Bruce Greenwald

Long-term Resilience

On Thursday, November 30, Bruce Greenland joined Markus' Academy for a conversation on "Long-term Resilience." Greenwald is the Robert Heilbrunn Professor Emeritus of Finance and Asset Management at Columbia Business School and the academic Director of the Heilbrunn Center for Graham & Dodd Investing.

A few highlights from the discussion.

- **A summary in five bullets**
  - Type 1 resilience is about responses to shocks: how much economies fall during crises and how quickly they recover. This has been the focus of the discussions.
  - Type 2 resilience however involves the ability of countries to adjust to structural changes/shifts to attain a new (and better) steady state.
  - Economies that are not able to adapt will stay down after crises. A prime example of this was the Great Depression: it was about the transition from agriculture to manufacturing, but policymakers failed to promote this transition, perpetuating the crisis.
  - Today we face the transition from manufacturing to services, but countries have rejected the transition by protecting manufacturing jobs, boosting exports, and keeping consumption low, which cannot be a global solution.
  - In many cases a lack of Type 2 resilience is self-inflicted and due to politically-imposed transformations. Numerous examples from history show that centralized interventions will lead to the wrong path of economic stagnation.

- **[0:00] Markus' introduction:**
  - There is a difference between concerns about risk, robustness, and resilience. Mitigating risk is a static approach. Measures of risk are variance, standard deviation or value-at-risk. Robustness is about rigidity and being resistant to most shocks.
  - Resilience is about the ability to adjust and bounce back. To secure resilience one should consider that endogenous responses to a crisis may foster negative feedback loops. Also, often a system can be more resilient if its parts are less resilient. Consider zombie firms: if an economy prevents all firms from failing its overall resilience will decline, while if it allows some of these to fail resilience will improve.
- **[8:11] Two kinds of resilience**
  - Type 1 resilience is about responses to shocks: how much economies fall during crises and how quickly they recover. This has been the focus of the discussions.

- Type 2 resilience concerns shifts and transition periods. It is an order of magnitude more important. It involves the ability of countries to adjust to structural change to attain a new (and better) steady state. Economies that are not able to do so will stay down after crises.
- Type 1 resilience is more concerned with external shocks, while with Type 2 they can be internal. Type 2 crises have a more gradual onset, and entail more long term consequences.
- A lack of Type 2 resilience can come in two forms. First are willed transformations through political intervention, which often fail because of excessive centralization (with too many decision makers and yet a lack of diversity of opinion).
- Second are failures to adapt. The Great depression is the prime example. People often attribute the crisis to the stock market crash and a failure of monetary policy. However the crash was temporary, while one still saw a depression in countries with different monetary policies.
- Together with the persistence of the downcycle, this suggests that the crisis was structural in nature: it was about the transition from agriculture to manufacturing.
- With input-neutral technological change and a low income elasticity of demand for agricultural products, agricultural productivity growth (beyond demand growth) brought a lowering of farmer's incomes. Given that a third of the population relied on farming income, this ultimately brought down industrial demand as well.
- Capital and labor was hard to redeploy to manufacturing because of the financial constraints brought by the crisis. Workers were unable to move into cities and retrain.
- But the government was also reluctant to have people's lives uprooted, and they intervened to keep farmer's jobs by having them reduce their output. The Great Migration had to wait until the industrial policy of WWII.

- [35:51] **The transformation from manufacturing to services**
    - The transition from agriculture to manufacturing was costly due to relocation, retraining, and cultural adjustment.
    - But more structurally it brought a shift from small production units to large (more productive) units. Higher density in cities brought spillovers, while the shift from individual to collective production brought wage inequality. Globalization brought a reduction in corporate profits.
    - Now we face the transition from manufacturing to services. Large investments in healthcare, education, and housing are required, along with a cultural adjustment due to there being less male jobs.
    - There is a turn from production in large to small units, so there is a productivity impairment in the long term. In services you value individual performance rather than the collective's, which fosters inequality.
    - Services are small local markets, allowing for monopolies and high excess profits. Even the large tech firms have segmented themselves to attain market power. Profits also grow as a share of national income since unions don't have power in services.

- [50:12] **The problems with policies that reject the transition**
    - Examples of an inability to adapt are Japan and Europe post-1990, or China since 2010.
    - Countries have been trying to save their manufacturing jobs by boosting exports and keeping consumption rates low, but in the aggregate the world can't export its way out of the problem. These policies generated long-term international imbalances which led to the financial crisis.
    - Avoiding a transition, governments have implemented "temporary" deficits chronically. Low interest rates sustained demand but brought slow recoveries. Not considering monopoly power brought an unexpected persistent inflation.
    - Industrial productivity is high, but we care about the aggregate. With real wages falling and a low labor participation rate, we see a failure to adapt to changing productivity conditions. Governments need to focus on technology diffusion.
- [1:09:30] **Are there good degrees of centralization?**
    - Some countries like Singapore or South Korea have been able to adjust to transitions with systems of "crony capitalism" and pervasive institutional connections.
    - These are small countries, but their experience suggests that in adapting to Type 2 transitions one can't ignore local cultural differences. How well countries can deal with structural change has to do with the nature of their institutions.
- [1:13:33] **The end of the export-led development model**
    - The export-led development model has been successful in the past. It only required moderately advanced technology and large productive institutions that could receive a lot of attention. It could also be implemented independently of local cultures.
    - But as industrial productivity outstrips its demand it will become a dying sector. As labor productivity grows and labor input shrinks, the value of a country having cheap labor will disappear. With manufacturing coming back to the developed world as a result, emerging countries will need a substitute development model
    - One proposal is to allocate 500bn in the IMF's SDRs to countries, and tax each country's allocations at 50% of their current account surpluses. Proceeds would be provided to deficit countries, especially ones in need of development aid, in exchange for a commitment to a structural adjustment to boost consumption (and local services).
    - Of course, the US would benefit from this scheme, but they also benefit from the status quo by being the reserve currency.
- [1:18:10] **The bottom line**
    - To achieve long term resilience we must recognize that structural changes are taking place. To do so we need intellectual and ideological diversity, and we must be able to conduct reasoned evaluations of previous responses to crises.
    - We have not conducted an evaluation of the covid response; it is not clear that the costs from broad lockdowns outweighed the benefits, even when measured by lives saved.

- For a positive note, Chile has shown a remarkable ability to get off bad paths. Things are not irreversible.

Timestamps:

- **[0:00] Markus' introduction:**
- **[8:11] Two kinds of resilience**
- **[35:51] The transformation from manufacturing to services**
- **[50:12] The problems with policies that reject the transition**
- **[1:13:33] The end of the export-led development model**
- **[1:18:10] The bottom line**

0:00

Markus Brunnermeier: Hello, everybody, and thanks for joining us again. Today we will talk about Argentina at the crossroads: perils of dollarization, with Ivan Verning from MIT and his co-authors, Tomas Cavallo and Pietro Martinez-Pereira. Hi, Ivan, good to have you with us.

Ivan Werning: Hello, Markus, thanks for having me.

Markus Brunnermeier: Great. We're looking forward to learning what, given the election outcome on Sunday, and we'll learn more about what's going on in Argentina and, you know, what the policy implications might cause for Argentina and the neighboring states. Starting with a few remarks: Argentina, of course, has shown us that there's a tight link between fiscal deficits and inflation. Inflation recently was around 140 percent. There's some large hidden government budget deficits and large deficits more generally. And, on Sunday, there was a presidential election where there was a choice between, you know, some “Venezuela-ization.” Some people argued between leading potentially to hyperinflation and a hard liberalism. So it was a tough choice in both ways. And we'd like to learn more about what the election outcome might imply for the Argentinian people. So first, I would like to start just to give a brief overview of currency regimes. So of course, the big debate and the candidate who won the elections, is proposing to introduce some dollarization. So full dollarization like what we have in Panama or Ecuador. Not only an informal dollarization, when formally the dollar is accepted as a currency, it will be officially accepted as the legal tender in Argentina. That's different from a currency board where a currency board is less committal than a dollarization. So it's not the actual dollar used in a currency board, it's just a central bank holding some dollars in reserves and then issuing some of its own currency. So it's easier to get out of the currency board compared to dollarization. And Hong Kong has a very famous currency board arrangement. Argentina had one between 1991 and 2002. Weaker than a currency board is a regular peg where there's a peg around a certain band. You can even have some managed or dirty float of exchange rates. Or you have a totally floating exchange rate regime. And so we talk today, we'll talk primarily about the dollarization, what it implies. There are two elements to consider. One is, if you go from the current situation of Argentina, transition into dollarization, what does it imply? How dangerous is it? What are the sudden stops, the recessions, which might occur? And then there's a long run effect. If you have a dollarization in the long run, what are the dangers there, what are the benefits, and what are the costs? Of course, on the benefits side, the whole idea is to get inflation under control. You might also lower the risk premium associated with the local currency. So you might get a potentially lower real interest rate. But of course, this only holds if you have less financial repression, and of course the real interest rate, if inflation is very high and people have to hold the local currency, but then the real interest rate is very low as well. So what are the long run costs? The long run costs, of course, you lose the monetary sovereignty, you lose essentially monetary policy to stimulate the economy if you have a recession, or cool it off if the economy is overheating. So you lose this instrument to slow it down or speed up the economy. You also lose the option to devalue your currency in order to stimulate export whenever you need it. So that's one big loss. A second loss in the long run is then if you have dollarized, you lose your seigniorage and you also lose the lender of last resort feature of the domain for domestic banks.

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So there's no central bank, if there's a run of the domestic bank, there's no central bank having the reserves. If you don't have the reserves to really bail out the domestic banking sector, if there's a run on deposits also held in U.S. dollars, because the local banks don't have access to the Fed discount window or other facilities. So with this, I would like to go to the poll questions and I'm grateful to all of you for answering these poll questions just to get us a little bit started. The first question is about the transition from the current circumstances to a dollarized economy. Does this lead to a sudden stop? And how severe will the sudden stop be? Is it more severe or similar to a currency reform? Is it less severe to a currency reform or is it similar to a regular recession? And the answers were 73% said more severe or similar to a currency reform, less severe 16%, and similar to a regular recession is only 11%. The other aspects or the other questions were more about the long run effects. So once you have dollarized, what's the cost and benefits then? So the main long run costs of dollarizations are the loss of not being able to conduct monetary policy. That's what 70% of you thought. You lose the seigniorage, that's only what 14% thought that's a big deal. And the loss of the lender of last resort features for the banks, that's 17%. The third question was about how costly it would be for banks if there's no lender of last resort feature anymore. So some people say it's 30% thought yes, that's what makes the banks more cautious. Yes, it will make them more cautious, but its also desirable, there might be too much risk-taking among the banks anyway. That's about 30%. Second, the B was yes, it will make the banks more cautious. It's desirable. That's 38%. And there's no effect. That's about 32%. So it's roughly equally split between all three answers. The fourth question was about whether Argentina has too few dollar reserves to really dollarize. And 80% thought, yes, that's a big problem. And 20% thought it's not a big problem. And finally, there's a question whether dollarization would lead to a better integration of the world economy, which means everything is dollarized anyway. And the outcome was about 45%, yes, 55%, no. So with this little background and the take of the audience, I pass on the mic to Ivan and his co-authors, Thomas and Petro. And we're looking forward to learning more about what's going on in Argentina, and how to predict the future a little bit.

Ivan Werning: Thank you. Thank you. Great introduction. And of course, if my co-authors wanna jump in anytime, and maybe they'll be the ones taking care of the hard questions at the end. These guys are wonderful students, up and coming. Look out for them in a few years. Okay, so let me get right to it. And what I prepared for today – I mean, we organized this yesterday after seeing what happened Sunday. I've been thinking about this for a little longer. So I adapted some slides. So what should you expect from this talk? Can you see my slides? Yes, okay. So this is not meant as some kind of political or a bottom line on dollarization in Argentina. It might be useful if you're for it or against it, if you haven't heard these arguments, or if you're just curious. Personally, what I'll have more to add is some new papers that point out some difficulties and challenges and costs, but, you know, we're not taking the balance of it all here. I have a personal opinion, maybe, but, you know, this isn't going to be an academic seminar where we're going to talk about the things I'm more certain about, and I think ideas that we can debate usefully.

8:06
So I prepared a crossroads part, the title, that is going to be a little more of a background for people that maybe aren't Argentine, in particular, or don't follow Argentina a lot. You know, basically, how do we get to such an extreme proposal like dollarization in Argentina? Markus said some things, so I'm going to be revisiting the things Markus said and giving you a little more background. And then review the standard pros and cons, also similar to what Markus said, just develop them a little more. And then I'll go to the perils part of the title, which is really these new two papers that we wrote. I think one was issued in May, another in October. And they showed that there's these extra costs in the short run due to a particular situation we think is relevant for Argentina, which is the scarcity of dollars. There's two kinds of scarcity that I'll talk about. So I'll get back to that. These are the papers. Maybe we can provide links to them. You can find them on the website or on my Twitter feed. Okay, so let me start with the crossroads part and give you just a little background. So this is a chart from a great paper by Buera and Nicolini and they also have a whole – Nicolini and Tim Kehoe have this great book on the history of fiscal and monetary policy in Latin America that I recommend. So on the left chart, you see just why Argentina is so depressed about its economy. You know, it's been in a rut for more than 40 years and you see it there in this GDP per capita. You also see it in this ranking of the world, which is maybe a little more of a colorful way of thinking about it. We're not really competing with the world. We just want to do well. But we used to be one of the top 15 countries in GDP per capita, and we've fallen way down over time persistently since the 1940s, 1950s. But we're still happy in Argentina because of these little three things. That's just to spice it up here. But going back just to give you a sense of those 40 years real quick, because I think it's relevant to the story. In the 80s, there was a debt crisis, we returned to democracy in Argentina, and we lived with very high inflation and high deficits, repeated failures to control both things. And finally, kind of a Brady plan that put us back into issuing debt. But we ended that first government of Alfonsín with a starting minimums with two big hyperinflations. That's how things started. I was a kid. That's what formed me as a macroeconomist. And then we got convertibility. I was still in high school. Convertibility, which is a currency board, as Markus said, and that was under Cavallo, which is not Caravello's dad. But Cavallo instituted this currency board, very, very strong reforms, also privatizations, a time of great boom and optimism at first. But that gave way to, you know, after a lot of tumultuous things in the world, Mexican crisis, Russian crisis, Brazil devaluing emerging markets, risk premia going up, to, you know, debt accumulating, high unemployment, high interest rates, and eventually social unrest in the country, and eventually bank runs. And finally, convertibility was abandoned, and debt was defaulted on, and, you know, people lost a lot of their savings in banks. So that's the memory I have of that happening. I was doing my PhD by the time everything exploded. And also quasi monies were introduced by provincial governments. Okay. So even before convertibility was abandoned the biggest province in Buenos Aires issued money basically. Okay. Here you have something that I think is relevant. You see inflation. So here you see these, it's in log scales because you can't fit it otherwise with hyperinflations. And you see here the convertibility really knocking inflation out. Okay. And after abandoning convertibility we went back to high inflation rates. They varied and sometimes they were high but moderate one digit, but eventually those crept up. Again, this is logs.

12:30
So, you know, you're getting 30, 35% near the end there. This stops at 2017. I'll show you some more recent stuff in a second. And you see here a government deficit which was high through the eighties, high more recently. This has gone up even now. But what I want to point out is even during convertibility here, we had high deficits. So this is a picture of kind of the fiscal dominant story of inflation, which I agree completely is what is the root of the problem in Argentina. And that's very different from the fiscal theory price level, by the way. You only need Sergeant Wallace and Kagan for this. No need for immaculate inflations. You actually see the central banks being called up and told what to do. So I believe in that kind of fiscal dominance. All right. What happened in convertibility, just a picture of some shocks, you know, Mexican crisis and other issues lead people to be more nervous about emerging markets. The optimism after the Brady plan goes away, that raises interest rates. And then Argentina starts having its own path of higher interest rates as people worried about its debt levels and the commitment to paying back. But here you also see another relevant, much discussed issue which is Brazil devalues. So the real exchange rate for Argentina becomes more appreciated just when maybe we were suffering from some other shocks here. And this is soybean prices. So you see that they were at an all time low – our exports, our main driver of exports. And in fact, the years that came later which were a recovery period but also we had a boom in commodity prices. So maybe hints of we also got bad luck but that's kind of relevant when you think about the cost of dollarizing or pegging or currency boards because you lose this monetary autonomy and you will get shocks. And that's what Markus was talking about. And these were some big shocks that hit Argentina. In addition to, obviously, the fact that we never really got the fiscal deficit under control. Here you see the sudden stop current account reversal that occurred. Here's one more thing I want to point out because another cost Markus mentioned is if you dollarize or if you have a currency board, you will not immediately have the same power of lender of last resort. Here you see two things: how people dollarize their banking, the fraction of deposits that are in pesos dropped as people got more worried about possibly leaving the currency union. Sorry, that's a mistake there, the currency board. Also, the total deposits, which were on the rise as the economy grew, but you see this bank run at the end here, okay. So that was a really dramatic ending to the convertibility plan. Okat, so what happened afterwards? And this will be my last slide showing you kind of bullets about the facts. And we recovered kind of quickly from that in part because the high inflation that resulted liquidated a lot of debt, liquidated a lot of savings for people and for the government's debt. And it also lowered government spending because salaries and other things were not adjusted to inflation. So you got kind of the fiscal balance under control. And then the central bank kind of did its job after a big spike in inflation to lower inflation in about a year. But Nestor Kirchner then comes around and he's got pretty favorable international prices but has a policy of a very devalued exchange rate that eventually starts leading, I think, to higher inflation rate. And the fiscal balance, it starts eroding. Christina Kirchner comes later and she starts suffering from much higher inflation. In fact, she fakes the inflation statistics. And there's a huge increase in spending there, a huge increase in fiscal deficit again, and in fact, a loss of reserves and they start using capital controls.

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So here's a quick picture to show you just how dramatic the problem is in Argentina. During that

time, especially the Cristina Kirchner time, this is federal government spending. You see the amazing increase relative to GDP. And this is very hard to bring down. And this is, you know, the counterpart of this is our taxes, which are kind of topped up. We have a lot of informal economy. So the deficit is, and the challenge of lowering the deficit is largely a problem of government spending and kind of incapacitated to get more revenue. But, you know, you see the numbers going from a historical 23% all the way up to 42%. That's just, I don't know if we're also champions of this in the world. So we're champions of soccer, champions in inflation, champion in increasing government spending. Uh-oh, what happens if I do this? Okay. There we go. All right. So going back to real quick history, this is very quick. Any Argentinian is bored. They know all this. Macri comes in, regains access to credit markets, tightens monetary policy, but doesn't really do much quickly on the deficit side. And eventually, with political uncertainty also maybe looming, loses market access, asks for an IMF program to deal with that liquidity, and in fact, puts back capital controls and starts adjusting along the IMF program, but the economy contracts and loses the election. So things turned out bad, there's high inflation at the end of that government. And then what we get is Alberto Fernandez and Cristina Kirchner as vice president, and they undertake a debt renegotiation at the beginning, but maintain high deficits. Obviously, there's a pandemic, but even after the pandemic, there is a high increase in maintenance of these deficits. And they tighten capital controls to the extent that right now, Argentina, you almost cannot import anything. It's just, you know, unheard of, and the economy is almost paralyzed. Milei comes in and wins this election. It's astounding what he's done. He's really spoken about what he thinks, he has created a huge enthusiasm for markets and for balancing the budget, which is unheard of. It used to be a bad word in Argentina. So I grew up seeing convertibility and then everyone, 10 years later, speaking the devil of Cavallo and anyone who talked about convertibility. And the unusual thing is Milei has managed to go on TV, relentlessly speak about it, and actually speak well of convertibility in that time period, but also speak importantly about adjusting the government deficit. And he has gotten a lot of people's minds, especially the young, changed on that matter. And that's unbelievable, okay? So he's proposing a bunch of things, lowering government spending, balancing the budget, but he's a libertarian, so he also wants to lower taxes a lot. So before he gained the presidency, he even voted to lower taxes, which made the deficit worse just a month or so ago. And one of his big proposals is dollarization, which brings us to today's topic. So just real quick to tell you what's happened since convertibility is we haven't had huge recessions, so the counterpart of high inflation is we have avoided big, big crises. Instead, we have this stagnating economy, of course, which is not pretty either, but maybe people voted against inflation. Maybe that's in part why they won, but it wasn't as big a margin. Probably in Germany, if anyone's generating a 50% inflation rate, you kick them out in two weeks. But in Argentina, it still took a runoff and he got 45% of the votes, the current prime minister who brought inflation up. So just to show you these kinds of numbers, these last few years real quick, starting from 2016. So this is kind of where Macri had started a lower inflation, but it's still pretty high. This is monthly, okay? So I always tell people, you know, in Argentina, we have 15% inflation. It's high. And people say, yeah, that's high.

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But then I tell them monthly and they go, oh, wait, of course, compounding that's 300% or

something. So, but then you see that after Macri's latter part inflation took off again, it started coming down again. And then the Fernandez Kirchner presidency just now, you see a steady rise in inflation, but a huge peak here at the end, which is what we're talking about now.

Markus Brunnermeier: What about the real interest rate is because of financial depression, the real interest rate is fairly low?

Ivan Werning: Yes. Yes. The real interest rate can be very low in Argentina for banks and for bondholders in Argentina. Obviously internationally, you know, those bonds are worth very less and there's a high yield with a lot of risk.

Markus Brunnermeier: People move into real estate, they don't have any savings in the savings accounts in the banks?

Ivan Werning: Yeah, the deposits and credit is at an all-time low, I think, and since 2007, I would say, where inflation started really picking up, what you see is people just investing in real estate or buying durable goods whenever they can. So everyone has air conditioners, LCD screens in their houses, and those sorts of things. So this just shows you that, you know, after Macri left things with a tiny primary surplus after the IMF program requested, but, you know, obviously the pandemic came and Fernandez and Kirchner came, they shot this up, and after the pandemic, that deficit might have come down, but it's still very high and then on the rise, okay? So you see that's kind of the recent situation. Let me skip this. This is important for what I'll talk about later. Reserves in the central bank are really low. In fact, you know, maybe if you go a little earlier, they were close to... 35, 40, and they've been falling, but then they really took a hit. And now certain calculations tell you they're negative. So this is showing you negative reserves here.

Markus Brunnermeier: Because of the IMF lending? Or what does negative reserves mean?

Ivan Werning: There's a lot of calculations that go behind it because you have swaps with certain countries, and so you have money, but you have debt on the balance sheet. So I think this depends on how you cut it up. I don't know if Tomas, do you have more details on that? But you can construct different measures. So if the central bank wants to default on some debt, it may have some positive reserves. But some of those reserves obviously are reserves they're holding for the banks for their deposits, because there are dollar deposits in the banks, and so on. So this is kind of netting out a lot of things, and you get to a negative number. So definitely nobody appeals to the fact that we have very low reserves, and depending on how you cut it, you either get tiny, tiny positive or negative. This is just to show you something else on the balance sheet in the central banks that's much talked about in this context, which is that the central bank in Argentina issues bonds and pays high interest rates on them.

23:58
Okay. So here you see the stock of those bonds relative to GDP. Okay. It's bigger than their other debt, which is the money. Okay. It's bigger than their base money. Okay. Like three times bigger. Okay. So they have this debt and the issue and it's almost like interest on reserve. So it's

the, the main counterpart today is saying it used to be the case, but today is banks. Okay. So the banks take deposits and basically just buy these bonds from the central bank to a large extent.

Markus Brunnermeier: Ivan, we cannot see this figure somehow.

Ivan Werning: Oh, wait, you don't see this? Okay, sorry. So here's the stocks of this relative to GDP, and it's been on the rise and here's this thing, which is the interest rate they're paying on that. Well, actually, this is the policy interest rate, but it's very related. This is the interest rate on these bonds, think of it. And the main point is, yeah, of course, it's risen a lot because inflation has risen a lot. So as a result – and I'm getting these charts from different people who produce awesome charts with this – you see here a chart of the primary deficits. But in gray, you see something which is astounding. And I was talking to Greg Ip about this the other day, because this is the interest payments due on these bonds. And if you consolidate the government and you think of that, that's part of the total deficit, not the primary deficit, but the total deficit. And this blows your mind if you're not used to accounting and issues under high inflation. Basically, these numbers can blow up a lot. Now, Markus, you said it: in real terms, the real interest rate on these bonds can be very low or reasonable. OK. They may be even negative during some time periods when inflation accelerates, okay? But the point is, this is still relevant if what you wanna do is undertake a big, you know, disinflation plan, because let's say you said, no, from now on, just keep prices fixed right away. Well, for a while, you're gonna have to pay these bonds and pay this interest, okay? The maturity of these bonds is de facto very short, I guess. Yes, this is pretty, yeah, this is pretty short. It's on the short end. I don't have a number for that, but in the months range is my guess. Okay, so, but the bottom line is, there's a view that that fuels inflation, because even if the treasury isn't asking them for money, the central bank has to deal with these bond, you know, things that are due, and it has to roll them over or pay them down somewhat in printing money, okay? So that's-

Markus Brunnermeier: Who owns these bonds? You can, can you default on them easily? or not?

Ivan Werning: You're getting into sensitive topics. Yeah. We've done that before. So, and there's talks about doing that or doing that implicitly with very high inflation rates that surprise you or high devaluation rates. But yeah, that's part of the discussion sometimes, or part of the, at least in the background, nobody wants to say, but there's a famous history of that in Argentina. So it's, but it's mostly banks. Yes. Okay. So this brings me to dollarization. What are the benefits? The benefits of dollarization are obvious because you get, it's like a very strong fixed exchange rate that's credible. And it lowers it will lower inflation fast in the new currency. Okay. Although I'll give you some caveats on that later.

27:25
It's similar to a credible fixed exchange rate or currency board, but what are the differences and what are the costs? Well, the costs over the long run are that unlike a currency board, you completely lose your seigniorage. Okay. And this is not totally trivial, although I wouldn't say it's

the biggest cost there is, but it isn't completely trivial in a growing economy, okay? Because it's not just interest rates. If you think Argentina will undertake at some point a catch-up growth process and will issue money in accordance with that growth rate, it's not just the loss interest rate. So it can be non-trivial. And in fact, during convertibility, there were efforts to go even further and dollarize that reached a stalemate because they thought they really needed to get a deal with the U.S. to share the seigniorage to be able to make the case for this. And that deal did not prosper. So it's not a small thing. In the past, it's what stopped us. But a big thing, in my view, is the loss of monetary policy. So I've studied the European crisis, what a currency union can do; create a great recession in Greece, and Spain, Italy, Portugal, uh, very long, strong, lasting recession. I just showed you what happened under convertibility. Uh, the recession we had, it was, you know, consumption fell 20%. I don't think I had that chart there, unfortunately. Oh, no, I don't have that chart, but consumption fell like 20%. Um, these are huge, huge recessions. Okay. We're talking about now, sometimes people say, but Ecuador hasn't had one. Okay. But you know, maybe they come every 20 years. So Ecuador is a sample size of one. Okay. These are like the big shock you don't want to have. It doesn't come every three or four years, like normal recessions. Those maybe do worse with a fixed exchange rate, but they're okay. But the big ones, those, those come more frequently, but they are really damaging. Okay.

Markus Brunnermeier: If you look at the shocks factor of Argentina, Argentina compared to the US you know, is there any correlation between them or is there more soybeans compared to Argentina and U.S. especially shocks?

Ivan Werning: Yeah, so in Argentina, a big source of shocks is the commodity prices, because that affects your exports, which you're usually pretty barring constraints. So it really makes your current account adjust a lot with all the effects that that has and people, you know, so yes, our commodity cycle, I think, is more important than in the US and in other countries that are more diversified. And/or anyway, have more of an internal market. We depend a lot on that.

Markus Brunnermeier: Another question: who owns the banks or the banks will capitalize if they push losses on them. And what's about the pension system? How's the pension system organized?

Ivan Werning: Okay, so let me start with the pensions. No. So yeah, the pensions we mostly have a pay as you go there's some investment in government bonds that can suffer along with any adjustment in bonds. The banks are mostly private banks. I don't know exactly where they're – I think they're well-capitalized, but not maybe for anything like this, a huge default of this kind. Their dollar deposits are very good. There's no leverage there. This is kind of a very strong macro proof inherited from the convertibility, but that depends on the central bank not defaulting on those dollars they're holding for them, those reserves.

31:21
So those are some issues. In the past, we've had huge destruction of deposits and credit to kind of compensate banks and then maybe bailouts. So we've had to live with, during these big crises, a big – there is usually a lot to think about these balance sheets, but it depends on the

shock you get. going into it now, they look normal, is what I would say.

Markus Brunnermeier: And they're holding dollar reserves with the central bank cards and U.S. treasuries directly to banks?

Ivan Werning: I think they're forced to hold some of these dollar reserves with the central bank, and they may have some other investments, but there's a lot of capital controls as to investing abroad, so I'm not sure exactly. I think most of it is held with the central bank. So the lender of last resort is a big issue also, and we talked about how that was relevant for convertibility. So it's not a theoretical thing. People who propose dollarization in Argentina these days recognize that, and they say, well, we should just let banks become basically offshore banks. I'm not going to talk about the details of that. I don't understand exactly how that works. How do you hope not to have, because maybe then Panama will not bail out those banks that lend to you. But there's some ideas there that I'm not going to be getting into today, but it is a big issue if you... to dollarize. As we saw, if you don't do that with convertibility, you might get a big problem. Let me try and portray the argument for dollarization in Argentina, which is interesting. So the idea is like, we've had high inflation, we've had high deficits, we've not been able to deal with this in the last 40 years, maybe we should give up, okay? And outsource this monetary policy, even at all those costs, recognizing those costs, but downplaying them a little, but basically hoping for the best, but we can't tolerate this high inflation anymore, let's give up on fixing it the usual way. Now, the more sophisticated version of that is a political economy argument that says, look, right now, the government keeps spending, spending, spending whenever it can, and part of the reason is it can just print money to do so, so let's take away that money printing machine. And this is actually in the words of Milei, he's used that very graphically, very persuasively, okay. So let's take away that money printing press from politicians because it's politicians' fault. They can't control themselves. We need to take this away from them as a commitment device, okay. Now the assumptions underlying that that I think are important to recognize and maybe question are that does it really buy you commitment? So first of all that assumes that if you dollarize it's either permanent or pretty damn permanent that it's costly to get out of. Okay well some countries have gotten out of dollarization but even looking at the most recent history in Argentina convertibility was very very close to dollarization. For every peso there was a dollar at the central bank and people got very used to that. Also the fact just psychologically that it was one-to-one meant I think in people's minds it's the closest we got to dollarization and people didn't think that the politicians would ever want to destroy that because people found it popular, and yet we got out of it, okay? And even before we got out of it, people, some provinces found a way to print money, to print basically pesos, okay?

34:54
So I'm not completely convinced of the argument that that would be a permanent thing and create commitment. A related point is, will it reduce deficits? Well, we also said that during convertibility, there were huge deficits, okay? And allow myself one comparison to Ecuador, Ecuador has had huge deficits and they've kind of raided the central bank's reserves to do that. So the question is, if that continues and they run out, what happens then? So I think these are the underlying assumptions and I wanna point out how questionable they are. The other thing is,

what about other countries that had a high inflation and is Argentina special? I think that's part of the argument. Part of the argument is Uruguay, Chile, Paraguay, Peru, so we're not talking about Germany. They're different from us. We're special. We're worse, okay? And maybe we are, I don't know, but let me put that in a map here for people again. You know, this is boring for Argentines. We all know this, but here's inflation in the 1980s in Latin America. Okay, there's a scale here of how red you are, but everyone's like past the limit. So they're all super red, hot inflation countries. Okay, above, I think it's 30, 20-30%, you go red, okay? Then in the 90s, some countries started lower inflation. We talked about Argentina's convertibility. And then later in the 90s, other countries joined. Brazil got things under control with the rail plan, Uruguay, Chile. Chile undertook a very slow disinflation process. Peru, things are looking good. And then 2010s, they continue to do pretty well. And Argentina got worse and Venezuela got worse. So this is the heat map, so to speak. What I think is, looking at this, it's not completely obvious why maybe we just lost 20 years. We didn't get on that boat. We slipped off of it. But can we climb onto it? And once you're onto it, it seems countries don't fall off of it so easily. So if you get to low inflation the right way without convertibility or dollarization, perhaps you can stay on that virtuous path. That's the argument against it. I gave you kind of a pro-con, the argument for it. And I told you some of the assumptions that I think can be questioned. Now, let me jump into the more-

Markus Brunnermeier: There's one interesting question by Laszlo Halpern. He's asked, was there no indexation earlier? And why was there no indexation in order to fight inflation this way?

Ivan Werning: Indexation of what, sorry? Of wages?

Markus Brunnermeoer: Of wages, but also debt contracts that you just get a real interest rate on them. Whatever the inflation is, you could pay for it in the form of…

Ivan Werning: Yeah, okay, you mean so people would tolerate inflation more? Yes, so Argentina has been compared to Brazil and Chile, for instance, always had less indexation. And in part, it was a policy in Brazil and Chile to adopt indexation, to make things easier. And then indeed in Brazil, they kind of use that as part of the rail plan to then lower inflation. They sort of swap currency, but in Argentina, the convertibility plan actually removed indexation. Okay, so there had been some indexation, there had been some adjustment for inflation kind of laws. And as part of convertibility, because the idea was, we're not gonna have inflation, and we're gonna allow you to contract in dollars anyway. So there was this kind of bi-monetarism that went along with convertibility, so that indexation was not needed, okay?

38:39
Markus Brunnermeier: But the reason why there was some lying about it, inflation numbers, was not because there was some indexation going on.

Ivan Werning: Oh, sorry, sorry. The lying about inflation, I don't wanna get into all the multiple reasons for it, but I think, no, I think the main reason wasn't a direct financial one that might've been part of it, but there was also just political cover-up and there was a GDP index bond where it was much more of an issue of that being indexed and the incentive to manipulate that. Okay, so let me now talk about the second part and I don't know how much time I can give myself. I'll try and give you two papers here. There's basically, they're very, very, very simple, okay? They're like throwbacks to another time when papers were simple, okay? So one looks like Sergeant Wallace and another looks like a paper by Yuzur Mokal in the early 80s, late 70s, okay? And the idea, so the ideas are extremely simple and I can convey them without a lot of technical or math. So what the ideas are is that Argentina is in a particular place also going into this: if it chose to dollarize without first having a huge hyperinflation and defaulting on bonds and cleaning up the balance sheets of the central bank that way, dollarizing is not so easy because you can't just, we don't have, basically the government is broke in many many ways in a flow sense but also in a stock sense. We have a program with the IMF, we don't have dollars. So the state doesn't have dollars. And so there's that kind of scarcity and there's another question of scarcity of dollars that I'll get to but the question is that that's going to imply that there's some kind of extra cost of dollarizing under these conditions. You can dollarize with very few dollars but it's going to be extra costly and this is the new point we're making in these two papers. Okay I'm just plotting here the two papers, you can check them out. There's also some slides I can share about them, okay? But, so I'm going to preview the main ideas and arguments and results. So there's two kinds of scarcity, okay? One is a scarcity ex-ante. Suppose you announce that we're going to dollarize, but we're going to dollarize in a year or two, okay? And that the state does not have a lot of dollars in exchange for the pesos. They have some limited amount, all right? Just to put numbers, rough numbers that aren't completely off. Let's say to pay out the whole balance sheet of the central bank today at current prices and get rid of pesos, you would need $40,000 million. Okay, here in the US you say 40 billion, in Argentina we say 40,000 million. And what if you don't have that? What if you, remember I showed you negative reserves. What if maybe after some effort to borrow a little with some special deals, with some financial risk-taking hedge funds, we get 10 thousand million or 15, okay, but we're still short of 40. What happens then? Okay that's the first kind of scarcity and the second scarcity is suppose we do dollarize with two with not too many dollars and so then people have their dollars now this doesn't exist and there's a scarcity of dollars in the population, okay, this one might get might be less scarce if a lot of people have saved dollars under their mattress and Argentines are famous for doing that, I'll get around to that argument that's true in aggregate but there's a picture that you have to think about that you know the distribution of these dollars so I'm not worried about the top one percent, top five percent of Argentines, they have enough dollars but I don't know that we know that the median or someone in the 25th percentile won't have a problem with dollars and that's a different kind of scarcity.

42:36

One is a state scarcity, the other is a country or a person's scarcity, and the two arguments i'm going to make is that during the ex-ante stage, if you announce a dollarization with a scarce amount of dollars, you're going to get a jump in the exchange rate and a huge jump in inflation in the price level. And over time, as you approach this dollarization, inflation will be potentially even rising over time. And I'll try to explain the logic of this: it's very simple. And if you delay dollarization, it may increase or decrease this inflation rate. It depends on how scarce your dollars are. For the ex-post period, after you dollarize, what happens, we're going to show that if you have too few dollars when you dollarized and people can't make up for it with the dollars under the mattress, then you're going to suffer a sudden stop. Basically, the whole country as a whole will try and accumulate the dollars they're missing. And that's like the country's trying to save. And that can lead you into a recession and lead to a huge real exchange rate depreciation that will effectively mean people will earn less in dollars. than they did before. So people's real wage is gonna fall, all right? And as a result, in fact, after the transition, you might get inflation because as this real exchange rate starts recovering, you will see an inflation even in the new dollar currency. Okay? All right, so that's the two arguments. So, two lessons that come out of this, because it's repeatedly made this point that, oh, look, I don't know why it happened, but I'm proposing dollarization and the exchange rate has devalued. That's a good thing for me because it'll be easier now to dollarize, okay? And as long as I do it at market rates, I'm giving you a fair deal, okay? This is kind of a logic that you hear a lot. And through the lens of the model, you realize just how baseless and ridiculous it is because the market exchange rate is clearly affected by your proposal to dollarize, okay? And there's a feedback loop and so, everything I said earlier about what would happen is that you would see when you propose dollarization a huge devaluation. But it's not the devaluation that's making the dollarization easier, it's your dollarization, your forced and dollar-scarce dollarization that's creating that problem, okay? So I think it's very important to keep that in mind. And the market exchange rate is not like I buy a house from you at the market rate so I paid what it's worth. Here's more like, look, I'm gonna demolish this neighborhood and let me buy your house. It's like, you know, you might get a much cheaper price for it now, okay? Because government policy can affect the prices. And the other point is, you know, people talk about those costs but they think that at least we'll get low inflation, at least we'll get a very stable economy. And the other lesson of the ex-post is not necessarily there's this transition afterwards, okay? And the other point I want to make is sometimes people say this isn't a problem, Argentines have a huge amount of dollars under the mattress, and the point we make in the paper is to show that just looking at the aggregate is misleading, okay? All right, so we write down an heterogeneous agent model and show that you do care about what the median person or etc holds, right? So this paper, and the two papers can be seen through these two figures, okay? The one on the left is a Laffer curve that some people might recognize, okay? This is revenue obtained from the inflation tax as a function of the inflation rate, okay? And this dotted line here might be your deficit, so then, you know, there's the good side of the Laffer curve, the bad side of the Laffer curve, and we'll talk about that little figure, and from there we'll be able to derive everything, okay?

46:25

And the second paper is more like a saddle path of a country saving in international markets, and the point of that is more like a Hume-Calvo effect, because Calvo wrote this beautiful paper that captures Hume, that if a country starts, imagine we're in the gold standard and a country starts with too little gold, then the country will make an effort to save and as they save, their consumption will go up. That's what the red line is until they reach a steady state. So that's all this figure is doing. This M is like gold, okay? And the whole point of the second exercise is after we dollarize, it's like we're not gonna be in a steady state immediately. We were gonna be below, okay? So we're gonna have to do the hard work in the Hume mechanism of accumulating those dollars. So let me start here with this ex-ante stage. I realize now I have the non-updated version of my slides, but that's okay. So here's the model I'm gonna set up. Without too much math, there's a baseline without dollarization where we would be running a fiscal deficit. Make it simple. Let's assume it's constant in real terms as a fraction of GDP, but let's imagine no growth. So in real terms, it's constant. Tau bar for all time. That's our baseline. So like, if we weren't to – let's be kind to Milei. If Milei hadn't been elected, this is what would have happened. So, and that's financed by printing money, seigniorage. And just to be simple, we're always going to think that we were on the good side of the Laffer curve. Most econometric evidence, you know, after some interest in the idea that we might be switching to the bad side of the Laffer curve, most economists think that, you know, that we're mostly on the good side of the Laffer curve. That we might just get very high inflation rates because we push inflation very high. All right. So, now imagine Milei wins and we announced dollarization today, but it'll be implemented in some time, maybe 12 months, maybe 18 months, 24 months, okay? And there'll be some dollars D-bar available to do that exchange of pesos to dollars, and we will have this fiscal deficit but after T we won't have it anymore so that's why after we dollarize things will be consistent, right so this is kind of the assumption.

Markus Brunnermeier: two questions: one, is this fiscal deficit has to be financed from abroad, is it not a fiscal deficit financed from the domestic citizens?

Ivan Werning: Yes, right now this is a close imagine not even a closed economy it wouldn't change if it's an economy, yeah this will be financed through inflation tax okay.

Markus Brunnermeier: And is there any price stickiness?

Ivan Werning: In this part there's no price stickiness, this is like the sergeant wallace economy. Right, or a kagan economy okay, so we have some real money balances that are given by some demand curve that depends on the inflation rate, okay, and the condition for seigniorage is that the rate of growth of money which I'm doing things in continuous time so it's m dot that's just the change over time and money in the numerator, divided by the price level, that should equal your real deficit. So that's how you're financing the government with this extreme fiscal dominance. If you put these two equations together, that implies the following equation that tells you something about which direction real money balances should be moving depending on the current inflation rate.

50:06

Okay, so this is the total seigniorage. This is, you know, this would be the inflation tax and this would be the seigniorage if I managed to get real money balances to be growing. Okay, so this is kind of standard accounting. At a steady state, though, this term is zero and you're just left with the seignorage has to equal the inflation tax. Let me call this function here “S” for seigniorage. Okay, so I'm just going to plot it over here.

Markus Brunnermeier: So can you really finance three, four, five percent of the deficit from seigniorage income alone?

Ivan Werning: Yeah, yeah. And what, and if you do the numbers on that, I was talking about this the other day with Greg Ip actually, just the back of the envelope tells you, say you have a deficit of 5% and your money balances are 10% of GDP, then you roughly, you need an inflation rate of a hundred percent or more because you need to like extract of that 10% of GDP, half of it, that's kind of a rough calculation.

Markus Brunnermeier: But people will economize on money a lot. They will economize holding money.

Ivan Werning: Yeah, yeah. So right now during convertibility, money balances were more like 10% of GDP or 12 or, you know, between 8 and 12. And now they're more like 5%. Okay. Yeah. But it's amazing how little it moves when inflation rises a lot, at least recently. It's something to look at though and to keep an eye on.

Markus Brunnermeier: Well, I think it's different when you're surprised when you can get a lot of seigniorage.

Ivan Werning: No, of course it's different. But the question is, yeah, exactly. So what I'm going to do in a nutshell is tell you, you know, even in Sargent-Wallace, they talk about these dynamics. They look at these steady states. So these are the steady states, the good one, the bad one. I'm going to focus on the good one, okay. But they talked briefly about these dynamics that come out of this model if you look outside of a steady state. As you'll see, these dynamics will play a role in what I'm going to do now, okay. Because what I'm going to do is basically here on the next slide, I'm going to assume that at capital T, when we dollarize, we will convert pesos to dollars at some exchange rate, which is like a conversion exchange rate. Call that E, okay, right. And before that, I'm going to simplify and assume that the exchange rate is going directly to prices, okay. And that's pretty accurate for Argentina. There's a huge pass-through, okay. I'm also, though, gonna extract from capital controls here, right, and from the government, maybe trying to keep the exchange rate at some level over time. That, I think, is only gonna change the timing a little bit because effectively what happens under high inflation is you keep the exchange rate, but then you make a jump, and, you know, so it would change in a micro high-frequency level of the story, but I don't think it changes the story overall.

53:09
And to simplify, think of international prices as fixed and equal to one, normalized to one. Then you get from this condition, and from the idea that this exchange rate has to equal the price, that the real money balances at T have to equal the amount of dollars that the government's gonna put on the table to convert them, which is actually a very natural thing. It's like, if, you know, my money's worth 10,000 million, but you're gonna put only 5,000 million on the table, then, okay, by the time I get there, the real money balances are gonna be worth 5,000 million, okay, because a moment before otherwise there would be a huge incentive to increase prices. So that's an equilibrium condition that we have to add to the model. So we're doing Sargent-Wallace, but now we're not doing Sargent-Wallace. Now we're varying it a little bit by saying it's the same model, money demand and so on, but at T you're doing this conversion.

And what this does, it means I have the same dynamical system Sargent-Wallace had, but I have a boundary condition at T. And my boundary condition is this, okay. So in a nutshell, this explains the whole paper, the first paper. What it's saying is you tell me how many dollars you have, that's the letter D-bar here. I'll tell you what inflation has to be at T, okay. So if I have very few dollars, I'm going to have to have a high inflation rate, okay. If I have more dollars at capital T, I'll start with maybe, you know, a high but lower inflation rate, okay. So the fewer dollars you have, the more T, the boundary condition moves to the right. But then you also solve the entire dynamics using those arrows I showed you earlier, and the net result of that is you get that already immediately you should have a jump in the price level, because at the boundary you need to reach a certain inflation rate, but that means you can't stay at the steady state today. You have to jump somewhere that will lead you to that boundary condition on T. So here's a little picture of that. So imagine at T the amount of dollars I have implies that I have to be, you know, at this inflation rate. Then, because the dynamics, as I showed you earlier, are of this form, it must be that at time T we already jump and the inflation rate already jumps today in anticipation. So that's why this paper's titled Chronicle of Inflation Foretold, which is also kind of inspired by Gabriel Garcia Marquez's famous novel, A Latin American Tragedy, like this inflation. Okay, so then you will get this move up. So relative to the steady state, which was bad, that you were at, you will have an even worse inflation rate to begin with, and you will have a jump in the price level, which implies a jump in the exchange rate, and a progressive increase in the inflation rate as you approach the date of dollarization. So has that happened in Argentina? It has, actually. Every time Milei looked more likely to win, the exchange rate further devalued. Now, there may be other reasons. This might not be the only reason, but it's consistent with the story. So the bottom line is we get these results here that I'm going to summarize in this blue box, that if your dollars are scarce but not too scarce, then the price level has to jump, and there will be higher inflation throughout, and inflation will be rising as you approach the dollarization date. Also, as a comparative static, if you postpone dollarization, or if you increase the amount of dollars, you'll get lower inflation today, because you're going to, it's just going to, for a given D, for example, you need to reach the same inflation rate, but if you give me more time, then I don't have to start here, I can start closer to the steady state. That's the idea. Okay.

56:56
Markus Brunnermeier: Can I ask a question? So let's suppose instead of totalization, I do a currency board with perfect commitment, so I cannot get out of it. I still, with the currency board, I still keep some seigniorage. Yeah. Or not. How would the analysis change?

Ivan Werning: You do keep some seigniorage here. That would be, here I drew it so that at zero inflation, you don't have seigniorage, but if you are a growing economy, at zero inflation, you do have some seigniorage. Okay. Okay. So that would be how you think about this figure. Yeah. Okay. Let me really quickly mention that there's another case, which is if your dollars are so scarce, you may have to end up at an inflation rate that's on the other side of the bad Laffer curve. Somewhere in this range. Okay. And that implies that you will be on the bad side of the Laffer curve, but it's not because of the usual reasons that we might have a bad equilibrium or something. You would be on the bad side of the Laffer curve, but in this model, that was a unique equilibrium. So it's kind of different, right? And in fact, in this case, the inflation rate can really blow up now as you keep making dollars more scarce, right? It becomes very nonlinear, intuitively speaking. So let me mention real quick here some additional results. Actually, I kind of stack the cards in favor of dollarization because I assume that the dollarizing policy got rid of deficits after T. But suppose I compare apples to apples and say, no, I'm gonna attain fiscal balance at T, but I'm not gonna dollarize, okay? Then you can do even better because what happens is you already start having lower inflation today, okay? In anticipation of that better fiscal stance that you have in the future. So the comparison becomes even more favorable or more unfavorable for this dollarization, okay? I've not shown you, but of course, if you have a lot of dollars, then you won't have this problem. So if you have enough dollars to buy the real money balances at zero inflation, then you won't have a problem, okay? So I'm talking about the cases that are scarce, which I think are relevant for Argentina. Let me just mention one thing too, that this inflation that you get, it's not the basic thing. Suppose I'd surprise you and I immediately tell you that we're dollarizing, here's the amount of dollars, and I put them on the table. That could produce a loss to me in value of my pesos, and in some sense, an immediate devaluation. But that would be purely mechanical, okay? That's just because you came up with less dollars than my current pesos are worth in dollars, okay? But what's happening in this model is worse than that, because when it's happening in the future, that's happening at T, but coming earlier, that means you have higher prices and higher inflation. And remember, the government still has to finance this deficit, okay? And because of that, that exacerbates, and there's a feedback loop, okay? So you get a lot more inflation than just the mechanical aspect, okay? This is a little version of that seigniorage curve fit to Argentine money demand. Just to show you, you can get reasonable numbers. A 4% deficit is consistent with a 100% inflation rate here, okay? And the bad side of the Laffer curve in this example, this is more debatable because you have to now know money demand further away from where we are. But here, it's above 300%, okay? So yeah, dollarization could take you from here, where we presently are at, to somewhere further out here. This is showing the nonlinearity as a function of the dollars you have, okay? If you have a lot, a lot of dollars, then you don't need any devaluation, you don't need any, so you're way out here. If you have fewer dollars, you're going to have to have, this is how much inflation you accumulate extra because of dollarizing.

1:00:48
And here you would accumulate like a hundred percent extra inflation rate. But as you have fewer and fewer dollars, the inflation rate grows, but in a very nonlinear way. That's what I wanted to point out in this figure. You see that it becomes very, very vertical. That has to do with going into this other regime. I'm going to skip this, just mention that there's some thoughts here on bi-monetarism. Some people say, let's not dollarize, let's just allow pesos and dollars to coexist more. And you get some similar things because people will shift away from pesos. So your seigniorage problem is still going to get worse. So now let me shift to what happens ex post, which is another separate paper. And here I'll probably be a little brief in the interest of getting to some Q and A's if possible. Does that sound okay, Markus? Okay, so I'm gonna really paint the general idea here. So I'm gonna look at what happens after T and just to simplify, let's imagine T was at zero. So I surprised you, because I just want to focus on what happens ex-post. So I'm gonna throw away the previous kind of ideas and imagine taking the extreme case, I surprised you. That allows me to focus on what happens after the dollarization. And that

means that once we dollarize, money balances are actual dollars, okay? And then the question becomes, do we start with enough of them? Okay, and here you have to think that enough of them means the population and the population may have enough of them because they already had some dollars and because maybe the conversion rate was good enough that the government gave them enough dollars for their pesos. But if either one is not big enough, then we might have some scarcity of dollars. Okay, and that's what I want to study. Okay, of course, there's also another. that you don't have enough, but you can borrow a lot, but that's not relevant for Argentina. We can't borrow a lot, okay? So we want to think of a case with financial frictions where you can't borrow a lot and you start with too little wealth and you will get a transition towards accumulating more of this money like asset, because it has liquidity services, okay? So the model we write down, and I'll say it in words and not worry with all the math, is very much like the previous model, but we're also going to introduce an untradable sector so we can speak of the real exchange rate, okay? And also so that when we think of nominal rigidities, we can put them there and think about recessions that occur in the domestic economy, all right? So that's the basic-

Markus Brunnermeier: You don't have a quick, oh, sorry, but very quick. If there's a scarcity of money, do you expect other forms of monies popping up?

Ivan Werning: That's very interesting you ask that. I'm assuming not because I want to think of true dollarization, but suppose what you do is the provinces start issuing money, as I mentioned earlier. I'm worried about that, okay? If, even if Argentina is a nation dollarizes, the biggest province in Argentina is actually run by a Peronist, who may find himself with very low resources for his budget and just issue currency. So it's a very fiscal country, you know, like the U.S. basically, maybe even more.

Markus Brunnermeier: A federal country.

1:04:11
Ivan Werning: Yeah, so federal country, yeah, that's the right word. Sorry, fiscal, fiscally bad, federally good, okay. So let me not do this math for you because I think I can do it on a picture. The basic thing you got out of math is a system of equations that tells you the dynamics and the dynamics are pictured here anyway. And all they show is that if you start, start by thinking of the case without an untradable sector, which is what Calvo did. Then you get this very Hume idea that if I'm dollarized, it's the same as being on the gold standard, basically. And I start with too little gold, I'm gonna save up. If I start with too much gold, I'm gonna spend it abroad. And that was really what Hume talked about because he was thinking of Spain that had a lot of gold. And so they were spending it abroad and losing their gold and creating inflation in the world, okay? So that's what this part is. And that's what, and the other part is this one, okay? So, all right. So if I start with a flexible price case, this is what happens. Behind that, I didn't tell you, but now I'm adding the non-tradable sector. And if you start with too little gold or too little dollars, you will consume less today in terms of the tradable goods. And you will eventually accumulate dollars thanks to consuming less, importing less foreign goods. You will then have a trade balance surplus and you will accumulate the dollars. That's what that arrow was showing you. But in the

background, now I'm gonna have non-tradable goods. In the non-tradable goods, there's no reason for it to contract, okay? Because it's a non-traded good. So the natural thing is the non-tradable goods stay the same and we just import less. But to achieve that, we need the real exchange rate to devalue. So we need haircuts to become a lot cheaper in Argentina, in dollars. So people who are barbers in Argentina are gonna collect less in real terms, in dollar terms, for their haircuts and for their salaries. And that's what we're showing here, that the immediate implication is a sharp devaluation. And over time, barber prices will rise and the real exchange rate will recover. So the bottom line is you will see a suddenly much cheaper Argentina after your dollar rises. And this speaks to, some people say, well, will I earn the same in dollars. And people are promised that they will, but our model is saying not necessarily, because if there's a scarcity of dollars, you're gonna have this real exchange rate devaluation. Okay? And then you also imagine that we will never see inflation after we dollarize, but that's not the case because the barber prices first drop in dollars, but then once they're being printed out in dollars, there starts to be inflation in their prices, okay? So this is rising, okay? So that's what happens if prices are flexible. But now you can imagine what happens if I say, wait a minute, what if those barbers don't want to accept a lower real wage or the prices of haircuts, etc, resist going down, then this red line won't be feasible and instead you'll get something like the dotted line, okay? Right? The dotted line is actually something else. It's assuming you suddenly fix the exchange rate and you have sticky prices or sticky wages. Then you get something like the dotted line, which is kind of standard. You should devalue immediately, but you can't. So what happens is the exchange rate in real terms starts devaluing, okay? And then you get deflation. In 2000 and 2001 under the currency board, Argentina was in a huge recession and we had deflation and the real exchange rate was slowly depreciating, okay? All the signs that we needed a different real exchange rate and we were only getting there slowly because of nominal rigidities. Okay, so what happens is if you have this inflexibility, quantities are the ones that do the adjustment. So you get a recession, okay? All right? So the bottom line is with some rigidities, you will get a different path for prices, but you'll also get a recession.

1:08:17
What we show in the paper is that actually the solution is this black solid line, because we assume we allow barbers to immediately adapt and set a new price, but after that, the prices and wages will be sticking. So it's a little different than your typical exercise where you have pesos and the prices are in pesos and you suddenly fix the exchange rate. Because there, the peso prices are still kind of sticky. Okay, here we're imagining that you're undertaking a huge reform where people are changing their unit of account. So in that case, then, we're allowing you a one-time-only, free, everyone-changes-their-prices-at-time-zero. And then that would lead you to the black line, which is different from the one I described before, but has the same feature that the price doesn't fall enough and you do get a recession. Okay, so in the interest of time, let me skip this, but in the paper we provide a calibration that illustrates that these effects can be significant. Okay, calibrate to the Argentine situation. I think we were very conservative there because we calibrated to base money, but if you include this quasi, if you include the other parts of the balance sheet, I think you can multiply our results by three or four. Okay, and so I'm going to skip all this and just conclude because I think it's interesting to try and get some questions. My conclusions are, for the crossroads part, is dollarization necessary given that all

our neighbors have done without it and is it sufficient given that when we approached something like that in Argentina we also backed out like convertibility or we suffered huge shocks and recessions and bank runs that maybe forced us out okay quasi money has appeared, so is it necessary, is it sufficient, if the real problem is fiscal deficits and we will solve them do we even need dollarization and if we think that dollarization is going to solve fiscal different deficits indirectly, well think, just please remind yourself of convertibility and look at Ecuador today? Alright so and then for the perils part that there are these extra costs that aren't typically discussed in the literature but we think are relevant for Argentina today which is there's this scarcity of dollars two types of scarcity one that I don't think anyone would argue with which is that there's a scarcity of dollars in the hands of the government government to make the exchange. And a second one, which is perhaps more debatable, do Argentines have enough dollars? I didn't have time to show you this, but I think in aggregate, they probably do. But if you look at, and you think of the 40 – we have a 40% poverty rate. And so if you start thinking distributionally, a large fraction of the economy might not have those dollars and that could be really impactful for them, create a recession or hurt those people in particular. And then these lessons are, let's stop saying, as long as I convert it to free market, flexible exchange rate, no problem. And hence any devaluation is helpful because that's missing the whole point. Right, let me stop there.

Markus Brunnermeier: Thanks a lot, Ivan. So I was wondering whether Tomas or people want to chime in once I haven't seen all the questions coming in.

Ivan Werning: Yeah, why don't you guys pick some questions? I had no time to look at. and say, answer them yourselves or throw them at me. Or Markus, I don't know if you have picked a question.
1:11:52
Markus Brunnermeier: Let me ask you some questions. So one basic question is how dependent is Argentina with the rest of the world? Now, if I go for an autarky solution, how dramatic would it be? I guess it's way more interdependent to the rest of the world than the US is. That's correct.

Ivan Werning: Can you repeat your question about that?

Markus Brunnermeier: Suppose I cut off all inputs from the rest of the world to Argentina.

Ivan Werning: Oh, right. How bad is the current account, you know, the sudden stop for Argentina. Well, our history is that our recessions have always been the large crisis from a huge current account adjustment. So I think, you know, it doesn't necessarily mainly work through inputs being the thing missing through like a supply side type thing. But that too, I think is relevant, especially today, even without the current account, because there's a lot of rationing of the dollars for imports, starting to see that problem. But also just because consumption will adjust. And, you know, again, we had a 20% drop in output and consumption. So the reason is investment fell by more and imports fell by more than 20%. Government fell by less than 20%. But like, this was not a recession, even like in the U.S., it was big, the Great Recession, because it was 9% or something. But, you know, consumption less than that, output, 9%. Like, no, this is like 20, 20. And so those are the kinds of recessions I think about.

Markus Brunnermeier: What explains that the unemployment states were low, relatively low?

Ivan Werning: No, I didn't show you unemployment during the convertibility. That was huge throughout convertibility. And in the recession, in the crisis of 2001-2002, it shot up. What I showed you is the only unemployment for the recent years and that was moderate, and in fact, what I would say is I think we tend to forget we all have memories, but in Argentina memories are short because a lot of things happen, so really what we have is a stock of how many memories we can have but that means we can only remember like eight years in Argentina, because like the world moved all the time in those eight years. So what I see is people in in in 2000s remembered convertibility and remembered the crisis and remember the recession but then in 2010s we had a lot of other things happening to us and not a lot of recessions actually, but high inflation, so now we forget the recession and the crisis parts and we just think about lowering inflation. That's really an armchair psychologist speaking here, but it's kind of interesting compared to Germany where maybe fewer ups and downs since the second world war that you can still remember those big inflations and fear them. But yeah, I think we basically, people always remember the last two or three bad things that happened to them. And in Argentina, that's just a month or two. So anyway, that's my–

Markus Brunnermeier: But for modeling choices, in a sense that everything is deterministic after the initial shock. Yeah. We think uncertainty, risk and risk premia. So many people say dollarization will bring the risk premium down. Is this something–
1:15:13
Ivan Werning: That's a great question. That's a great question. I don't think– I'm just modeling the case with certainty because it was enough to make the point I wanna make here. But I agree with you that uncertainty is important. However, I don't think it's so straightforward that dollarization would lower uncertainty. Again, I showed you the risk premia of Argentina under convertibility. It can be huge. Because while you gain predictability on prices, maybe now you have these sudden stops that are gonna hit you and you won't have the monetary policy to deal with them, the bank runs, et cetera. So you get on the quantity side, a bunch of risks. So I just believe it's not obvious which way it plays out. In 2015, when Macri took the government, there was a lot of hope that just by him being more market friendly, there would be a huge amount of, the counterpart of this, of what you're saying, is risk premium would go down and there would be a lot of investment coming from abroad. And that didn't really happen. In fact, investment was largely driven by government spending, which was one of the reasons Macri, in the first two years, did not achieve a huge deficit reduction or a sufficient deficit reduction.

Markus Brunnermeier: So could you test your theories, when Ecuador, or when Panama, so it would be just look at the data. I don't know. I have no clue.

Ivan Werning: I don't know enough about the Panama dollarization. The Ecuador one was done under huge duress and they changed the plans and how they were doing it. These are also pretty messy times. So it's a little hard to look at those events. I would say, it was more of a surprise dollarization coming after in a desperate measure after hyperinflation. So it looks more like what would have happened, kind of what we did with our hyperinflation. We adopt the convertibility and they adopted this. So you also get a huge "benefit" again of those big, big inflation rates before they have you dollarized wiping a lot of people out. So all I'm pointing out is the ex-ante part. Be prepared. If you want to do that, maybe you always have to take this bad medicine first and have a huge cleaning up of balance sheets through high inflation, unless you get enough dollars. But yeah, I haven't done those calculations for Ecuador on what are

Markus Brunnermeier: Just going off from the German hyperinflation, because you mentioned that in 1922 or 23, it was the case that most of the people's savings was wiped out already in 1922, and when the currency reform happened in 23, there was essentially nothing to be wiped out anymore. But would you say in Argentina, there's still a lot of savings to be wiped out, or is it pretty much wiped out, people's savings?

Ivan Werning: No, no, there's still a lot of savings to be wiped out. Yeah, that's what I would say. There has been high inflation, but it hasn't been the kind of upswings of hyperinflation that completely catch people by surprise. So interest rates have to rise when inflation rises and that doesn't necessarily mean they've been wiped out. Now, like we talked earlier, they moved away from the banking system to a large extent. They save in dollars in banks or under their mattress, and they save in real terms in other ways. Savings is low anyway in Argentina. Yeah.

Markus Brunnermeier: How big would you say is the informal dollarization? So because there's an informal dollarization going on, they just make the final step, in a sense, to make it formal.

1:19:15
Ivan Werning: Yeah, yeah. That's often used. Yeah, I have no issue with that. That would mean that you have enough dollars, but I don't see that yet. So it's true that the dollar is used a lot in Argentina for fixing ideas of what prices are. So if you're selling your house, you, you know, either quote it directly in dollars or kind of index it to that, and even payments are made in dollars. for those big transactions because of the risk of, if I start paying you in pesos for that one week where we're doing the transaction and it gets wiped out. That happened to me. I worked for a whole month when I was like 15 years old in a video club, when those things existed. And I was supposed to earn $100 after a whole month. That was like what I wanted. And I wanted to be able to buy like, I don't know, some video games or something. And then there was a huge devaluation. And I remember I got paid $40. So-

Markus Brunnermeier: It was a good lesson, I guess.

Ivan Werning: It was a good lesson, yeah, yeah. But yeah, so where were we? Why did I mention that? I forget, but yeah. It depends on the surprises and such, and they do happen, but yeah, they haven't been. I've laid–

Markus Brunnermeier: There's other questions on the board, which I'm not an expert on, such as how would the- to deal with the central bank's debt, LELICs, if Argentina dollarized at some future time is converted to US dollars?

Ivan Werning: Yeah, well, okay, so that everyone who's proposing dollarization, I think very sensibly, is thinking about that. So they're saying, we're not just going to put the dollars up for the pesos, we're going to put them up for those LELICs too, because I guess they should be on par. I mean, they should be, they're fungible. Why would you treat one liability differently than the other? So they, that's where you get to like a number of like 40,000 million or 30, between 30,000, it depends where the exchange rate last moved, because you add up the base money with these LELIC, which is very close to just adding M2, because like I said, these LELIC are the counterpart of the bank's deposits, you know, in the central bank. So, so yeah, most of the time, the idea is that that's the right measure of the liability, which means at least there isn't necessarily... So basically, the idea is people who think dollarization is feasible, they have some plan to get dollars that would cover the sum of the two. That's my impression.

Markus Brunnermeier: May I summarize your final conclusion? Perhaps to put some words in your mouth. Let's get the deficit in order and then think about dollarization.

Ivan Werning: I think that's a good summary. And I think that that's also a little bit the plan that I've heard of, but there's a lot of uncertainty. But I think that would be my summary as well.

Markus Brunnermeier: So normally, we stop with a positive note during this webinar series. And you know, there are a lot of challenges…

1:22:38
Ivan Werning: Is it the World Cup again or something?

Markus Brunnermeier: Oh, I see. But Messi is not playing anymore.

Ivan Werning: He's playing today.

Markus Brunnermeier: Oh, I see.

Ivan Werning: No, Argentina against Brazil. It's going to be fantastic. It's also scary. I mean, the Brazilians are very good. So let's hope.

Markus Brunnermeier: Very good. Thanks a lot, Ivan. And thanks a lot, Petr and Tomas for being with us and answering all the questions as they came in. And we hope the whole thing will play out well. And it will put Argentina to a more stable path going forward. Thanks, bye bye.