An Economy Built on Debt — Is There a Way Out?

A webinar with Dr. Michael Kumhof, hosted by the International Movement for Monetary Reform.

Opening

Samuel: Hello and welcome. My name is Samuel, and I'm from the Swedish branch of the International Movement for Monetary Reform. It's wonderful to see so many people here. We've actually reached over three hundred, just as predicted. That's great. We are gathered from all over the world for this webinar: "An Economy Built on Debt — Is There a Way Out?" Global debt recently reached a historic record of three hundred and forty-eight trillion dollars. That's more than three times the size of the world economy. Mortgages, consumer loans, corporate debt, and government deficits continue to grow at an extraordinary speed. Why? There is a reason that is almost never discussed today: money itself is created as debt.

For those of you who are completely new to this subject, here is a very short explanation of how it all works. You go to a bank and take a loan of one hundred thousand dollars. You're now in debt — you've promised to pay one hundred thousand to the bank in the future. You also receive that amount in your bank account. Nothing strange so far. But wait a moment. Have you ever asked where this money actually came from? The answer is that it was created out of nothing. The bank didn't borrow it from anyone else to later lend it to you. It simply entered the amount on its computer, and — hocus pocus — new money is created. This is how new money enters the economy today: banks lend money into existence.

Moreover, this new money is itself a debt. It's a promise to pay you cash if you go to an ATM to withdraw banknotes. So digital money is just the bank's liability to its customers. That is what we use as a means of payment today. The origin of almost all digital money is a loan, and money itself **is** a debt.

So what's the problem with all this debt? The problem is that the mountain keeps growing. If GDP increases, incomes increase. But the money supply, and the corresponding debts, have for a long time grown two to three times faster than GDP. In other words, the mountain of debt grows much faster than people can climb it. This means they will never reach the top. This is clearly not sustainable. What should we do? Is there a way out from under this ever-growing mountain of debt?

To help answer that question, twenty-three organizations working for a better economy have invited Dr. Michael Kumhof. Michael is a leading researcher in monetary economics who recently worked as a senior researcher at the Bank of England. He has deep knowledge of money, banking, and the financial system, and is especially skilled at building macroeconomic models and simulations that help us understand how different monetary systems work. He has even worked at the International Monetary Fund, where he developed their main model for simulating the global economy. Through his

rigorous analysis, influential papers, and thoughtful lectures, he has played a key role in bringing debt-free money and monetary reform into both the academic and public debate. It's a great pleasure to have you here, Michael. We're very much looking forward to your talk. Maybe you can start by telling us how you became engaged in these questions.

Interview: How Michael Came to These Questions

Michael Kumhof: Thank you for the kind introduction. The history goes back to roughly 2006, when I worked at the IMF building their global economic model. It was still a work in progress at the time. I started to get very concerned about the situation in US financial markets. I'm a former banker — I made loans for five years at Barclays in the UK, Portugal, and Singapore. I saw what was being reported about banking practices and became very concerned, and I started reading about monetary issues and monetary reform around that time. That was still fairly casual.

But in 2008, when the crisis really erupted, I began to read more seriously — a number of books, especially ones published around the time of the Great Depression. Back then, the leading economic thinkers in the United States were all talking about the monetary system as the key origin of the crisis, and the thing we needed to fix to make sure something like that never happened again. There's a very nice book by Ronnie Phillips that documents this.

At the time, two proposals were being debated. One was the Chicago Plan, advocated by the majority of leading macroeconomists. The other became Glass-Steagall, which was less radical and therefore faced less resistance from the banking and financial sector. The financial sector couldn't do much against the great momentum toward reform, so eventually Glass-Steagall became law. And it arguably helped a lot for several decades.

Then I came across Irving Fisher's "100% Money and the Public Debt" — a concise booklet of less than fifty pages that laid out his arguments. It became immediately clear that with the toolkit I had built at the IMF, I could try to model his reform proposals and see what would happen. I worked on that for a year or two alongside my other duties, and published a paper in 2012 — in what I now think was still a fairly rudimentary form, because there were some modeling problems.

Then I was invited to many central banks. I presented that paper in many places, because this was still in the wake of the global financial crisis and people were interested in these things — as they always are after a crisis, before they fall asleep again.

When I joined the Bank of England, I had some interesting conversations with Andy Haldane, my boss at the time. With his inspiration, I looked at the related question of central bank digital currencies, because Bitcoin was becoming increasingly prominent. The natural question was: what if central banks issued an electronic currency like that? I realized it's essentially a little cousin of the Chicago Plan — much more modest, because it leaves banks to do what they do today, but it creates so-called narrow banks, reserve-backed banks, alongside our existing banks. And that would help the economy.

The paper I published with my co-author John Barrdear in 2016 at the Bank of England coined the acronym CBDC. That was the starting point of a long literature that has since grown, with all central banks now contributing to it in some form. I could never have imagined it in 2016, but CBDC has become a very mainstream idea. That also means the Chicago Plan — a closely related but much more radical idea — should also be discussable, because it just shows what would happen if you took CBDCs to their logical end point, where all money in circulation is a form of CBDC. So that's the history.

Samuel: Looking at today — what's your driving force to keep caring about how the monetary system is organized? Why care about this at all?

Michael Kumhof: We're in an even more precarious situation now. If we ever get another financial crisis, we have even higher debt loads, and therefore more fragility. I hope we don't get one — but if we do, there's a problem. So the concerns are really unchanged.

At a more philosophical level, this is a question of justice. The existing monetary system, as I'll expand on in my talk, is not just. There could be a much better monetary system that takes care of the needs of the ordinary citizen far better than what we have today. That's true both in terms of the level of economic activity we could reach, and in terms of crises — which can be extremely painful for a lot of people, as 2008 was. If the next one comes along, we'll again face a lot of pain and stress. I'd argue that's not necessary. So justice is the motivation at the highest level.

But economists like to turn up their nose at notions like justice — I don't agree with that, but you don't even need to go there. You can simply ask: could we have higher output and less volatility under this system? And the answer is yes. To an economist, that's a value in itself. We don't need to talk about justice.

Samuel: It's interesting for the wider audience to hear those other reasons why we care about the monetary system — it's about wider values too, not just economics. Thank you. Let's continue with your presentation. We've already used fifty minutes, so let's jump straight in.

Presentation: The Chicago Plan Alternative

Michael Kumhof: My theme was "An Economy Built on Debt?" — with a question mark — and then the Chicago Plan. Normally I'd have a disclaimer here, but I don't need it anymore, because I no longer work for the Bank of England as of about a month and a half ago. In the 1930s, the Chicago Plan was the result of a profound debate about how to make the financial system safer in the wake of the Depression. In many ways, that debate was more fundamental and deeper than the one in the wake of the 2008 crisis — which is amazing when you think about it. The reform was supported by Irving Fisher, Henry Simons, Frank Knight, and — for the economists among you — Milton Friedman, who came a decade or two later. These were the leading lights of their time, and the founders of the free-market Chicago School of Economics. But they saw control of money as a precondition for free markets and industry, which is what they cared about. So the original free-marketeers would have

signed up to the ideas I'm presenting today, even though today's free-marketeers largely would not. In a nutshell, the Chicago Plan proposed separating the monetary and credit functions of banking. You'd establish money banks, whose deposits must be backed one hundred percent by public money. You could also configure this as people directly holding deposit accounts at the central bank, with a money bank as intermediary. And you'd have credit banks, which finance credit to those who need it — but not through the ex nihilo creation of private money out of nothing — only through the on-lending of pre-existing public money. Let me explain today's banks first.

Understanding Today's Banks

Banks as a whole do not intermediate pre-existing loanable funds. The "loanable funds" theory of banking, which dominates much of the academic literature, is complete nonsense, because there are no loanable funds. The important thing is to think about the banking system as a whole, not an individual bank. I can write a check on my account and deposit it in another bank, and it looks like that bank received a deposit. But the banking system as a whole did not — I've just moved my deposit around. If you consolidate all the banks into one financial sector, nothing has changed. And that's what matters at the macroeconomic level.

Banks as a whole also do not accept deposits from non-banks. They create deposits in the act of lending — as Samuel explained at the beginning. This has two implications. First, for efficiency, or the level of GDP and welfare: adequate money creation must load the economy up with debt. You cannot create money unless you also create debt. Cash is still a debt-free form of money, but it accounts for only about three percent of the money supply. The other ninety-seven percent is bank deposits, which can only be created through debt.

Second, for volatility — the fluctuations of GDP and real economic activity. The current system means banks can quickly start a lending boom by, in effect, electronically printing money on a computer. And it can also start a lending crash just as quickly.

The Chicago Plan would change this. Most public and private debt would be replaced by public money, so debt throughout the economy would drop a lot. Credit banks could only intermediate sovereign money — they'd become intermediaries of sovereign money, which previously didn't exist except as cash. And banks could no longer create private, debt-based money on their computers.

Let me show the existing banking system first. The chart at the top is a balance sheet — assets on the left, liabilities and equity on the right.

How Banking Actually Works

This is the "Mickey Mouse" model of banking many people use: the saver deposits in the bank, the bank takes it and lends it to someone else. At the macroeconomic level, that's completely wrong. Here's an example. If I give a speech and someone pays me a thousand dollars by check, I deposit it in my bank. The moment the bank receives the check, it increases my deposit, but it acquires a claim on the bank the check was drawn on, to collect the underlying funds. My bank gains reserves —

central bank reserves, which banks keep at the central bank to settle balances among each other. My bank's deposits go up, the other bank's deposits go down, and the banking system has no change whatsoever.

So this cannot be what people mean when they describe that top model. As I show in other papers, it only works if people literally take goods — wheat or widgets — to the bank and drop them in the forecourt for the bank to lend out. I worked in a bank for five years and never saw that happen.

So how do aggregate deposits actually increase? That's shown at the bottom — what I've called "financing through money creation." In that case there is no saver and no borrower. There's one person or entity that comes to the bank and gets both a loan and a deposit at the same time, just like Samuel showed at the beginning. They circulate the deposit, but it may also come back — a firm paying its workers, who then spend on the firm's goods, returning the deposit to the firm. That's how additional deposit money can be created — by loans, and also by securities purchases, though that's quantitatively much less significant.

I went to this length because the reformers of the 1930s, Irving Fisher first and foremost, understood this very well. If this happens too much — if a bank decides the economy is going to boom and creates a lot of additional deposits — there is nothing to constrain it except its own perception of whether that will be profitable and safe. And that perception may not always be right. Then you get a lending boom.

If the top model were true, the bank would always have to look over its shoulder and ask whether a saver would trust it with their money before lending it on. But that's not what happens. The bank only needs to be sure, in its own opinion, that lending will be safe and profitable.

Modeling the Chicago Plan

Now to the Chicago Plan. I'm an economic modeler — the Chicago Plan model has around two hundred equations. That's my stock in trade. For today, I've stripped out almost everything to present this simply, but there is a credible economic model underneath. I've omitted almost all the mathematics underlying the full model, except for balance sheets and budget constraints. And those I am not omitting, because you cannot really discuss the Chicago Plan, or any monetary reform, without being very precise about what happens to balance sheets and budgets. So if you want to get serious about this, study accounting — a lot of this is about accounting, and there's no way around it. Otherwise you end up making outlandish claims about what debt-free money could accomplish, with no support in the balance sheets or budget constraints.

In this model, households have preferences over consumption and hours worked — their labor supply. Output is produced using capital and labor. Deposits and banks are indispensable for real economic activity: to consume, invest, or pay workers, you need deposits, or everything grinds to a halt. Banks create those deposits by extending loans, using collateral to ensure repayment.

Then there's the budget constraint. For a household, deposits minus loans equals gross income minus gross spending. Gross income minus gross spending is what's popularly called saving — and saving is a physical concept. My gross income comes from going out to work and getting paid; gross

spending is going to the shop and buying products. The difference is saving. Deposits, on the other hand, are not physical — they're financial. They can be created in ledgers on balance sheets, all on computers now. So the deposits people need to pay each other can be created by the bank through loans. The wealth a household can accumulate through saving is the difference between deposits and loans. Deposits are gross wealth; deposits minus loans is net wealth. If a household or firm wants more deposits, it can get them by taking on more loans. If both items on the left-hand side change by a million, nothing needs to change on the right — but this person now has a million more in deposits to spend. Saving itself cannot increase deposits, as I explained with my speaking fee: the person who pays me dissaves, and nothing changes in aggregate.

For banks, the balance sheet is: loans plus government bonds equal deposits plus net worth. In some countries, government bonds are very important — in Hungary, for example, government bonds and central bank reserves are almost half of total bank balance sheets. In the US it's a lot less, because most government bonds are held by other financial institutions, not commercial banks. On the liability side, I've lumped checking, time, and savings deposits into one aggregate, because the issue here is understanding, not modeling every nook and cranny. I require banks to hold capital so they don't violate the Basel capital adequacy rules, and they optimally set spreads between wholesale lending rates and the policy rate — the rate you read about in the newspaper, set by the Fed or your own central bank. Retail deposit banks have market power over retail depositors, so they can set the retail deposit rate below the policy rate. Households accept very low, even zero, interest, because without deposits they can't consume or invest and firms can't pay workers. Banks offer them a way out of that bind — and one advantage banks gain is being able to pay lower interest. Retail lending banks, on the asset side, need to be compensated for the risk of borrower default. This is where banks genuinely add value. As a banker, I monitored customers' investment projects; while that's primarily the enterprise's responsibility, a banker can add value with industry knowledge and judgment, helping make it a good loan and a good investment. There's also a class of bond investors who arbitrage between government bonds and wholesale bank deposits — we don't need to dwell on it.

Now, monetary and fiscal policy in the current system. Monetary policy is the interest rate the central bank pays on reserves, and it rises with expected inflation: if the central bank forecasts inflation one point above target, it tends to raise the rate by at least one and a half points to bring inflation back under control. Fiscal policy follows a deficit rule: deficits increase when the economy is slack, so fiscal policy stimulates through deficits. Think of automatic stabilizers — unemployment benefits and certain transfers that rise when the economy is in a slump and help stabilize it automatically.

Now, after the Chicago Plan. The key thing to emphasize is that I assume household preferences, production functions, technology, and banking behavior don't change. Even the numbers on key parameters don't change. The only change is that bank deposits must equal reserves at the central bank — deposits must be backed by reserves. How that happens in practice requires balance-sheet mechanics, which we'll discuss.

This is the end state the Chicago Plan requires. Credit banks then have loans equal to treasury credit — a loan from the public sector to the bank — plus net worth. You could also make private deposits a main funding source for credit banks. So credit banks finance themselves through a combination of their own net worth, shareholders or private deposits — which can no longer be created out of nothing — and a sliver of treasury credit that can be injected when needed. Today's banks can increase deposits simply by increasing loans — a book entry on a computer; nobody needs to deposit anything. Under the plan, that's no longer true. People would have to take deposits from the money banks to the credit banks to get a private deposit, which is no longer money but an investment — probably paying better interest, but carrying higher risk. The credit bank attracts these deposits only to lend them out; the money then circulates through the credit banks. It needs to be attracted and then lent out, rather than created by being lent out. That's the key distinction.

Monetary policy in this world has three levers instead of one. The first is the interest rate on reserves — the policy rate that rises with inflation, and which should be very aggressive. The second is new: the interest rate paid on public money. I find it's optimal to keep this at a fixed spread under the policy rate. If you like, you could set it to zero and treat it like cash. Some feel public money shouldn't pay interest, but interest paid by the public sector to its citizens is a completely different thing from interest earned within the banking system. The third is the interest rate on public credit — the rate at which the central bank or Treasury is willing to print additional money to satisfy bank demand for credit. You can get aggressive with this: if banks want to start a lending boom, you can moderate it by charging a higher rate. As I'll show, that's very effective.

The Transition and Its Advantages

Now, the six advantages of the Chicago Plan. Fisher identified four in "100% Money and the Public Debt"; in our own work we identified two more. The first is a dramatic reduction of public and private debt. Here's the transition. The yellow area at the top is the US banking sector before the transition; the white areas relate to the transition; the green is where we end up afterward. For didactic purposes, I assume it happens overnight, because none of it requires saving — it's all balance-sheet mechanics. It could also take time. These numbers are roughly in percent of GDP. There are deposits at 148 percent of GDP, equity at 17 percent, investment loans at 50 percent, and other loans — mortgages, consumer loans, working capital — at another hundred. Banks also hold some government bonds.

The Chicago Plan says: banks, you have these deposits, and now you must back them with public money. Since this public money doesn't exist, I'll create it out of thin air — just as you created your deposits out of thin air over the last two hundred years. I'll create reserves to back your deposits against an IOU — an IOU from the banks to the central bank or Treasury, because banks don't get these reserves for free. For simplicity, let's say it's the Treasury, though it could be the central bank.

Then you rearrange things and split the institution into money banks and credit banks. The money banks are simple: deposits backed by reserves. They don't need to keep equity, because the deposits are safe by construction — the central bank can't default on reserves, since it can always create more.

The credit banks inherit all the other items: bank equity, treasury credit, and the various loans on the asset side. They now mostly have treasury credit — the IOU to the Treasury — on their liability side.

Now, this next part is an assumption — it doesn't have to be done this way. Part of the treasury credit is earmarked to retire government bonds as they fall due. Since treasury credit is an asset of the public sector and the government bond is a liability, they can be canceled against each other.

Next is a large citizens' dividend. The Treasury currently has a huge account in the banking system — something like twenty-five trillion dollars, actually more like thirty trillion now. It says: twenty-five trillion of this I'll give to my citizens, per capita, equally — every man, woman, and child gets the same. In this example, that's exactly one hundred percent of GDP. People get citizens' accounts they can use to cancel against their loans. It makes more sense to repay than to sit on the account, because the interest on the debt is higher than what they'd earn on the account. So the government has shared its gain — the treasury credit — with its citizens. That's why both public and private debt fall.

I assume the primary use of these balance-sheet gains is balance-sheet repair, for both the public and private sectors — not spending and not tax cuts. The only spending and tax cuts come later, on a sustainable basis, through lower interest costs. You have to be careful, because there's only so much gain — this is not Christmas. You can't do everything with a monetary reform. But you can use it for a combination of additional spending, lower taxes, and balance-sheet repair. Here, private debt goes from 150 percent of GDP to 50 percent — a very significant improvement.

Now the government balance sheet — yellow is pre-transition, green is post-transition. The government doesn't actually publish a balance sheet like this, but we know its debt liabilities are 75 percent of GDP in this calibration. The creation of treasury credit against reserves is the flip side of what we saw in bank balance sheets, and some government debt is repaid against treasury credit — here, government debt goes from 75 to 60. The citizens' dividend is a reduction of treasury credit accompanied by a reduction in net equity.

Here I need to explain something. I wrote a paper with some eminent legal scholars showing that reserves of public money — including cash, the reserves created here, and reserves created under CBDC issuance — are not a debt of the consolidated government. They're also not strictly the same as corporate equity, but based on various legal categories, central bank money is much more similar to equity than to debt. We call it social equity, because it's shared by everybody, with the central bank acting as everyone's agent to create it.

So net public debt goes from 75 percent of GDP to 27 percent — government debt minus treasury credit. And equity goes from zero to 48 percent, because the government doesn't pay out everything; we have the citizens' dividend. So under these specific assumptions, a much stronger public and private balance sheet — balance-sheet repair — is a primary use of the gains from the Chicago Plan.

Bank Runs and Credit Cycles

The next advantage is a complete elimination of bank runs. This was front and center for Irving Fisher. Under the plan, money is completely safe by construction: deposits are backed by reserves, with no loans on the asset side. So the quantity and quality of private debt doesn't determine the quantity or quality of money, and the performance of private debt doesn't affect it. It's completely safe, at least nominally.

Could you still have a run on the credit system? Yes, you could. But if you did, the payment system would remain one hundred percent safe. Today we worry about runs because the credit system and the payment system are joined at the hip — if the credit system goes down, so does the payment system, and then firms can't pay their workers, and we're in real trouble. Here, the two are separated. Furthermore, with treasury credit as a marginal funding source, and regulation ensuring private funding is only long-term or equity, runs are much less likely. In fact, Larry Kotlikoff in 2012 suggested funding should be equity, making credit banks like credit mutual funds. If they make a lot of bad loans, that's like a stock-market crash — not nice, but not the same as a financial crisis where the whole payment system goes down with it.

The next advantage is much better control of credit cycles. The money-creation privilege of banks is a major source of credit cycles. Banks today never face loan-financing risk, only deposit-refinancing risk, because a bank knows it can always finance a loan by creating a deposit. The only risk is that the deposit runs off to another bank. So while the banking system as a whole isn't in trouble, one particular bank might be — and micro problems can snowball into macro problems if the system isn't safe. Because banks don't face loan-financing risk, they can finance loan decisions on a computer. And the government guarantees deposits, explicitly or implicitly, because the payment system depends on their credibility. So depositors don't pay much attention to risk — you and I don't analyze our bank's annual statements, because we assume the regulatory apparatus stands behind it.

Under the Chicago Plan, this creation privilege is removed. Intermediary banks must persuade investors to deposit by being safe and offering good returns. Deposit insurance can be removed, because in the limit it's like a stock-market investment — and the stock market isn't guaranteed by an FDIC equivalent. So I'd be more cautious investing in a bank, which makes it less likely the bank starts a credit cycle — though it doesn't rule it out completely. Furthermore, policy now controls three tools rather than one: the interest rate on reserves, on public money, and — more importantly — on treasury credit.

Here's a simulation of a boom-bust cycle in the credit market. The horizontal axis is quarters, so thirty-two quarters is eight years. The shock starts at period eight: for twelve quarters, banks lend more and more, creating money and boosting GDP. Then in the thirteenth quarter they get cold feet, drastically cut credit, and the economy crashes. The red lines are the pre-Chicago-Plan model; the black lines are the Chicago Plan model. Look at the top left: GDP is much more volatile in the current economy for an identical shock. In the second row are the policy rates. In the current economy, the real policy rate would rise by almost two and a half points to deal with the boom's inflation, then fall after the

crash. Under the plan, that rate barely needs to change. Instead, the interest rate on public credit changes — by only about half as much — and that's enough to dissuade banks from extending so much credit. The shock is still there, and banks are still optimistic, but now it costs them much more to get marginal funding from the central bank, so they extend less. That's behind the much lower volatility of GDP.

Large Output Gains

The next advantage is large output gains, for three reasons: lower real interest rates due to lower debt, lower taxes due to fiscal improvements, and more abundant liquidity. I'll focus mainly on the first two.

This chart looks messy, but it's just a bird's-eye view. It's a transition simulation: we start in today's economy on the left, and in the very long run — the red dotted lines — we reach a new equilibrium, which takes a long time. The horizontal axis is a hundred quarters, or twenty-five years. It takes long because this is almost a structural reform: taxes change, real interest rates change, and capital accumulation changes, which takes time to show up in the capital stock.

Zooming in: there's a big drop in net public debt. Gross public debt goes from 75 to 60 percent. Public credit — net treasury credit — goes from zero to about 48 percent. Net public debt, gross debt minus public credit, goes to 27 percent. It's well established empirically that when leverage decreases, including for the public sector, the interest rate on remaining debt goes down. So the policy rate goes from about 3 percent to roughly 220 to 230 basis points in the long run, after some short-term fluctuations tied to the reform's inflationary effects. Lower debt means lower riskiness, which means lower real interest rates, which means greater capital accumulation, which stimulates greater labor supply and greater economic welfare.

The government also pays much less on its debt and gains seignorage revenue from money creation. So the fiscal situation improves, because funding becomes much cheaper across the board. I assume that saving is plowed into lower taxes on labor, capital, and consumption. As any businessperson will tell you, a tax on capital disincentivizes capital accumulation, and a tax on labor disincentivizes labor supply. I used to think, as an urban liberal, that this was all just theory — but it's not. Notice the numbers, though: the tax on labor goes from 25 percent to about 19 percent in the long run — not to zero. This reform is not Christmas. A lot of the initial gains went to balance-sheet repair, and I only use the sustainable improvements from lower interest rates to lower taxes. The gain is finite. This emphasizes studying not just balance sheets but also the budget constraint. Debt-free money is beneficial, but not without limits, and there are trade-offs: do I spend more, lower taxes, or repair balance sheets, and in what proportions?

Finally, higher output: GDP increases by around five percent in the short run, relative to trend, and almost seventeen percent in the very long run. I often get a comment from economists: "These results are implausibly large. I don't like it, so there must be something wrong with your methodology." That's economic science for you. The only scientific objection would be to say the methodology is wrong for specific reasons. You can't say the methodology must be wrong because the results are too large. We used completely standard methodology. If you disagree, tell me what to change, and I can do it. I

could make certain changes that would reduce the gains to maybe ten percent — but that's still enormous. And this isn't even about crises and risk — it's about economic well-being in a new equilibrium, when everything is sailing smoothly.

Responding to Criticisms

Over the years, I've received various criticisms of the Chicago Plan. When I was in Hungary recently, I told the audience: if anyone comes up with a new one, they get a prize. I'll repeat that today — you get a prize for a new criticism, because this paper has been out for fourteen years and I think I've seen them all.

Samuel: It would be good to leave some time for questions soon. Maybe take the most important criticisms.

Michael Kumhof: First: "Where's the market failure?" A senior Fed official asked me this. The idea is, if it ain't broke, don't fix it. There are two counterarguments. First, rent-seeking — getting something for nothing. Banks earn the difference between the risk-free interest rate and the very low rate they pay on deposits. That's partly due to keeping a diversified loan book, but to a significant extent it's due to public-sector guarantees and backup. There's an extensive economics literature on this. That's a market failure. Second, increasing returns to scale. Money creation requires trust, and the bigger and more solid your institution, the more trust you generate. Take the whole of government and society, and you reach maximum scale and maximum trust. By contrast, at the scale of Silicon Valley Bank, trust can evaporate very quickly, as we all saw.

Another criticism: money substitutes can prevent monetary control. I have a long list of countermeasures in the paper; it just depends on how radical you want to get. And you don't even want to control the quantity of public money — you want to control the interest rate on it.

Another: maturity transformation. Banks are good at transforming short-term liabilities into long-term assets. But the point of maturity transformation is the maturity, not the transformation. If you can reach those maturity profiles without the transformation — which is exactly what the Chicago Plan does — then forget the transformation. You have the maturity. Be happy.

The most popular criticism: too much money, leading to inflation. The idea is that if the public sector gets the money-creation privilege, it might create too much. There's no reason to expect inflation, for three sets of reasons. On monetary theory: inflation is determined by the relative quantities of goods and money in private hands. Too much money chasing too few goods causes inflation. Under the Chicago Plan, the quantity of money in private hands stays almost completely unchanged — what changes is the nature of money, from debt-backed to public-reserve-backed. And I'm not even trying to control the quantity of money. I'm controlling its interest rate, and letting the private sector decide how much money it wants at that rate. So by construction there's no inflation from money creation, because money is endogenous at the interest rate set by the public sector. The same people sometimes also say there'd be too little money for small businesses. As the paper shows, based on what happens to interest rates, I expect the opposite.

A final criticism: that the government would interfere with credit allocation. But under this scheme the government would not control the quantity of credit, nor its allocation — that's left to private banks. It would only affect the price of credit. And affecting the price of credit is already one of the objectives of monetary policy today. I'm just claiming you could do it much more effectively under the Chicago Plan. So those are my conclusions. I could finish in two minutes, Samuel, or we can go to questions.

Samuel: Let me do a thirty-second summary for those newer to this. The Chicago Plan dates from the 1930s. The idea is to separate money and credit, so we can create new money without people having to go into debt for the money supply to grow. Michael built a mathematical model — a simulation of the current economy — then changed just one thing: he implemented the Chicago Plan, the separation of money and credit. The result was several positive gains for the economy. You wrote this paper thirteen years ago but also did an updated version about two years ago. Can you say briefly why, and what's different?

Michael Kumhof: My CBDC paper from 2016, and others after it, taught me a lot, as did more papers on bank money creation. Some of the original 2012 paper wasn't quite perfect. The part on the transition and its benefits didn't change much. What changed significantly is the part on managing cycles using different interest rates — that's much better and more coherent now. It brings out something important. A lot of people like to think about sovereign money in terms of the central bank controlling its quantity. I think that's potentially a pernicious idea, because if you control the quantity rather than the price, you risk getting it wrong — creating too much or too little, which is inflationary or deflationary. Instead, just fix the interest rate you pay on public money, and the rate at which you're willing to lend additional public money if credit banks want to lend more. Then let the private sector sort out how much money it wants to hold, so the quantity becomes endogenous. The supply and demand of money equalize automatically under this system, but not if you try to control the quantity of sovereign money rather than its interest rate. That came out much more clearly in the 2024 paper than in the 2012 one. The newer paper is also shorter and omits much of the history, since it's aimed more at an academic audience.

Audience Questions and Discussion

Diane — The American System and a National Bank

Diane: I come from the tradition of what's historically called the American System. A national bank can be a huge part of building the physical economy of a nation — as in the early United States, and in China today, with massive, rapid physical development. If you extend credit for productive purposes, you can create enormous employment building water projects, energy projects, and so forth. There's no lack of such needed projects. I've never been on this format before — maybe you're all privateers, I don't know. But to me, what you're describing isn't constitutional. I understand everything except the "not constitutional" part: our Constitution expresses principles about the welfare of the population, and the best way to support it is extending long-term, low-interest credit for productive work.

Michael Kumhof: I don't disagree with anything you said. What I described is certainly not anti-constitutional — but you could supplement it. You could add a public bank or national bank that obtains treasury credit and makes the investments you describe. I call it treasury credit, but you could call it central bank credit — the central bank will be a different animal in this world. It could charter an institution to make these investments. And I completely agree that the benefits I highlighted — seventeen percent of output relative to trend — vastly understate the actual benefits, because a lot of activities with a public-goods character could get funded that don't get funded today. So I don't think we disagree. You'd have additional treasury or central bank credit to fund institutions lending into sectors of the real economy that specifically improve productivity. Personally, I don't think it should be the central bank — the central bank should be concerned with monetary affairs, not be a lending institution. But you could easily charter a national development bank to do that. It's not a contradiction; it could be a supplementary aspect of what I'm proposing. I have to talk to central bankers and academic economists in much of my work, so I try not to go too far afield — but at the back of my mind is something very similar to what you described. I have nothing but sympathy for the American System of political economy. I didn't stop you because I thought some of the audience might not know what it was, but I think there are excellent ideas there.

Diane: I just think there's a huge difference between a central bank and a national bank. In many ways, that distinguishes us from those we fought the American Revolution against.

Michael Kumhof: There's a difficulty of semantics here, because this new central bank would no longer be the kind of central bank we have today. You might want to call it a national bank, or not — but I don't want to get into semantics.

Lucille: Thank you, Diane. Let's move on. Jeff, do you want to unmute?

Jeff Eder — Settlement and Bank Money

Jeff: When the central bank engages in settlement at the end of the business day with other financial institutions and the government, does this enable bank money to be moved from one institution to another?

Michael Kumhof: Yes. Using my earlier check example: if I pay a thousand-dollar check into my bank, Bank B, and it's drawn on Bank A, then Bank A loses reserves to Bank B along with the check. It's a one-for-one movement of both deposits and reserves. Because checks go both ways, the net at the end of the day is always very small. So the answer is yes — it enables bank money to be moved, but not created.

Jeff: I ask because the transactions and settlement balances between commercial banks and the federal government are largely invisible to the public — there's no publicly available database. Settlements sit more or less fixed on the Bank of Canada's balance sheet, much like banknotes, while cash transactions occur in the real economy. However, the Consolidated Revenue Fund, the government's account at the Bank of Canada, is completely transparent. My assertion is that these funds represent commercial bank money.

Michael Kumhof: Wait — the government fund is separate from commercial bank money. The government has an account at the central bank, and it can spend it into circulation, at which point it becomes commercial bank money. But while it's just sitting in that account, it isn't. You don't need to see what's happening in those settlement accounts, because that's literally millions of transactions a day going both ways. In the UK, between NatWest and Barclays, a million checks go one way and a million the other, and the net balance at the end of the day might be a hundred pounds. There's no discernible reason you should know what's happening to each million checks.

Jeff: So the money you see in those transparent transactions in the Consolidated Revenue Fund immediately becomes commercial bank money as soon as it's transferred to a bank that can spend it?

Michael Kumhof: Yes. If the government spends it, it writes a check I can deposit in my bank, and the commercial bank clears it using a transfer from the government's account to its own reserve account.

Samuel: Michael Hudson, you were there. I wanted to give you a few minutes to comment on Michael's presentation.

Michael Hudson — Asset-Price Inflation and the Political Problem

Michael Hudson: Michael made a wonderfully clear description of the balance-sheet aspects of all this. We've worked together for over ten years now. Our take-off point was Irving Fisher's description of debt deflation. That's really the problem: debts grow faster than the economy's ability to pay — the point made at the very beginning of this broadcast. So why hasn't the Chicago Plan been adopted? The problem is what banks create money for. Commercial banks create money against assets, and the result is asset-price inflation. Unlike savings banks, commercial banks can lend more and more to bid up the price of real estate, stocks, and bonds. The price of real estate is essentially however much a bank is willing to lend, and they've lent more and more as a proportion of real estate value.

The problem isn't simply the creation of money — it's what money is used for. It's not used for industrial purposes; it's used to make money financially, not to create new means of production to pay the debt. So it's a political problem. There's a vested interest in doing things the way they're done now, rather than the Chicago Plan. As Michael said, banks are rent-seekers. The result of this explosion of bank credit is the debt of the rest of the economy — homeowners, consumers, and businesses — which grows faster than the economy's ability to pay, especially because debt overhead slows the economy down. They pay more interest to the commercial banks and have less to spend on goods and services or to create new factories.

That's the dilemma the Chicago Plan was designed to address. The alternative is to have the government — something like China's, where it's the Treasury, not a central bank, that decides what purposes credit can be created for. You need credit to fund new capital investment, and the Chicago Plan doesn't block this: the government can act as a depositor in the banks to enable lending for projects it approves as profitable investment opportunities. So when you talk about banks with one hundred percent reserves, those reserves can include a larger amount of government deposits. That happened in the United States from the Civil War to World War One: the Treasury had huge amounts

of gold and silver from budget surpluses driven by protective tariffs, and deposited that money from the sub-treasuries into commercial banks to enable loans for growth. The problem was that, being commercial banks, they wanted to make money financially — lending for corporate takeovers, monopolies, and raids.

So the problem is not simply monetary; it's a political problem of what banks do. There's a huge vested interest of the creditor class — the wealthiest class in America, because most wealth is financial wealth, and that wealth has been inflated.

The counterpart to debt deflation was asset-price inflation: banks lend more and more for real estate and corporate takeovers, so more interest has to be paid by the real-estate and industrial sectors, leaving less to invest in new production. That's the whole problem. The Chicago Plan was the only way, under the political reality of the time, to avoid this self-destructive financialization led by commercial banks and the central banks behind them.

Michael Kumhof: Michael and I agree on almost everything, but you made a very good point I'd like to expand on. Why do debts keep growing and growing, weighing the economy down? There's a very good argument — the one Michael just made. But there's also a bad argument this movement should avoid: the claim that when new money is created through debt, the new money equals only the principal, not the interest, so there isn't enough money to repay the interest. That argument is nonsense, because money circulates. You don't need a specific amount of the money stock to make those payments — you could have just one dollar circulating to make all of them. What happens is a resource transfer from debtor to creditor. The fact that the loan interest rate is higher than the deposit rate doesn't create a shortage of money.

But Michael's point is true. If that bad argument is wrong, then why has debt grown so much? Because banks haven't been lending for productive purposes. There are no underlying real payment streams from their activity to grow the economy and pay for that resource transfer. The loan rate is higher than what I earn on my money, so I need to procure resources to pay it. If I have a productive investment with a fifteen percent return and the loan rate is only five percent, I can pay the interest and still have something left. But if I only speculate on financial assets that don't add to real resources, that's a problem — and then the only way to get more money is to borrow even more.

So I'd like to juxtapose these two stories: the one Michael mentioned, which in my view is the right one, and the wrong one.

Samuel: we can send you a short video about why the wrong one is wrong. Maybe a final thirty seconds, Michael Hudson.

Michael Hudson: Since 2008, central banks have given commercial banks enough money to inflate real estate, stock, and bond prices through arbitrage to earn economic rent. As Michael pointed out, to get a free lunch you borrow at two percent and buy back your own stock yielding ten percent and make a gain. Borrowing to buy your stock isn't productive at all.

Banks love to lend for that, because it creates more debt — and debt is their product. Their product is the wealth of the top one to ten percent, which is the debt of the bottom ninety to ninety-nine percent. It's this one-to-ten percent that controls the government and the central banks. They keep calling central banks independent — they're not independent of the commercial banks; they're independent of the government. They serve the commercial banks and their debt creation to keep those debts solvent through asset-price inflation, which causes debt deflation.

The whole system has to be broken. Either we say we won't let commercial banks create credit, because they create it for unproductive purposes that deindustrialize the economy — which is exactly what's happening — or we make banking and credit creation a public utility in the hands of government, China-style. The financial sector is essentially predatory and rent-seeking, not productive. That's the whole problem causing such resistance to even thinking about the Chicago Plan.

Michael Kumhof: I wouldn't put it quite so black and white. Central bankers are influenced by the financial sector, but also by the government — it's a question of proportions, of who has more power. Governments should serve the public interest more. On that, I can agree.

Lucille: Miguel is on screen.

Miguel — The Political Path to Reform

Miguel: I'd like to ask about the political procedure for implementing this reform. In the last decade we saw some steps forward — the public debate in the UK Parliament, the Dutch Parliament, a report from the Irish government, and so on. But since 2020 I haven't seen any major advance, perhaps because every government has been busy with Covid, Ukraine, Gaza, Iran, and so on. Is there a critical mass of elites ready for this reform, or for an open debate?

Michael Kumhof: I've said ever since the original paper that the only time people will listen to this is during, or in the wake of, a major financial crisis — which is why I could write the paper in 2012 and immediately get a big audience. As that receded into memory, the pressure went down. Realistically, the only time we'll get serious attention again is, God forbid, another financial crisis. That said, the whole CBDC development gives me some hope, because central banks have at least dipped their toe into the idea of public money. The idea is no longer so alien to most central bankers. So some progress has been made, and if some CBDC experiments succeed, that will be an argument the next time people are willing to listen to something like the Chicago Plan.

Lucille: Martin, you've had your hand up.

Martin — Targeted Policy and Credit Guidance

Martin: I'm Martin Schmalzried, an independent researcher in economics. My first question concerns targeted monetary policy. I've often compared central-bank monetary policy in addressing market failures, like credit overheating, to trying to kill a mosquito with a sledgehammer. For example, the 1998 Asian financial crisis was caused by overheating in commercial real-estate credit, while the rest of the economy wasn't affected. My understanding is that monetary-policy tools affect all credit lending

rather than targeting the specific sector where overheating happens. How does your model address that? And second: you say credit should be left to private banks, but shouldn't your model consider something like the credit guidance recommended by Richard Werner — direct intervention in guiding how credit is allocated — to prevent overheating in certain sectors?

Michael Kumhof: I'm a macroeconomist, and my model is aggregated — it has one single productive sector — so it doesn't let me address questions like that directly; the model would have to grow from two hundred equations to two hundred and fifty, and it's already quite big, though it does have four different types of lending. Central banks don't only use aggregate tools these days. Macroprudential policy is often targeted at a specific part of the financial sector, so it's not just a sledgehammer. The reason aggregate tools still have to be used is domino effects: if one significant sector gets into trouble, balance sheets collapse, with knock-on effects you can't predict. So the way to address that is to work at the aggregate level to prevent it from happening in the first place. On credit guidance — like the earlier question on the American System — this could be supplementary to my proposal. I'm trying to stay very focused on how to re-engineer the monetary and financial system to make it more resilient and growth-supporting, which leaves out aspects like window guidance. But I have great respect for Richard Werner's work on window guidance, and nothing in my work says you shouldn't do it. In fact, personally, I'd want more of a plan to have the financial sector support real economic activity instead of the FIRE sector, as Michael Hudson would call it. So we have no disagreement — it would be a useful additional tool. I just can't do everything in one paper.

Lucille: Thank you Nicholas.

Nicholas — Regional and Subnational Currencies

Nicholas: Thank you, professor, and great job, Samuel, on organizing this. I'll take the stance of my organization, Monetary Diversity. We gather around sixty NGOs working on alternative monetary systems — local currencies, mutual credit, regional currencies. From a European perspective, fiscal and monetary policy are no longer in the same hands, so we're stuck. Would there be any consideration for implementing a Chicago Plan style of reform at a national or even regional level, including through regional banking?

Michael Kumhof: I'm not sure I understand the question, because my paper built a model of one national economy implementing the Chicago Plan, so that part is answered there. Are you more interested in the regional aspect?

Nicholas: I was wondering whether, for a country like Belgium where I am, we could have a regional plan that does the same process but with regional currencies — subsidiary to sovereign money.

Michael Kumhof: So that basically means a supranational currency, like a mini-euro but in a smaller region than the euro area? There are historical examples — you can think of arrangements in Argentina, for instance. I'm not a great fan; I think it can very quickly get messy. To me, national sovereign democracy requires sovereignty, and an important aspect of that is monetary sovereignty.

Your question is really about the correct level of government at which we should have that sovereignty.

Nicholas: I'm thinking more that, in the process of democratizing money, where supranational entities are rigid and hard to change, there may be more flexibility at the subnational level to integrate such measures.

Michael Kumhof: Wait a minute — now we're going back and forth. I summarized your proposal earlier as a supranational mini-euro, but now you're going subnational. So which one is it?

Nicholas: Subnational, for sure. Think of a US state with a state-owned bank and state-issued bonds putting a subnational sovereign money in place — sovereign in the sense that it's by a political entity, just not at the highest level.

Michael Kumhof: And would it issue US dollars or Kentucky dollars?

Nicholas: Kentucky dollars.

Michael Kumhof: I think that's very problematic and can get very messy. I'm very skeptical, but I don't want to go into detail, because I've never done research on that. Perhaps we can discuss it further another time.

Lucille: Thank you. Ron, you've been waiting.

Ron — Big Tech, Stablecoins, and the Payment System

Ron: I enjoyed your talk very much. The political problem with the Chicago Plan has always been the opposition of the banks. In the 1930s, the banks and the Federal Reserve had basically a monopoly on the payment system. What's changed today is that Google, Apple, and others want in. So it's becoming Apple versus JPMorgan Chase over who operates the payment system of the future. To the extent JPMorgan loses payment-system share to Apple, that pressures it toward equity-based lending. It doesn't guarantee the Chicago Plan, but it changes the dynamics. And there are also states that want to issue stablecoins, which may be worth throwing into the mix.

Michael Kumhof: The more general question — and your last sentence gave it away — is about greater diversity than just commercial banks, whether stablecoins or Apple and the like. It's easier for me to answer on stablecoins, because I'm writing a paper about that right now, arguing against them, as you might imagine. Essentially, I think stablecoins are just banks. Instead of monetizing private credit, those that hold government securities are monetizing government debt — doing what we've been telling central banks not to do for centuries, because it's inflationary. Now the private sector comes around and wants to do the same thing. If stablecoins are essentially just banks whose main assets are safe rather than less-safe assets, the nature of the problem hasn't really changed — unless you regulate them so tightly that they're always one hundred percent backed and can't behave like banks and risk the stability of the whole system. As for Apple, I'm not sure yet how to think about it, but if they offer a payment system, they need to offer a liability that can serve as a medium of exchange —

and the question is what their assets will be. If government securities, it's just a different brand of stablecoin; if loans, it's a different brand of bank. At the end of the day, none of this makes a fundamental difference, whereas the Chicago Plan does, because then it would just be the public sector.

Lucille: Jamal has unmuted. He's on a bus, so no video. Jamal, ask your question, then we'll go to Earl, and Michael can answer.

Jamal — Capital Controls, Demurrage, and Land Rent

Jamal: You've talked in other lectures about needing capital controls to implement the Chicago Plan nationally. Could you instead use a monetary reform like demurrage to prevent the hoarding and capital flight that might occur? And second, related: you've done research with Nicolaus Tideman on recovery from the coronavirus. If we implement this reform and remove rent-seeking from banking, what prevents rent-seeking from simply intensifying in the natural-resource sector — things like real estate?

Michael Kumhof: On capital flight: there's no fundamental reason an economy that implements this reform should suffer capital flight, because the economy would become stronger. But if financial markets decide it's too unfamiliar and they don't like it, they can engineer capital flows against you. A smaller, less powerful economy might then be in trouble and need capital controls. So it would be highly desirable for a large, powerful economy to go first, set an example, and be less vulnerable. On demurrage — Gesell money — I don't want to go there. I've never quite seen the point of it, though maybe that's because I haven't read enough. On real estate and land rent: Michael Hudson's work makes clear that financial rent and land rent are highly complementary. Land rent is probably much larger than financial-sector rent — in my view around twenty percent of GDP, with land values about two hundred and fifty percent of US GDP, and even higher in some countries. Rent means getting something for nothing — here, for sitting on land. In work with Nick Tideman, I've proposed shifting taxation toward land to remove that form of rent. One difficulty is that under the current financial system, this would reduce land values so much that the collateral available to banks would shrink significantly — trouble for the financial sector. That's exactly where the complementarity bites. If you do both the Chicago Plan and higher taxes on rent, you can raise taxes on rent after rents have ceased to be the major collateral for bank credit creation. Otherwise you have to disentangle the two, which is difficult.

Lucille: Earl, go ahead.

Earl — Werner, Small Banks, and Greenbacks

Earl: I totally endorse Michael Hudson's comments, and I was very impressed by Michael's presentation, which I first saw about twelve years ago in Chicago. I'm drawn to Richard Werner's description of democratic control of lending — creating new money but ensuring it's for productive purposes, and ideally for things that are sustainable, which would exclude purposes like war. Doing that under democratic control would, of course, require restoring more democratic systems than we

currently have in, say, the United States, where we're dominated by the influence of billionaires. Werner points out that China does this, the Sparkassen in Germany do it, the Bank of North Dakota does it. That seems a more practical and effective way to get money into local, productive projects that create jobs and are more decentralized and democratically controlled.

Michael Kumhof: There are two aspects: democracy, and small banks. On small banks — I shared a stage with Richard in Hungary recently, and I have no disagreement that small banks can be very effective at getting credit where it ought to go. The German Sparkassen and Volksbanken have done that. But they keep merging. I've banked with a Volksbank since childhood, and it has merged upward and upward and is becoming super-regional. So small banks aren't an effective defense on their own, because the pressures run the other way. And in many countries, like the UK, there's no tradition of small banks to begin with — creating that from nothing is a taller order than the Chicago Plan itself. Crucially, my proposal doesn't rule out small banks. The credit banks could be a few large banks or many small ones — that's a micro-level question, and I'm a macroeconomist. Promoting small banks, window guidance, national development banks — these can all be grafted on. They're important in practice, but they don't take away from the central proposal: moving from a debt-based to a money-based system at the heart of it. With a lot of monetary-reform proposals, it's easy to lose yourself in those details. My focus was the macro infrastructure — what makes the system work better. Once that's right, we can do all these other things too. There's no contradiction.

Earl: What's wrong with the Werner program? I agree you need large banks for some of the largest lending, but decentralizing most everyday lending — creating new money for productive purposes, as much as you need, and avoiding inflation because productive lending matches supply with demand — seems like an easier system to set up and regulate than the plan you've described.

Michael Kumhof: Not in a country where there's no tradition of these small banks, because then you'd have to create the whole tradition and microcosm. And again, my proposal doesn't rule out small banks: the credit banks could be a few large banks or many small ones. That's a micro-level question, and I'm a macroeconomist. As has come up at various points today, there are ancillary proposals you could adopt — promoting small banks, window guidance, national development banks — and they can all be grafted on. But none of that takes away from the central proposal: going from a debt-based to a money-based system. No matter how many micro-banks do the credit banking, that remains the heart of it. With a lot of monetary-reform proposals, it's very easy to lose yourself in those details. They matter in practice, but my focus was the macro infrastructure that makes the system work better. Then we can do all these other things — window guidance, encouraging small banks, and so on. There's no contradiction.

Earl: Does your proposal include a national government producing greenbacks, as under Abraham Lincoln — printing money and spending it into the economy for productive purposes?

Michael Kumhof: It could, but it's not that simple. You don't want to print money to spend and say "one hundred percent of my spending will be financed by printing money" — that's a recipe for financial instability. In my proposal, the central bank sets an interest rate it pays on public money, and an

interest rate at which it will create additional public money. Doing so earns the central bank significant profits, because its liabilities are much cheaper than its assets, and it transfers those profits to the fiscal side regularly. Then the elected representatives of the people decide what to do with them — spending it into the economy is fine, lowering taxation as in my proposal is fine. But that's a decision for elected representatives, not the central bank.

Closing

Samuel: I think we should end. We're forty minutes over time, and we're hugely thankful, Michael, for staying so long and answering every question. It's been a true pleasure to have you here. And it's amazing that around one hundred and eighty people are still with us — almost half the audience stayed this long. Let's end there for today. Many thanks to all of you. We hope to see you at another webinar, and we'll send out the recording soon. There are many interesting questions still in the chat that we couldn't answer; we'll try to address at least some of them by email in the future.

Michael Kumhof: I hope you can do that, because I have a number of projects on the go.

Samuel: Yes, Michael, we'll do it for you.

Lucille: On behalf of all the US and North American citizens in the room, Michael, we welcome you to the United States of America. We're sorry for the state of the country you decided, for whatever reason, to join — but we look forward to working together to change our money system for the good of all, the good of the planet, and the soundness of our exchange relations.

Michael Kumhof: Thank you.