sense like

162
00:31:04.150 --> 00:31:08.070
Emil Verner: you. You could say that there was exactly you, you could say in a way that people

163
00:31:08.110 --> 00:31:16.170
Emil Verner: thought that the rise in prices was transitory, and not only did they think that inflation would go down, they actually thought that the mark would appreciate that there would be deflation.

164
00:31:16.230 --> 00:31:29.530
Emil Verner: And I think one of the things that's important to keep in mind is that there hadn't been a high or hyperinflation, you know, for a 100 years the last, the the last sort of comparable episode would have been during the French Revolution, and many people didn't even have

165
00:31:29.580 --> 00:31:36.910
Emil Verner: a a framework to think about inflation in the way that we think about it today. So they thought. You know many people thought about inflation

166
00:31:36.950 --> 00:31:44.240
Emil Verner: as a a a shortage of goods, because of, for example, the war and disruptions after the war leading to high prices

167
00:31:44.260 --> 00:31:53.530
Emil Verner: rather than to, you know, just large money supply and large deficits leading to inflation. So I think that's important. That people didn't necessarily have the framework.

168
00:31:53.580 --> 00:31:58.950
Emil Verner: and they developed this sort of gradually over time with with the inflation.

169
00:32:01.790 --> 00:32:07.340
Emil Verner: So there's sort of the 2 phases of the inflation also play out in on the real side.

170
00:32:07.400 --> 00:32:12.560
Emil Verner: So the figure on the right here shows real Gdp per capita. So this is annual data

171
00:32:12.660 --> 00:32:26.840
Emil Verner: for Germany and Red and for other major economies excluding Germany here in blue. So other major economies. This is a weighted average of 17 other major industrialized economies, including the Us. The Uk friends.

172
00:32:26.860 --> 00:32:28.040
Emil Verner: and so on.

173
00:32:28.360 --> 00:32:44.840
Emil Verner: And what you see is that while the the other major economies, you know, especially the Uk and the Us. Are going through what was known at the time as the depression of 1,921, because a very restrictive monetary policies and attempts to get back to the gold Standard.

174
00:32:44.960 --> 00:33:00.070
Emil Verner: Germany from 1,919 to 1,922 is actually booming. So German growth is quite strong. During this period unemployment is very low, and Germany avoids this 2,021 depression.

175
00:33:00.070 --> 00:33:11.440
Emil Verner: So for kind of the first phase of the inflation, the economy is actually doing quite quite well, which might be surprising to you, given that this hyperinflation is often remembered as as a disaster.

176
00:33:11.800 --> 00:33:17.180
Emil Verner: But then, in late 1,922, and going into 1,923,

177
00:33:17.250 --> 00:33:22.880

Emil Verner: 1923. There is this large collapse and outputs output falls by about 15%,

178
00:33:22.910 --> 00:33:32.840
Emil Verner: and this is due to a combination of factors that are a bit difficult to disentangle. The first is the hyperinflation itself, which clearly became very disruptive for for economic activity.

179
00:33:32.870 --> 00:33:43.570
Emil Verner: because, you know the credit shortage because of price dispersion. Just the difficulty of doing business. You see that unemployment, for example, starts to go up at the end of 1,922;

180
00:33:44.260 --> 00:33:54.260
Emil Verner: then in January, of 1,923; there's the rural crisis. So the invasion of the Roar by France and Belgium in order to extract reparations in kind, and this leads to a

181
00:33:54.390 --> 00:34:03.690
Emil Verner: passive resistance and a halting of of production. And that explains really, I think, this big collapse in in output, and then the third factor is

182
00:34:03.780 --> 00:34:16.969
Emil Verner: by the second half of 1,923 germany is already preparing for the stabilization discount. Rates are arising at at the Reichs bunk, and and the stabilization is also leading people to expect that there's going to be, you know.

183
00:34:17.110 --> 00:34:31.690
Emil Verner: big a fiscal consolidation and tight monetary conditions going forward. And so 1,923 is therefore really this kind of disastrous year in terms of of Gdp growth. So again, it's useful to kind of think about these 2 phases of the inflation.

184
00:34:31.960 --> 00:34:44.389
Markus Brunnermeier: So email can ask you how seriously it you take this figure because I could make a case that in the long run actually it was good to run this hyper inflation. It was a one bad year, but if I go from 1918 to 1927

185
00:34:44.440 --> 00:34:45.780
Markus Brunnermeier: Germany the better

186
00:34:46.100 --> 00:34:49.830

Markus Brunnermeier: rather than going back to the

187
00:34:49.969 --> 00:34:58.700
Emil Verner: yeah, that's a that's a you know very, very, very it's probably pushing it too hard, because I think you know, after 1,923, the sort of good

188
00:34:58.780 --> 00:35:11.280
Emil Verner: growth, the reasonably decent growth that happened sort of in in the second half of of the 19 twenties in Germany was because the debt was wiped out, and that's why the growth was doing so well even subsequently.

189
00:35:11.980 --> 00:35:19.010
Emil Verner: Well, what we're gonna see just in terms of the our analysis is that most of the benefits that come from this debt being wiped out.

190
00:35:19.100 --> 00:35:31.600
Emil Verner: they really show up in the early phase of of of the inflation. S019-19-1921, and then they've largely dissipated by then, and we don't see sort of clear evidence of those benefits later on.

191
00:35:31.640 --> 00:35:34.260
Emil Verner: And, in fact. there is sort of

192
00:35:34.620 --> 00:35:44.280
Emil Verner: not going to talk too much about this today, but there is a discussion of the of the stabilization crisis so 1,92425 are actually relatively bad years in terms of unemployment.

193
00:35:44.350 --> 00:35:46.200
Emil Verner: because of the aftermath

194
00:35:46.310 --> 00:35:55.160
Emil Verner: of the hyperinflation and sort of the cleaning up that had to be done so one, you know many firms that over expanded. They had to rationalize their production.

195
00:35:55.320 --> 00:36:12.540
Emil Verner: There was also some debts that were were valued that led to increases in debt burdens for some firms that that led to increases in in defaults. So I think actually, you know, Peter Garber, for example, has a paper from from the early 19 eighties, where he argues that actually the hyper inflation also

196
00:36:12.550 --> 00:36:20.520
Emil Verner: created difficulties for German growth, 1,924 and 25 as well. So I think the way I would think about it is that

197
00:36:20.770 --> 00:36:22.330
Emil Verner: the the inflation

198
00:36:22.890 --> 00:36:32.990
Emil Verner: benefited growth sort of in the short run. and then in the media run it, you know, combined with this with this political rural crisis, was very bad for

199
00:36:33.010 --> 00:36:37.750
Emil Verner: for for output and in terms of the long run, I think just the fact that you know Germany was

200
00:36:38.560 --> 00:36:42.950
Emil Verner: growing industrializing the economy that add a lot of productivity

201
00:36:43.000 --> 00:36:44.840
Emil Verner: advancements as as well.

202
00:36:45.120 --> 00:36:57.220
Emil Verner: so the is equal weighted, or is it? It's evaluated. So the the Us, for example, would have the most way followed by the Uk. France, and and so on. Yes.

203
00:36:58.090 --> 00:37:11.840
Emil Verner: so. And you see this when comparing Germany to most other countries, except for France, actually, which has very, very high growth. starting in 1918 from a very, very low base, because so much of of the French industrial capacity was destroyed during the war.

204
00:37:14.160 --> 00:37:22.370
Markus Brunnermeier: But when I measured German Gdp, all the which was used and then shipped over for preparation payments is part of the red line.

205
00:37:22.790 --> 00:37:26.790
Emil Verner: Yes, this this this comes from exactly production, so

206
00:37:26.870 --> 00:37:28.400

Emil Verner: no reparations which

207
00:37:28.640 --> 00:37:38.660
Emil Verner: amounted to, you know, nominally at least to between 6 to 10% of of Gdp that wouldn't be subtracted there. So e exactly another way to.

208
00:37:38.760 --> 00:37:41.160
Emil Verner: I guess, to ask that question is to say, Well.

209
00:37:41.340 --> 00:37:54.210
Emil Verner: the hyper inflation is, or the inflation is remembered as sort of a disaster. What was happening to people's consumption. We don't have great data on this, but we do know that, you know real wages declined considerably, especially in 1,919, 1,920,

210
00:37:54.360 --> 00:37:56.170
Emil Verner: and then they sort of race to

211
00:37:56.200 --> 00:38:07.760
Emil Verner: to keep up. But a lot of this Gdp Wasn't fueling consumption. It was fueling investment. and some of it was being transferred abroad. At the same time there's actually pretty big capital inflows going into Germany

212
00:38:07.800 --> 00:38:09.340
Emil Verner: in the first part of the

213
00:38:09.360 --> 00:38:12.380
Emil Verner: of of the inflation, because of the speculation on the mark.

214
00:38:15.360 --> 00:38:25.330
Emil Verner: So there's this quote: One of the early students of the German hyper inflation was Frank Graham, who was actually Princeton economist, and what he said was that

215
00:38:25.340 --> 00:38:32.520
Emil Verner: that business in Germany was booming during most of the inflation period is a universally admitted fact. I think this quote is useful

216
00:38:32.560 --> 00:38:35.950
Emil Verner: just because this figure often comes as a bit of a surprise to people.

217
00:38:37.620 --> 00:38:45.450
Emil Verner: So let me talk about the data. So we're gonna bring some newly digitized firm level data in order to study this debt inflation channel.

218
00:38:45.630 --> 00:38:57.680
Emil Verner: The data source is from this investor's manual called Solings. and this gives us balance sheets and income statements for about 700 firms per year. So just to give you an example of the data

219
00:38:57.710 --> 00:39:05.230
Emil Verner: on the right here is data from this manual, from Siemens. So a precursor to the modern Siemens concern.

220
00:39:05.610 --> 00:39:12.240
Emil Verner: And you know, if you could read German, if you can read German, what this tells you is, you know you have information on incomes.

221
00:39:12.260 --> 00:39:29.730
Emil Verner: revenues, different types of costs, expenses like interest expenses, and then quite detailed balance sheet items. And so we've digitized and harmonized all of this year by year, letting us look at what's happening to these roughly 700 firms per year through the inflation.

222
00:39:29.950 --> 00:39:32.050
Emil Verner: We're also gonna to collect information

223
00:39:32.060 --> 00:39:43.810
Emil Verner: on bond assurance by firm, so that we know which firms have outstanding bonds, and how long the maturity is. One challenge that's important to emphasize is that

224
00:39:44.020 --> 00:39:57.940
Emil Verner: this is before gap inflation, accounting. So the inflation severely in sort to distorts, accounting, especially in 1,923. What you see when you look at these data is that real items, like, for example, firms plant and equipment.

225
00:39:57.960 --> 00:40:09.430
Emil Verner: is significantly undervalued relative to nominal items like their treasury holdings or or cash holdings, and this is especially a concern in 1,923. When when inflation is very very high

226
00:40:09.800 --> 00:40:14.580
Emil Verner: so To deal with this concern, we have a few different so solutions to this challenge.

227
00:40:14.670 --> 00:40:21.930
Emil Verner: So one we use what are called revvalued goldmark balance sheets, which were required by law

228
00:40:22.030 --> 00:40:26.170
Emil Verner: for all firms to produce by January first 1,924.

229
00:40:26.220 --> 00:40:44.910
Emil Verner: So these revvalued gold mark balance sheets firms were asked to drop new balance sheets where they tried to construct the market value of the assets and liabilities that they had in gold marks or in stable marks. And these balance sheets are, you know they're not perfect, but they're considered to be much more reliable by historians.

230
00:40:44.910 --> 00:40:47.850
Emil Verner: Then, for example, the 1,923 nominal balance. She

231
00:40:48.180 --> 00:40:58.380
Emil Verner: beyond that we're going to look at variables that are immune to this measurement error. So we're going to look at employment which we have for about 300 firms and stock prices from a newspaper from the time.

232
00:40:58.480 --> 00:41:10.600
Emil Verner: So just to give you a sense of the stock price data, this is from the Berliner versus item, which is a newspaper that would report a daily stock prices for all industrial firms. So we get stock prices and dividends from here.

233
00:41:13.900 --> 00:41:25.250
Emil Verner: So with these data. We first start by looking at some aggregate evidence on this debt inflation chat. and the figure on the left here shows the distribution of firm leverage

234
00:41:25.380 --> 00:41:29.490
Emil Verner: at the onset of the post war inflation in 1,919 here in red.

235
00:41:29.560 --> 00:41:35.750
Emil Verner: and then in the aftermath of the inflation, using these revvalued gold mark balance sheets in 1,924.

236
00:41:36.000 --> 00:41:45.990
Emil Verner: And what you see is that in 1,919 the Median firm had book leverage defined as as as book liabilities over assets of about 50%

237
00:41:46.260 --> 00:41:49.410
Emil Verner: by 1,924 this had fallen by about half.

238
00:41:49.550 --> 00:42:09.560
Emil Verner: So this tells you 2 things: one: the inflation led to a large erosion of liabilities, most of which were nominal. A and 2 firms are still able, though to continue borrowing to some extent during the inflation. So this doesn't completely go to 0 from still have some liabilities, even in the aftermath of the inflation

239
00:42:10.770 --> 00:42:23.200
Emil Verner: on the right here. I'm. Showing you interest as a share of total expenses and salaries and materials as a share of total expenses over time indexed here to 0 in 1,918.

240
00:42:23.520 --> 00:42:32.860
Emil Verner: And what you see is that this reduction in firms Leverage also shows up in their interest expenses as a share of total expenses. So as inflation rises, they

241
00:42:32.890 --> 00:42:39.870
Emil Verner: firms interest expenses as a share of total expenses falls by about 5 6 percentage points to suggest that you know firms.

242
00:42:40.010 --> 00:42:52.470
Emil Verner: You know we're making interest payments to their debt holders. The banks, the bondholders all of a sudden have more cash flow that they could potentially to vote to other things, either to paying out equity holders, or, for example, to investing

243
00:42:53.480 --> 00:42:58.350
Emil Verner: you. Don't see the similar dynamics for the share of salaries and materials.

244
00:42:58.540 --> 00:43:07.920
Emil Verner: So input costs in production relative to total expenses. Those are relatively stable throughout the inflation. So so you kind of see this this dichotomy

245
00:43:07.930 --> 00:43:13.000

Emil Verner: between these financial expenses and the real expenses through throughout the inflation.

246
00:43:13.370 --> 00:43:21.830
Markus Brunnermeier: So the blue line. Can you do it for salaries alone as well? Just to see the back, the wage stickiness. So when the real, we just declining essentially.

247
00:43:22.820 --> 00:43:31.980
Emil Verner: we we can do that. We just go down further, and the to understand the materials and the materials, and and and that's certainly true. So we have data on wages

248
00:43:32.090 --> 00:43:34.460
Emil Verner: in the in the paper, and you see that

249
00:43:34.550 --> 00:43:44.410
Emil Verner: in the first part sort of 1919, 20 real wages do go down, especially for more skilled workers and workers kind of at the higher end of the wage distribution

250
00:43:44.840 --> 00:43:59.170
Emil Verner: because of of of sort of the fact that these firms Don't, report these data in a harmonized way. But we have to go to the source that looks like this, and sort of try to break out what the different types of expenses are like, you know, for this firm you have interest, expenses, depreciation, and so on.

251
00:43:59.250 --> 00:44:00.110
Emil Verner: We kind of

252
00:44:00.420 --> 00:44:16.480
Emil Verner: tried to maximize the sample by combining salaries and materials. We could also look at salaries separately. It would be a smaller sample, but I suspect you would see that the salary share does go down, especially in the beginning, because of this, this real wage decline that that you mentioned.

253
00:44:16.570 --> 00:44:21.360
Emil Verner: The real way to the client channel, though, is really kind of operating in the early phase.

254
00:44:21.810 --> 00:44:29.120

Emil Verner: Once once inflation picks up, you really see that wages become adjusted more frequently, and they're kind of racing to keep up with prices.

255
00:44:30.510 --> 00:44:34.330
Emil Verner: So this reduction in firms real debt burdens

256
00:44:34.460 --> 00:44:43.440
Emil Verner: that's associated with a large decline in bankruptcy and the incidence of financial distress. So Just one simple way to see this is through the scatter plot

257
00:44:43.540 --> 00:44:49.900
Emil Verner: where on the Y-axis, here i'm just plotting the total number of bankruptcies in Germany in a given quarter.

258
00:44:50.080 --> 00:44:55.900
Emil Verner: and each observation here is is a quarter on the X-axis. I'm plotting inflation

259
00:44:56.020 --> 00:45:01.770
Emil Verner: from 4 quarters ago to this quarter, and inflation here is based on the wholesale price index.

260
00:45:02.090 --> 00:45:16.360
Emil Verner: And what you see is that as inflation rises, the incidence of bankruptcy declines quite sharply. So that kind of during this first days of the inflation, up until the summer of 1,922 bankruptcy is fall by about Two-thirds.

261
00:45:16.640 --> 00:45:23.690
Emil Verner: Then, as inflation kind of rises and gets higher and higher, and becomes hyperinflation then the additional benefits

262
00:45:23.750 --> 00:45:36.240
Emil Verner: of inflation in terms of reducing firms real debt burdens. Well, those sort of dissipate, because debts have already been wiped out, and so additional inflation doesn't have much of a relationship with bankruptcy after that. So you get this sort of downward sloping.

263
00:45:36.300 --> 00:45:47.440
Emil Verner: and, you know, convex relationship between inflation and and and bankruptcy. But it's suggesting that these firms non financial firms are are really benefiting from this erosion in their debt burden.

264
00:45:49.870 --> 00:45:56.550
Emil Verner: We can also look at what happens to the behavior of wages and prices, and this goes back to some of the discussion that we had

265
00:45:56.590 --> 00:45:57.710
Emil Verner: earlier.

266
00:45:58.070 --> 00:46:15.500
Emil Verner: So the these figures here compare the frequency with which wages and prices are adjusted against inflation. So, for example, on the left, here is the average number of days that have passed since wages were last increased, and this is based on an average of a wages

267
00:46:15.500 --> 00:46:18.750
Emil Verner: that are negotiated by unions across 7 industries.

268
00:46:19.120 --> 00:46:33.710
Emil Verner: And what you see here is that when inflation is is relatively low, so between 0 0 to 50% wages are adjusted every 180 to 270 days. So you know, every 6 months to to 9 months or so.

269
00:46:33.870 --> 00:46:52.510
Emil Verner: and as inflation rises, the frequency with which wages are are adjusted rises, so that the average number of days elapsed since the wage increase declines, and once inflation exceeds about 100 wages are adjusted every 60 days or so. Once inflation exceeds 200, they're adjusted every 30 days.

270
00:46:52.510 --> 00:46:54.020
Emil Verner: or or even less

271
00:46:54.050 --> 00:47:00.010
Emil Verner: so. We interpret this as saying that once inflation becomes quite high, wages appear essentially flexible.

272
00:47:00.420 --> 00:47:11.580
Emil Verner: We can do the same thing for some newly digitized data that we have that underlie the cost of living index. So these are representative prices of goods in 17 major cities.

273
00:47:11.650 --> 00:47:19.170
Emil Verner: And what you see is that again, as it what inflation is relatively low. Prices are only adjusted every, you know, 90 to 100 days.

274
00:47:19.210 --> 00:47:27.940
Emil Verner: but then, once inflation becomes high, and you know, exceeds about 75% prices are being adjusted every 30 days, or even less.

275
00:47:28.400 --> 00:47:41.960
Emil Verner: and this no pattern of an increasing frequency of wage and price adjustment with inflation is most consistent with State dependent menu cost models. For example, this very nice paper by Fernando Alvaras and co-authors showed

276
00:47:41.980 --> 00:47:47.430
Emil Verner: using data from Argentina the patterns are actually very similar to other hyperbolic

277
00:47:47.440 --> 00:47:48.830
Emil Verner: as well.

278
00:47:48.930 --> 00:48:07.830
Emil Verner: And an implication of this, if you take the menu cost model seriously, is that there's relatively limited scope of an expansionary effect through the nominal rigidity channel. Once inflation becomes very high, and so kind of the the main channel that then is going to operate in terms of being expansionary is going to be the step inflation channel.

279
00:48:09.340 --> 00:48:10.070
Emil Verner: So

280
00:48:10.120 --> 00:48:23.280
Emil Verner: let me turn to some firm level evidence on this debt inflation channel in order to get some sharper identification, and to quantify the extent of of of the debt inflation channel in terms of increasing real activity

281
00:48:23.280 --> 00:48:44.830
Markus Brunnermeier: in you know, throwing a question from how. So you know the equivalent in a that thing of the frequency of a trusting prices would be the maturity of the nominal debt. He would like to know what was, you know, if you look at clock, that that issue, and what was the average maturity in the beginning of the inflation period. Was it 10 year fixed, or was it floating fixed, or was it, you know, what was the corporate bond structure?

282
00:48:45.020 --> 00:48:45.700
Emil Verner: Yes.

283
00:48:45.850 --> 00:48:55.660
Emil Verner: great question. So in terms of of of the information on the bonds. I'll show that a a little bit later. But what you see is that about half of the firms in our sample

284
00:48:55.720 --> 00:49:03.750
Emil Verner: 51% have fixed rate bonds outstanding. and so bonds were generally always at at fixed rate.

285
00:49:03.790 --> 00:49:08.570
Emil Verner: The typical coupon at the time was about 4 and a half, or to 4 and a half percent.

286
00:49:08.740 --> 00:49:13.530
Emil Verner: and the bonds that are outstanding in 1,920, as i'll show you

287
00:49:14.030 --> 00:49:26.830
Emil Verner: their final repayment. Date, on average, is in 1,940. So the typical remaining maturity on these on these bonds is quite long. So the they have a remaining maturity of about of about

288
00:49:26.890 --> 00:49:30.930
Emil Verner: 2020 years. and the maturity of about 30 years or so

289
00:49:31.010 --> 00:49:38.330
Emil Verner: when when they're issued, so on the bond side. Firms really are a benefiting from very long term fixed rate, financing

290
00:49:38.460 --> 00:49:40.500
Emil Verner: on the bank credit side.

291
00:49:40.540 --> 00:49:46.880
Emil Verner: It's a little bit more difficult for us to know the exact terms of of the loan contracts for for banks.

292
00:49:46.970 --> 00:49:56.100
Emil Verner: The narrative historical evidence was, which is what we can rely on here suggest that banks are gradually increasing the rate at which they're lending.

293
00:49:56.210 --> 00:50:00.470
Emil Verner: But importantly, many of bank loans in general

294
00:50:00.740 --> 00:50:10.100
Emil Verner: we're indexed to the Reichsbased discount rate and for much of the inflation up until 1,922. The right spunk is keeping its discount right very very low.

295
00:50:10.510 --> 00:50:14.700
Emil Verner: you know, in part that sort of part of the problem. Why, there's this this inflation.

296
00:50:14.790 --> 00:50:26.070
Emil Verner: and that means that actually, in terms of the pass through of bank lending rates into the price of of corporate loans. That's that's sort of only rising gradually as the right spunk increases its discount rate.

297
00:50:29.290 --> 00:50:32.670
Markus Brunnermeier: That's one more question I can throw in now in the sense

298
00:50:32.980 --> 00:50:44.250
Markus Brunnermeier: in the early phase of the inflation phase, when we before we move into hyperinflation and the wages are still sticky. You, I wrote a real way to income of households, and that also the press demand.

299
00:50:44.540 --> 00:50:50.360
Markus Brunnermeier: and a demand for goods that should hurt the revenue of the firms as well should this lead to an increase in bankruptcy?

300
00:50:50.470 --> 00:51:01.270
Emil Verner: This is a force in the other direction. And why is it that overwhelming the force you depicted in the data.

301
00:51:01.310 --> 00:51:07.770
Emil Verner: That's precisely what's happening. So households are losing out both because they're real wages are declining.

302
00:51:07.810 --> 00:51:17.960
Emil Verner: and because they're losing, they're losing their savings through the erosion of of these debt contracts that are being wiped out wiped out because

303
00:51:18.070 --> 00:51:19.550
Emil Verner: of inflation.

304
00:51:19.600 --> 00:51:21.520
Emil Verner: So in our model.

305
00:51:21.870 --> 00:51:23.820
Emil Verner: the expansionary effect

306
00:51:24.030 --> 00:51:31.500
Emil Verner: of the reduction in real wages on a labor demand is the one that's going to dominate, and that generally happens in this in this sticky wage

307
00:51:31.530 --> 00:51:39.690
Emil Verner: sticky wage models, because households are willing to supply any amount of labor that firms demand at that given wage. That's sort of typically the assumption

308
00:51:39.870 --> 00:51:41.010
Emil Verner: that you have

309
00:51:41.050 --> 00:51:44.290
Emil Verner: in terms of that depressing domestic demand.

310
00:51:44.770 --> 00:51:51.220
Emil Verner: We don't see so much evidence for that in in the data many of these firms are, you know.

311
00:51:51.590 --> 00:52:01.690
Emil Verner: tradable firms they're selling, you know, not just in Germany, but all over the world. So that might be part of the reason why they're not sort of affected by this decline in in domestic demand. The one other thing i'll, i'll say is that

312
00:52:02.050 --> 00:52:05.480
Emil Verner: in our model, and you have some historical evidence for this.

313
00:52:05.540 --> 00:52:18.180
Emil Verner: But households become poorer because they lose their savings. They actually, you know, may want to work more. So there's kind of this general equilibrium effect where this wealth, loss for households can increase labor supply.

314

00:52:18.250 --> 00:52:22.090
Emil Verner: and it's hard for us to have sort of systematic evidence for this.

315
00:52:22.120 --> 00:52:27.460
Emil Verner: But there's a lot of you know, just historical examples of people who were reliant on fixed incomes.

316
00:52:27.490 --> 00:52:30.840
Emil Verner: who actually all of a sudden had to go out into the labor market and start working.

317
00:52:30.910 --> 00:52:33.830
Emil Verner: And so, you know, labor was relatively abundant

318
00:52:33.840 --> 00:52:35.770
Emil Verner: at the time and part for this reason.

319
00:52:38.030 --> 00:52:51.230
Emil Verner: Okay. So let me look at some firm, level evidence on this debt inflation channel. We want to think about, you know? Can we see it in the cross section of firms and does it merely redistribute wealth, or does it affect real activity?

320
00:52:51.800 --> 00:52:56.240
Emil Verner: So we're gonna use 2 simple measures, a firm, level exposure to this debt inflation channel.

321
00:52:56.270 --> 00:53:05.880
Emil Verner: and they're both going to be measured as of the onset of the inflation so averaged over 1,918 and 1,919 doesn't really matter how you how you do it. But we thought this was a reasonable

322
00:53:06.180 --> 00:53:07.410
Emil Verner: way of measuring it.

323
00:53:07.880 --> 00:53:14.850
Emil Verner: The first is going to be liabilities over assets like I showed you before. That's one minus book equity over assets

324
00:53:14.940 --> 00:53:17.010
Emil Verner: measured as of 1,989,

325

00:53:17.260 --> 00:53:29.620
Emil Verner: and the second measure is financial debt relative to assets. So this is sort of a subset of the overall liabilities measure. That also includes non financial liabilities like accrue pensions, accrued wages, and and so on.

326
00:53:30.100 --> 00:53:33.580
Emil Verner: We think the firm level analysis several advantages.

327
00:53:33.620 --> 00:53:43.310
Emil Verner: So first, it's going to let us be a little bit sharper in terms of identification. We're going to be able to control for time, varying shocks that are affecting firms, including firms in different industries

328
00:53:43.420 --> 00:53:52.460
Emil Verner: and firms with different characteristics. We're going to be able to kind of quantify the how much redistribution there actually is. And we're going to be able to estimate the real effect.

329
00:53:52.510 --> 00:53:59.800
Emil Verner: Unemployment, which is a variable that we think is appealing because it's immune to some of these measurement issues during inflation

330
00:54:01.320 --> 00:54:08.140
Emil Verner: as an initial exercise. Let me just take the sample of firms that we have, and sort them into 3 bins

331
00:54:08.160 --> 00:54:12.470
Emil Verner: based on their leverage at the onset of the inflation in 1,91819.

332
00:54:12.710 --> 00:54:17.400
Emil Verner: So this figure here shows the evolution of employment for low leverage firms in red

333
00:54:17.660 --> 00:54:29.200
Emil Verner: firms with intermediate leverage in light blue, and firms with high leverage. So the highest hostile of leverage and dark blue. They're all indexed to 101,918 Again. What you see is that overall

334
00:54:29.300 --> 00:54:31.360
Emil Verner: just like with the Gdp figure

335

00:54:31.420 --> 00:54:48.810
Emil Verner: this employment data which comes from the self reported firms. Employment also shows that you know, employment is rising during the first phase of the inflation up to 1,922. And then there's sort of a contraction in employment that happens between 1,922 and 1,923, 1,924

336
00:54:49.530 --> 00:54:50.460
Emil Verner: a second.

337
00:54:50.650 --> 00:55:06.330
Emil Verner: The expansion and employment is really concentrated amongst high leverage firms. The firms that i've argued, would benefit most from this debt inflation channel followed by these intermediate leverage firms, and finally, low leverage firms are also expanding, but but much less than these high leverage firms.

338
00:55:07.730 --> 00:55:18.920
Emil Verner: So we can do this a a little bit more formally by estimating a specification that's going to let us control for various differences across firms in a way that the previous figure wouldn't allow.

339
00:55:18.950 --> 00:55:23.600
Emil Verner: So i'm going to estimate a regression of a log firm employment on a firm, fixed effect.

340
00:55:23.840 --> 00:55:29.380
Emil Verner: Time Fixed effects, and potentially industry Time fixed effects. That's what the s here represents the sector.

341
00:55:29.540 --> 00:55:44.330
Emil Verner: and then we're going to sort firms by their liabilities relative to their assets at the onset of the inflation in 1,91819, and I'm. Going to compare the evolution of firms with high liabilities to assets relative to low liabilities, to assets.

342
00:55:44.490 --> 00:55:51.070
Emil Verner: fixing 1,918 as the benchmark here. So we can do this with only firm and your fixed effects.

343
00:55:51.280 --> 00:55:56.670
Emil Verner: And what we see is that these high leverage firms they see relatively stronger employment growth.

344
00:55:56.680 --> 00:55:59.860
Emil Verner: especially in 1920, 2122,

345
00:55:59.920 --> 00:56:06.430
Emil Verner: and then it sort of Peters out by the end of the inflation in 2,324

346
00:56:06.770 --> 00:56:08.420
Emil Verner: in terms of magnitudes.

347
00:56:08.490 --> 00:56:15.270
Emil Verner: What this estimate here means is that if I increase leverage by 10 percentage points

348
00:56:15.470 --> 00:56:21.810
Emil Verner: that's associated with 5% stronger employment growth from 1,918 to 1,922.

349
00:56:22.420 --> 00:56:23.110
Emil Verner: No.

350
00:56:23.390 --> 00:56:32.280
Emil Verner: there's you might have lots of concerns with this type of exercise. You might worry that the firms that have high leverage. They're just, you know, going to be different from firms that have lower leverage.

351
00:56:32.400 --> 00:56:46.760
Emil Verner: So one concern you might have is that they might be in different industries. We know capital structure varies a lot across industries, and it might just be that the industry is with high leverage. They are the ones that are doing the best. So to deal with this i'm going to put in industry by year fixed effects

352
00:56:46.800 --> 00:56:49.400
Emil Verner: for relatively detailed industries.

353
00:56:49.420 --> 00:57:02.230
Emil Verner: The corresponders are roughly 2 digit S. IC. Industries today, and you see that even within industries the firms that have a higher leverage. They are the ones that grow the most during the inflation in terms of their employment.

354
00:57:02.720 --> 00:57:08.720
Emil Verner: We can also control for firm characteristics like firm size, firm profitability.

355
00:57:08.790 --> 00:57:22.380
Emil Verner: firms, fixed assets as a share of total assets sort of standard financial characteristics at the onset of the inflation. To make sure that this leverage effect that we're identifying is really about leverage, and not about one of these other characteristics.

356
00:57:22.460 --> 00:57:28.080
Emil Verner: And you see that you know here in this dark blue estimates. These are quite similar.

357
00:57:28.550 --> 00:57:36.650
Emil Verner: Now the final story is, what a concern is a story that we've already talked about, which is about what's happening on the credit supply side on the intermediation

358
00:57:36.720 --> 00:57:54.990
Emil Verner: aside. So you might worry that well firms with low leverage. They might, you know, be connected to different banks that are cutting their credit supply relatively more. And so, in order to deal with that, we're going to put in bank time, fixed effects. What this is going to do is essentially compare a firm with high leverage

359
00:57:55.020 --> 00:58:00.210
Emil Verner: to a firm with low leverage that have a relationship with the same bank. For example, Deutsche Bank.

360
00:58:00.230 --> 00:58:02.590
Emil Verner: And so that's going to take out sort of any

361
00:58:02.640 --> 00:58:07.120
Emil Verner: overall contraction and credit the Deutsche Bank is doing at at the time.

362
00:58:07.490 --> 00:58:14.920
Emil Verner: We're also going to control for firms distance to Berlin as a proxy for their access to the Reichsbunks discount window.

363
00:58:15.900 --> 00:58:22.640
Emil Verner: When we do that, you know, we see again quite similar patterns. So this expansion, or get inflation channel that's running from

364
00:58:22.680 --> 00:58:29.700

Emil Verner: 1918 to 1,922 it, you know it doesn't seem to be confounded by one of these other other factors.

365
00:58:31.510 --> 00:58:41.680
Emil Verner: We can also, you know, try to corroborate this debt inflation channel story a little bit more by looking at what happens to other aspects of of of Firm's performance.

366
00:58:41.740 --> 00:58:55.220
Emil Verner: So this figure here shows a a similar estimation exercise, but it looks at the share of interest, expenses, and the share of total expenses. And what you see is that it's precisely the firms that have higher leverage again measured as liabilities over assets.

367
00:58:55.250 --> 00:59:10.420
Emil Verner: the that are the ones that see the largest decline in their interest expenses as a share of total expenses. So these are really the firms that are benefiting most just, you know, in cash flow terms by having to make pure interest payments in real terms to their bank and to their bond holders.

368
00:59:12.400 --> 00:59:14.540
Emil Verner: What happens in in the equity market.

369
00:59:15.950 --> 00:59:16.770
Emil Verner: So

370
00:59:17.010 --> 00:59:24.860
Emil Verner: what we do here is we look at for firm performance in the stock market during the inflation from 1,919 to 1,923.

371
00:59:25.070 --> 00:59:33.540
Emil Verner: And what we're gonna do is we're gonna sort firms into 5 portfolios based on their lag leverage again to kind of get at this debt inflation channel.

372
00:59:33.650 --> 00:59:41.680
Emil Verner: and this figure here shows you the average return across these portfolios from the low leverage portfolio

373
00:59:41.700 --> 00:59:44.010
Emil Verner: to the highest leverage portfolio.

374
00:59:45.330 --> 00:59:47.040

Emil Verner: And what you see is that

375
00:59:47.050 --> 00:59:55.350
Emil Verner: firms that are in the high leverage portfolios. They do relatively better compared to firms that are in the low leverage portfolios.

376
00:59:55.870 --> 01:00:02.070
Emil Verner: All firms have pretty poor stock returns during the inflation, but high leverage firms do relatively better.

377
01:00:02.130 --> 01:00:04.430
Emil Verner: so that, for example, a portfolio that went

378
01:00:04.450 --> 01:00:15.860
Emil Verner: long, high leverage firms and short, low leverage firms would have had 13% higher returns per year during the the inflation period, and this is a quite significant difference.

379
01:00:16.050 --> 01:00:27.430
Emil Verner: So what this is telling you is that there is evidence of this redistribution from debt. Equity holders in contrast to the more limited evidence that we have from other inflations like the 1970 s period.

380
01:00:28.360 --> 01:00:35.390
Emil Verner: And finally, let me just talk a little bit more about long term bond financing. So I think I've already talked about most of what happened.

381
01:00:35.480 --> 01:00:50.390
Emil Verner: and most of what this this slide is going to show. But what it shows is actually, there's a question. If I may ask this. You know how I'd Bloom would like to know who is actually the hold of this low interest step issuance.

382
01:00:50.550 --> 01:00:53.220
Markus Brunnermeier: not this German banks, for on us.

383
01:00:53.530 --> 01:01:00.850
Markus Brunnermeier: and all the defaults may not occur. There might be subject to crashing mark to market evaluations. Say anything you can say

384
01:01:01.290 --> 01:01:05.370

Emil Verner: so. What we know is, you know, on the loan side

385
01:01:05.710 --> 01:01:24.970
Emil Verner: the holders of these loans are are are banks, so Banks, you know, mainly provide working capitals of credit Banks mainly provide working capital financing at the time, and the banks really do suffer during the inflation. I just what want want to be clear about that. So kind of on the on the credit supply side. If you look at, for example, banks

386
01:01:24.970 --> 01:01:26.930
Emil Verner: a real equity.

387
01:01:27.200 --> 01:01:34.530
Emil Verner: their equity declines by about 2 thirds during the inflation. So there's a big reduction in the real capitalization. So they they lose out

388
01:01:34.570 --> 01:01:36.860
Emil Verner: from this, even though they also sort of benefit

389
01:01:36.900 --> 01:01:47.720
Emil Verner: in in other ways, from from the inflation that we can we can talk about. Then, if you look at the long term bonds, I think those are wild, widely held amongst the the population. So they're held by

390
01:01:47.870 --> 01:01:56.110
Emil Verner: insurance companies. You know life insurance, for example. They're also held by by private individuals.

391
01:01:56.160 --> 01:02:01.060
Emil Verner: and those people are the ones who lose out during the inflation. And actually, you know, later on, they

392
01:02:01.090 --> 01:02:02.910
Emil Verner: kind of try to form

393
01:02:02.930 --> 01:02:11.130
Emil Verner: coalitions in order to advocate that they should have some compensation because of of of this loss. And so this kind of becomes a political economy issue

394
01:02:11.190 --> 01:02:12.640
Emil Verner: later on down the road.

395
01:02:12.670 --> 01:02:17.050
Emil Verner: But yeah. So the the bond holdings, the losses are relatively dispersed

396
01:02:17.120 --> 01:02:30.600
Emil Verner: on the loans. The losses are going to be concentrated on the credit banks, and that's going to show up, you know, on the credit supply side, especially in the second things of the inflation. You see one word you know, in 1,924, when there was a revelation of the bonds through political lobbying.

397
01:02:30.710 --> 01:02:41.120
Markus Brunnermeier: Was this a reason? Why then, these firms, you know, came back high leverage forms did not have more employment any more. Subsequently, because suddenly the that came back.

398
01:02:42.030 --> 01:02:52.480
Emil Verner: Let me see if you what's on this? So so what happens is that there's this sort of long political economy kind of debate between the the creditors who've lost out.

399
01:02:52.680 --> 01:02:54.280
Emil Verner: And

400
01:02:55.340 --> 01:03:01.030
Emil Verner: you know other other parties, including kind of mainstream politicians who really didn't want to have a debt rev of evaluation.

401
01:03:01.090 --> 01:03:06.910
Emil Verner: and they settle on a compromise where mortgages are revvalued by 20%

402
01:03:06.980 --> 01:03:11.180
Emil Verner: other types of bonds are revalued by between 10 and 15%.

403
01:03:11.250 --> 01:03:16.700
Emil Verner: But the revaluation terms are quite generous on the on the debtor side, so the firms

404
01:03:16.820 --> 01:03:28.450
Emil Verner: they they they all of a sudden have these revvalued loans, but the interest rates are very low, and they don't have to start making

repayments until 1,932, and actually once 1932 comes. Then there's subsequent moratoria

405
01:03:28.540 --> 01:03:35.400
Emil Verner: as well so there's some evidence of of rising defaults at the time, which might be related to this this evaluation.

406
01:03:35.440 --> 01:03:39.570
Emil Verner: I think another reason just why there's this. There's sort of a temporary boom

407
01:03:39.630 --> 01:03:43.660
Emil Verner: from this, which then sort of Peters out, is that some of the firms

408
01:03:44.080 --> 01:03:45.710
Emil Verner: may have over expanded

409
01:03:45.760 --> 01:03:51.230
Emil Verner: during the during during the inflation, so they benefit from this reduction in debt.

410
01:03:51.320 --> 01:03:55.500
Emil Verner: They don't really know what to do with the cash flow that they have. And so they, you know, invested in

411
01:03:55.610 --> 01:04:10.800
Emil Verner: plant equipment land. They hire more workers, and you know. once the stabilization comes some of this, you know, expansion reverses as as firms kind of try to cut costs and and rationalize themselves, and I think that explains

412
01:04:11.010 --> 01:04:12.790
Emil Verner: part of the reversal thanks.

413
01:04:14.790 --> 01:04:28.670
Emil Verner: So if you look at you know what types of bonds did firms have outstanding at the onset of the inflation? Here is a a figure which shows shows a snapshot of when bonds were issued, and when they are repaid.

414
01:04:28.680 --> 01:04:39.510

Emil Verner: So if you're looking at 1,91819. The typical firm issued bonds. The Median is in 1,906, and some of them had issued bonds as far back as the 18 eighties.

415
01:04:39.870 --> 01:04:43.940
Emil Verner: but most of them were issued before World War one. Then.

416
01:04:43.950 --> 01:04:55.220
Emil Verner: you know, there's some issuance that comes back right after the war during World War one there isn't much insurance, but some issuance does come back in the aftermath kind of consistent with this idea, that inflation isn't anticipated.

417
01:04:55.450 --> 01:04:57.110
Emil Verner: and these long term bonds.

418
01:04:57.360 --> 01:04:59.860
Emil Verner: They have pretty long repayment terms.

419
01:04:59.900 --> 01:05:15.690
Emil Verner: So the typical firm only finishes repaying its long term bonds 20 years later, in in 1,940, and you know some of them have repayment terms that go all the way into the 1950 S. 1960 s. So these firms that are in in our sample that have long term bonds.

420
01:05:15.720 --> 01:05:20.790
Emil Verner: Many of them have very, you know, very long term bonds that they're. They're reliant on.

421
01:05:22.260 --> 01:05:32.460
Emil Verner: so we can use the idea that this debt inflation channel should be especially strong for the firms that have long term financing that isn't subject to reprising during the inflation.

422
01:05:32.770 --> 01:05:44.720
Emil Verner: So what we do here is we estimate this this specification that I showed you before, but we'll do it separately for firms that have low versus high share of debt being long term.

423
01:05:47.120 --> 01:05:57.120
Emil Verner: So this figure here shows the result of this exercise for the interest, expense, shares, and for employment. So you see that you know, for all firms interest expenses go down

424

01:05:57.180 --> 01:06:03.720
Emil Verner: as a share of total expenses, especially for firms that have a higher debt relative to their assets.

425
01:06:03.830 --> 01:06:17.840
Emil Verner: But this effect is much stronger for firms that are in the highest quartile of their long term debt as a share of total debt. whereas firms that have, you know very little long-term debt, and have a lot of short term debt that is subject to summary pricing They see you know relatively smaller effects

426
01:06:17.910 --> 01:06:21.700
Emil Verner: on on interest expenses. Similarly, if we look at employment.

427
01:06:22.040 --> 01:06:38.900
Emil Verner: the pattern isn't quite so clear, but it's it's certainly. Certainly. There you see that the strongest employment gains come precisely for the firms that have the highest share of of of long-term debt in total debt all the smallest effects come for firms that have the lowest share of of of long-term debt

428
01:06:38.900 --> 01:06:43.940
Emil Verner: in in total debt kind of consistent with this idea that this debt inflation channel is going to be stronger

429
01:06:44.080 --> 01:06:47.030
Emil Verner: for firms that have a more long maturity debt.

430
01:06:48.250 --> 01:06:48.940
Emil Verner: Okay.

431
01:06:49.080 --> 01:07:05.130
Emil Verner: let me conclude here. So what we've tried to do in this paper is to revisit this classic episode of the German hyper inflation and provide some aggregate and firm level evidence on the role of this debt inflation channel, which appears to be quite important during this context.

432
01:07:05.130 --> 01:07:14.150
Emil Verner: So what we find is that there's clear evidence of redistribution, redistribution toward the equity holders of net debt or firms, and that seems to have real effects.

433
01:07:14.840 --> 01:07:23.300

Emil Verner: And the key friction that seems to matter here is long-term nominal debt and financing constraints rather than nominal, rigid.

434
01:07:23.620 --> 01:07:27.230
Emil Verner: Now, what's the aggregate importance of this shock.

435
01:07:27.490 --> 01:07:32.980
Emil Verner: Well, if we do sort of a simple, partial equilibrium aggregation of our estimates, it implies the

436
01:07:33.080 --> 01:07:37.380
Emil Verner: that the dead inflation channel accounts for about a 14% employment increase

437
01:07:37.560 --> 01:07:45.750
Emil Verner: from 1918 to 1,922. During the expansionary phase of of of this inflation, which is about 75% of the total effect.

438
01:07:45.850 --> 01:07:55.590
Emil Verner: So this debt inflation channel it, it. It appears to be expansionary, and it can work, even if prices are flexible. Now, of course, in terms of aggregate and effects of the inflation.

439
01:07:55.780 --> 01:08:01.490
Emil Verner: You also want to think about the other side which we've been discussing several times, which is this credit supply side.

440
01:08:01.600 --> 01:08:16.319
Emil Verner: So we're trying to do more about this in the next paper, but it's pretty clear that our credit supply does contract, especially in the second phase of the inflation, and that that was a a strong dampening, and maybe even overall contractionary effect. Once inflation became hyper.

441
01:08:17.279 --> 01:08:25.580
Emil Verner: Finally, you know, let me just say a couple of words about external validity, because I think this type of analysis is always going to invite those types of questions.

442
01:08:25.700 --> 01:08:28.510
Emil Verner: You know, we think that in

443
01:08:28.550 --> 01:08:38.689

Emil Verner: by studying such a high inflation episode we can kind of clearly identify a channel that might also matter during more moderate inflation. But that's going to be more difficult to see.

444
01:08:38.870 --> 01:08:56.890
Emil Verner: At the same time, you know, we have to be open to the fact that relevant channels might be different during smaller inflation. So price stickiness, for example, might matter more when monetary policy responds sharply. That's going to have different effects on financial conditions relative to if monetary policy doesn't respond like in this episode.

445
01:08:56.960 --> 01:09:06.560
Emil Verner: And finally, the structure of debt contracts matter. So this debt inflation channel is going to be particularly strong when firms have fixed rate. Long term domestic currency. Get.

446
01:09:06.649 --> 01:09:23.960
Emil Verner: If you're in other environments where there's floating debt that's being reprised or foreign currency debt that that's subject to this you know, opposite evaluation effects from exchange or depreciation. You can get much weaker, even, you know, inverse effects of of of this debt, that channel.

447
01:09:23.960 --> 01:09:31.710
Emil Verner: So you know whether this debt inflation channel is operative, and other settings really depends on what financial system and financial contracts look like

448
01:09:31.760 --> 01:09:33.960
Emil Verner: during that setting. So

449
01:09:34.020 --> 01:09:48.710
Markus Brunnermeier: thanks a lot for for your questions and for happening and happy to take some more questions. Thanks. Thanks. A email. So we have some more questions. So in particular, I would like to come back to the poll questions as well. The last poll question, that's also what Ron Anderson would like to know

450
01:09:48.880 --> 01:10:01.090
Markus Brunnermeier: what is, was a good hedge then against this inflation at that period. And what are the lessons for today? Is it, you know? Probably Did we know the ponds? Not but what was the performance of equity? Was response. Commodities and real estate.

451
01:10:01.230 --> 01:10:02.130

Emil Verner: Yeah.

452
01:10:02.480 --> 01:10:06.830
Emil Verner: I mean, if you was on this.

453
01:10:06.950 --> 01:10:14.120
Emil Verner: the best hedge would obviously have been to go for a foreign currency, and that's certainly what many, many people did it. Many firms did this.

454
01:10:14.170 --> 01:10:27.880
Emil Verner: for example, Siemens, that I showed you before by 1,922 a half of their cash holdings were in in foreign currency so that's that's kind of obviously the best hedge. But there were capital controls that made it difficult, especially for some ordinary people.

455
01:10:27.890 --> 01:10:29.020
Emil Verner: to do that.

456
01:10:29.080 --> 01:10:33.170
Emil Verner: Then, in terms of of hedges in the long term.

457
01:10:33.200 --> 01:10:44.490
Emil Verner: so funds were were obviously the worst shares do relatively poorly, but at least they do retain their real values, and the stock market does recover. In the second half of the 1920, so

458
01:10:44.610 --> 01:10:46.570
Emil Verner: you know, in the medium term

459
01:10:46.620 --> 01:10:48.840
Emil Verner: stuff, a shares would have been relatively

460
01:10:48.870 --> 01:11:03.240
Emil Verner: a reasonable hedge, at least better than bonds, which many people were reliant on, and then, in the medium term. real estate would also been an okay hedge. But in the short term it was a very bad hedge, because

461
01:11:03.340 --> 01:11:13.040
Emil Verner: landlords suffered a lot because of price restrictions on rents, so they couldn't raise rents with inflation, which meant that essentially the cash flow coming from real estate investments

462
01:11:13.090 --> 01:11:17.660
Emil Verner: when essentially to to to to 0. So I think those

463
01:11:17.790 --> 01:11:30.380
Emil Verner: those types of assets that are known to provide partial hedges against inflation and other times like real estate and and and and and and stocks of non financial firms also do relatively

464
01:11:31.360 --> 01:11:37.920
Emil Verner: relatively better, but are still not perfect hedges. Here I think more broadly. The evidence that we have on hedges against

465
01:11:38.060 --> 01:11:48.840
Emil Verner: inflation is is kind of very similar. So real estate is a partial hedge against inflation. If you look across. You know, many countries over a long period of time. It's not perfect.

466
01:11:48.900 --> 01:11:53.470
Emil Verner: and the stock market is also a kind of a partial hedge and sensation.

467
01:11:53.560 --> 01:11:54.930
Emil Verner: but but not perfect.

468
01:11:56.580 --> 01:12:09.600
Markus Brunnermeier: So you made a very good case that you know the inflation was not anticipated at all, because we had more than 100 years of very low inflation. and people who are speculating in the fax market that the you know the

469
01:12:09.900 --> 01:12:12.130
Markus Brunnermeier: gain in value as well.

470
01:12:12.580 --> 01:12:20.950
Markus Brunnermeier: Do you think this is a very specific to cases where you know the inflation expectations are always very low and transitory.

471
01:12:21.720 --> 01:12:28.420
Markus Brunnermeier: Or can we to all conclusions, even for other cases where inflation goes up and people don't have a strong inflation anchor

472
01:12:29.190 --> 01:12:40.870

Markus Brunnermeier: would it be for Latin American countries? But there's no strong inflation. Anchor. What you say with this defect is the same. But it was just not super announced, or it would be not the I don't work because one price would price it in.

473
01:12:41.020 --> 01:12:46.220
Emil Verner: Exactly. I think that if inflation, you know, becomes anticipated.

474
01:12:46.370 --> 01:12:51.700
Emil Verner: and then the contractionary effects of higher expected inflation through financial channels

475
01:12:51.840 --> 01:13:05.360
Emil Verner: can dominate this debt inflation channel. So I think what happens is, you know. if you have a what's important in terms of advantage and expectations for financial channels when you have long-term contracts is not

476
01:13:05.380 --> 01:13:11.910
Emil Verner: whether inflation next year is anticipated this year, but whether it was anticipated when debt contracts were signed. And so, if you do have.

477
01:13:12.010 --> 01:13:13.800
Emil Verner: you know, medium

478
01:13:13.850 --> 01:13:17.700
Emil Verner: to the long term debt contracts at our fixed rate.

479
01:13:17.710 --> 01:13:21.750
Emil Verner: then this channel can still be operative if inflation is anticipated

480
01:13:21.830 --> 01:13:26.410
Emil Verner: in the in the short term as long as it wasn't anticipated when contracts were signed.

481
01:13:26.720 --> 01:13:32.930
Emil Verner: But if you know you, you are an environment where people are used to relatively high inflation.

482
01:13:32.990 --> 01:13:36.590

Emil Verner: and they're not willing to enter long term financing. In the first place.

483
01:13:36.640 --> 01:13:47.350
Emil Verner: then, the benefits of of high inflation are going to be much weaker through this channel, because, as you said, debt is going to be priced. You know, interest rates are going to be.

484
01:13:47.440 --> 01:13:55.330
Emil Verner: because people, you know require higher compensation, and then I think, if you're in the world of terms being financed and constrained.

485
01:13:55.510 --> 01:13:59.100
Emil Verner: then the contractory to channels become more important.

486
01:13:59.200 --> 01:14:08.960
Emil Verner: Because, for example, if you have a firm that faces a working capital constrained. It needs to borrow from banks in order to pay its employees, and to, you know, buy materials.

487
01:14:09.220 --> 01:14:15.110
Emil Verner: Then, if you have an increase in nominal interest rates that comes from an increase in expected inflation.

488
01:14:15.340 --> 01:14:17.890
Emil Verner: even if there is no increase in the real rate

489
01:14:18.080 --> 01:14:24.350
Emil Verner: that actually tightens the firms working capital are constraint, and so you can have sort of a contractionary effect that comes from

490
01:14:24.420 --> 01:14:28.580
Emil Verner: from from having less less working capitals with this financing channel.

491
01:14:28.750 --> 01:14:40.130
Emil Verner: you know, even if real Rates haven't gone gone up yet, the nominal rate itself might matter, and I think that's if you're in a. If you're in a setting where people have experience very high inflation, and think that very high inflation could come back.

492
01:14:40.390 --> 01:14:48.510

Emil Verner: That seems to be more important. And and then you're going to be more likely to have kind of a financial system that's been adapted to that. I think that's been the experience of many

493
01:14:48.650 --> 01:14:52.280
Emil Verner: inflations, especially in Latin America, in the post war period.

494
01:14:53.260 --> 01:14:55.520
Markus Brunnermeier: So let's we always.

495
01:14:55.530 --> 01:15:05.770
Markus Brunnermeier: and with the positive note that quick, positive note, perhaps, and also lessons for today. What are the main lessons and what's so? Is there any positive note from this analysis?

496
01:15:06.090 --> 01:15:07.580
Markus Brunnermeier: That's a good outcome.

497
01:15:07.610 --> 01:15:11.980
Markus Brunnermeier: We should learn from that, and that will help us in the current circumstances.

498
01:15:13.390 --> 01:15:23.060
Emil Verner: I don't know if it's a certainly, if it's a positive note from the perspective of of combating inflation for the fed. But I do think that if you want to think about how this debt inflation channel

499
01:15:23.340 --> 01:15:27.370
Emil Verner: might matter today in the role of of financial fictions.

500
01:15:27.560 --> 01:15:32.250
Emil Verner: It seems plausible to me, for example, that you know, during Covid, when we saw high inflation.

501
01:15:33.430 --> 01:15:46.510
Emil Verner: many people homeowners what long-term fixed rate debts 30 year fixed rate they had borrowed at maybe 2 and a half, 3, 3 and a half percent. even though their wages didn't go up as much as inflation. If their wages still went up

502
01:15:46.620 --> 01:15:53.230
Emil Verner: because of some inflation. They actually would have, you know, benefited from this, and that might be part of the reason

503
01:15:53.240 --> 01:16:01.180
Emil Verner: why we have, you know, relative, have had relatively strong household demand relatively strong a balance sheets, and that's, of course, been one of the reasons why

504
01:16:01.250 --> 01:16:07.690
Emil Verner: you know. Demand has been strong, and that's led to more inflation. And so I think you know, in a way that's

505
01:16:07.900 --> 01:16:09.150
Emil Verner: that's sort of a

506
01:16:09.350 --> 01:16:17.570
Emil Verner: something that you know we need to think about, even even kind of in the present context that that might have been a way in which inflation may have stimulated demand.

507
01:16:18.130 --> 01:16:24.830
Markus Brunnermeier: Thanks a lot email. I hope you you locked in a mortgage rate for 30 years at 2 and a half, but 2.8, and

508
01:16:25.610 --> 01:16:32.060
Markus Brunnermeier: we stay in touch and keep on pushing this line of research. Thanks again, and I see you soon.

509
01:16:32.110 --> 01:16:40.250
Markus Brunnermeier: Thanks, Mike. See you soon, thanks to everybody for coming, and next week we will have a discussion with Bill Dudley, the former president of the New York, Fed.

510
01:16:40.320 --> 01:16:43.340
Markus Brunnermeier: talking about the lessons from the banking crisis.

511
01:16:43.550 --> 01:16:46.610
Markus Brunnermeier: Hope to see you again. Thanks for joining us this time.