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The Godley–Tobin Memorial Lecture

Neoliberalism, Keynesian economics, and responding to today's inflation*

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Neoliberalism – the idea that markets, left alone, are efficient and the best way to achieve prosperity – has been the predominant ideology of the past 40 years. The theory has been referred to as *market fundamentalism*, the late twentieth and early twenty-first century version of *laissez-faire*. It was based on vested interests – its policies enriched a few – and simplistic models that ignored problems of imperfections of competition and information, externalities and public goods, and incompleteness of markets. Neoliberalism argued for small government, with limited regulation, and privatization of everything that could conceivably be privatized, even prisons (but stopping short of privatizing the military[1]). It typically ignored matters of social justice or the distribution of income, but its advocates, not surprisingly, worried about the adverse incentive effects of progressive taxation and so argued for, at most, limited redistribution.

There was a certain irony in the Right's vehement and persistent opposition to Keynesian ideas: Keynes had saved capitalism from capitalists, showing how limited intervention by the government could enable a capitalist economy to achieve full employment, which was so crucial at the time of the Great Depression when the deep failure of the market was evident.

Why, then, was there such strong opposition? Because he provided a rationale for government. The market had failed and government intervention could save the economy. But that, the Right feared, would open the door to further government intervention.

There was another strange aspect of Neoliberalism. Neoliberal policies were often, even typically, disjointed with the Neoclassical/Neoliberal models that were used to support them, and both were incongruent with economic realities. The standard models (invoking the representative agent) said debt didn't matter, that it was just money that some individuals owed others, and, in the representative agent model, money that the left pocket owed the right. Yet 'Neoliberal' policies are often focused on debt – with the Right having an obsession with government undertaking excessive debt.

Some models (e.g., Real Business Cycle models) denied the existence of unemployment. Others (especially many of the early New Keynesian models) blamed the victim – wage rigidities were the central deviation from the standard competitive model ensuring full employment. The obvious policy implication was to lower wages

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1. The extensive use of Blackwater and other contractors in Iraq showed that even the military was partially privatized. The actions of these contractors were often contrary to broader US national interests.

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by getting rid of minimum wage legislation or weakening unions, even in an economy marked by high inequality. And there were other variants of the New Keynesian models focusing on price rigidities (menu costs) which, with real costs of adjustment being so much greater than those associated with nominal price adjustments, simply lacked plausibility.

All of these models sought an explanation for fluctuations in external shocks. The global financial crisis of 2008 and most other downturns are in one way or another the result of *endogenous* shocks – excessive exuberance in the stock market and excessive expansion of credit.[2]

There was a final, curious aspect of Neoliberalism: it became fashionable just as its main doctrines were being discredited. A host of economists, including me, showed that even a little bit of imperfection of information implied that competitive markets were not Pareto efficient.[3] Incomplete markets – and risk markets are inherently incomplete in a dynamic, innovative economy – also meant that the economy was not in general Pareto efficient (Greenwald and Stiglitz 1986). Indeed, not only was the first welfare theorem overturned – Adam Smith's invisible hand was shown to be invisible because it wasn't there. The presumption that markets were efficient was reversed: now there was a presumption that markets were not efficient. The assumption that markets were naturally competitive was also undermined, and there was increasing evidence of growing market power in key sectors of the economy.[4] Behavioral economics showed that individuals were far less rational than standard economic theory presumed.

1 THE DISILLUSIONMENT WITH NEOLIBERALISM

Today's disillusionment with Neoliberalism, however, has less to do with its lack of intellectual foundations or the apparent inconsistencies between the models and the policy prescriptions. Rather, it is a result of the failure of Neoliberalism to live up to what its advocates promised: faster and more stable growth, which would result in the increased wellbeing of everyone through some mysterious process of trickledown economics, if we only left matters to the market and the workings of the competitive process.

Not surprising that neoliberalism didn't deliver

Neoliberalism didn't deliver. Rather, it was associated with lower growth than during the pre-Neoliberal era; and what growth did occur went to those at the top of the economic ladder.[5] Predictably, in the advanced countries trade liberalization between advanced countries and developing countries led to increased inequality.

Financial liberalization led to the deepest downturn in three-quarters of a century – again the predictable outcome of deregulation, showing that unfettered markets were not only inefficient but also unstable.

All of this was predictable and predicted. And it had strong political consequences. There was a backlash against financialization and globalization. Most importantly, the

2. These and other criticisms of the prevailing macroeconomic models are set forth at greater length in Stiglitz (2011, 2018).
3. These ideas and the underlying references are set forth in Stiglitz (2002, 2009, 2013).
4. A theme I have taken up more expansively in Stiglitz (2019). See also the references cited there.
5. See, for instance, Stiglitz (2012) and Piketty (2014) and a large subsequent literature.

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growing inequality provided a fertile field for demagogues, and in every country there was an ample supply of would-be authoritarians ready to till this field. Moreover, too often, rather than blaming the flawed policies based on Neoliberalism for growing inequality and slowing growth, the demagogues doubled down on Neoliberalism, while typically turning to nationalism – blaming outsiders for the observed failings of the economy.

Pandemic showed the key role of government

The decline in Neoliberalism is related not only to its failure, but to the successes of government, whose role and competence Neoliberal ideology denigrated. In every crisis, individuals turn to government, to collective action, showing that what we can do together may be much greater than what we can do individually. This was especially true during the COVID-19 pandemic, where government action saved us in several distinct ways.

In innovation. In record time vaccines were developed with strong support from government, based on earlier basic research that had created the mRNA platform, which again was almost entirely funded by government.

In addressing public health externalities. COVID-19 was a highly contagious disease, so taking actions that reduced the spread of the disease was critical. Not surprisingly, places where there was more trust in government, and greater understanding of how individual actions such as wearing masks or maintaining social distancing affected the spread of the disease, did a better job of containing the disease. In the same vein, countries that had done a better job before the pandemic of creating societies with smaller inequalities in health and better systems of social protection had a better record in combatting the pandemic.

In sustaining the economy. The pandemic was a major shock to the economy, a shock both to demand and supply. Without government intervention, there would have been major downturns in those countries most affected – downturns far worse than what they experienced. Countries where the government took strong actions, such as the US, had a stronger recovery with GDP more quickly returning to pre-COVID levels. (As this paper goes to press, some countries, namely the UK and Germany, still have not fully recovered; and the US has exceeded pre-pandemic levels by the largest margin among advanced countries[6]).

Keynesian policies worked – everyone became a Keynesian

Governments in advanced countries undertook unprecedented actions – in the US, spending an amount in excess of 25 per cent of GDP. The money was enormously effective in protecting the most vulnerable – indeed, in the US, it was so well targeted at the bottom that childhood poverty was reduced by 40–50 per cent.

The 2008 Great Recession showed that fiscal multipliers could be large (contrary to conservatives, who cited results on Ricardian equivalence, which suggested that government debt finance spending would be matched by reductions in private consumption, in anticipation of the future taxes that would have to be levied to pay back the debt[7]). In the pandemic, not only were the fiscal expenditures very effective in sustaining the macroeconomy, but as in 2008, fiscal policy was far more effective than monetary policy.

6. See, e.g., https://www.ft.com/content/9d6de7b3-a31d-465b-b61b-e0a0f81ceb4a.
7. This is another instance in which the predictions of the standard model were markedly off mark.

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Aspects of Keynesian economics (as developed further by Godley and Tobin) proved especially relevant

To the extent that monetary policy was relevant, it was about more than just lowering interest rates, and the limitations of monetary policy arose not just because of the zero lower bound. (Lowering interest rates in the Great Recession from 4 per cent to zero did little to stimulate investment. Why would one think that lowering it to −1 per cent or −2 per cent would make much difference? Of course, making the interest sufficiently negative would have had an effect, but doing that would have required massive subsidies to the banking system and would be more akin to a fiscal policy than a monetary policy, and was beyond anything contemplated.)

In fact, the low interest rates and even quantitative easing proved largely irrelevant – as argued more generally by Stiglitz and Greenwald (2003). What mattered was access to finance in the presence of extensive credit rationing (Stiglitz and Weiss 1981) and the broader impacts of monetary policy on the prices of the range of assets, including equity, as Tobin (1969) and Tobin and Brainard (1977) argued.

But the Fed and US government did a poor job in thinking deeply about the allocation of credit – both who should get it and how it should be done. The government delegated the responsibility of allocating credit to the banks. And the banks did a particularly poor job – their best customers were first in line, not those who were most vulnerable and needed the funds the most – and were unjustly rewarded.

2 EXPLAINING WHY STANDARD MACRO MODELS WERE NOT HELPFUL IN RESPONDING TO THE PANDEMIC

In this section, we explain the key assumptions in the standard model that made it of limited value in addressing the pandemic shock. First, the pandemic was a large *sectoral* shock, not a simple aggregate shock. Second, while much of standard economics (especially representative agent models) ignores distribution, the pandemic had large distributional consequences and these were relevant for macroeconomic behavior. Third, most of the shocks that we've experienced in recent decades are highly idiosyncratic, with both the consequences and duration hard to predict; they are far different from the technology shocks that are at the center of standard macro models, which are drawn from a well-defined and known probability distribution. The pandemic shock was unprecedented – with great uncertainty about its duration, its consequences, and the magnitude and effectiveness of government interventions. There is deep uncertainty, and this drives behavior. Fourth, while standard models ignored credit rationing and other problems arising from asymmetric information, credit rationing turned out to be critical. Fifth, while standard models focus on the adverse effects of wage rigidities, real wages, and in some sectors and places even nominal wages, fell during the pandemic; and almost surely, greater wage flexibility would have exacerbated the pandemic downturn. Finally, standard models assume perfect competition. As we shall see, the post-pandemic inflation was marked by large increases in mark-ups, reflecting the temporary increases in market power associated with the breaking of supply chains.[8]

8. Not surprisingly, this theory attributing inflation to high and increasing mark-ups has been criticized by those wedded to the standard competitive or Dixit–Stiglitz models. For instance, Conlon et al. (2023) argue that there is little relationship between rising prices and rising mark-ups at the industry level. But as they note, the absence of correlation could be because firms 'have not passed along declines in marginal costs to consumers'. Moreover, the lack of

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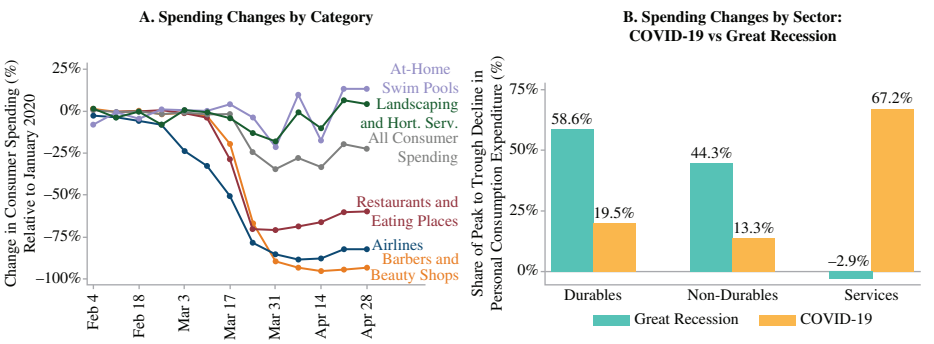
Sectoral issues

The pandemic was clearly a sectoral shock, affecting those in the service industry the most (in particular, sectors like restaurants, hotels, and airlines). Indeed, some have described the pandemic downturn as the first service sector recession (see Figure 1). But the shocks leading to the Great Depression and Great Recession were also sectoral shocks (Gatti et al. 2012). In each, there were large changes in relative prices, and such changes undermine the ability to use a simple aggregative model. This is especially so because factors do not move quickly across sectors, so differences in factor prices (e.g., wages) may exist for an extended period of time – the economy may operate well below its production possibilities frontier. These *real* rigidities (themselves explicable in part by imperfections in capital markets) are as or more important than the nominal wage and price rigidities that have been the center of so much attention in the macroeconomic literature.

Sectoral shocks require sectoral responses – the standard 'aggregate' tools (such as raising interest rates) are too blunt. A well-designed sectoral response is especially important because of the importance of macroeconomic externalities (the macroeconomic manifestations of the pecuniary externalities in the presence of market imperfections explored by Greenwald and Stiglitz 1986). Weaknesses in one sector get reflected in weaknesses in other sectors.

We saw that dramatically in the Great Depression, when weakness in the agricultural sector led to weaknesses in the urban manufacturing sector. In the pandemic, weaknesses in the service sector have been translated to weaknesses in other sectors.

(Relatedly, the impacts of the shocks were felt differentially in different locations, as is the case with many of the shocks confronting the economy. Imperfect mobility across locations as well as across sectors reinforces the observation made earlier that the economy operates well below the production possibilities curve, as it is usually



Source: Chetty et al. (2020).

Figure 1 Effects of COVID-19 on spending by sector

correlation *in general* and at the industry level does not tell us about the specifics of the particular sources of inflation that we have delineated. In those subsectors, there still may be a correlation. Moreover, even if (and that's a huge if) it is not the market power that is the primary causal factor, the empirical reality is that rising profits contrasted with lower growth in wages have led to a particularly regressive redistribution.

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defined *assuming* perfect mobility, and this limits the ability to use standard aggregative models.)

Distributional issues

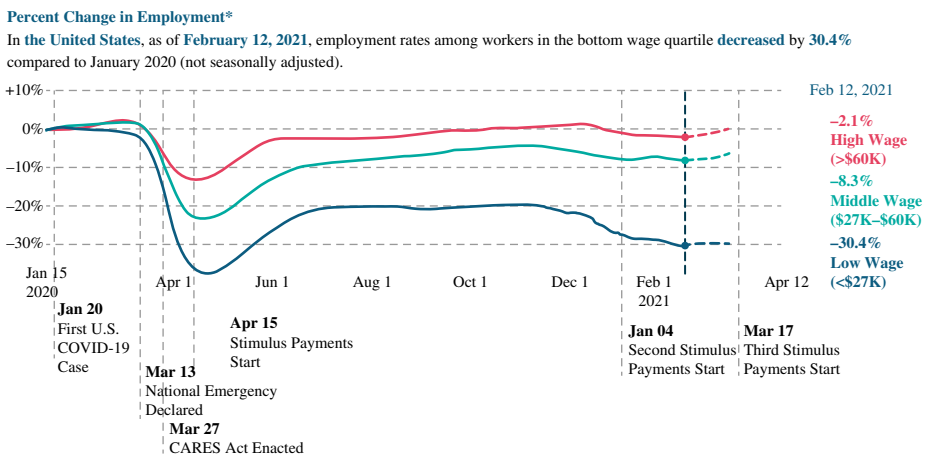
COVID-19 exposed and exacerbated inequalities in society. There were large differences in impacts of the disease (see Figure 2 for the differential effects on employment), and large differences in the impacts of assistance – the rich saved much of what they received; the poor spent it (see Figure 3). There were thus large differences in their marginal propensities to spend. Models that ignore this are leaving out something important.

Targeting money to the poor not only protected the most vulnerable, but also was most macroeconomically effective. Of course, we should and could have done a better job of targeting the assistance that was provided – politics aside. (But politics cannot be put aside. If Trump had had his way, we would have done a much poorer job of targeting.) But time was of the essence, and the judgment was made that it was better to have timely assistance even if not perfectly targeted. I believe that was the correct decision.

But the failure to target did not have adverse effects claimed by some (such as Summers) – it did not give rise to the post-pandemic inflation, as I'll explain later in this lecture. The reason was the high level of aggregate savings, itself not a surprise. Given the level of uncertainty, there was a high level of precautionary savings among those who could sustain themselves (higher-income individuals). One needed to take that into account in deciding the size of fiscal stimulus required to sustain the economy. The US did a better job than most other countries.

Credit rationing

There is a reason for the differential effects of subsidies given to the rich and the poor. Those at the bottom had a marginal propensity to spend that was very high because

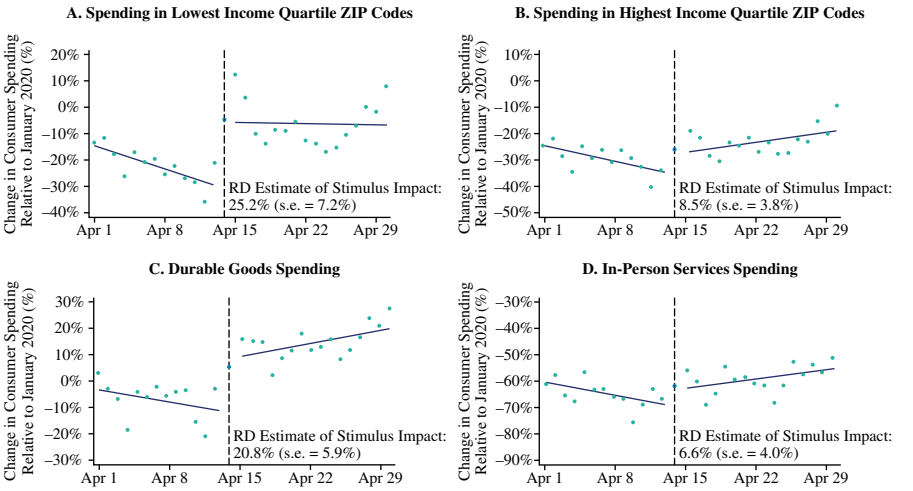


Source: Opportunity Insights Economic Tracker developed by Chetty et al. (2020).

Figure 2 Differential impacts of COVID-19 on employment

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Source: Chetty et al. (2020).

Figure 3 Effects of COVID-19 on spending by income and category

they were credit-rationed – an aspect of capital markets that is critical for understanding macroeconomics but was denied by those who believed in perfect markets in spite of advances in theory and evidence. Poorer Americans were constrained in their spending by their cash flow. Both the rent moratorium and the financial assistance they received were critical in sustaining their spending.[9] The same was true for many firms, which without access to credit (some of which would be forgiven, so what was officially a loan was essentially a grant) would have had to cut back on employment and investment. States and localities, too, live in a world largely based on balanced budgets, and the cutbacks in revenues that would have resulted from a decrease in GDP that would have occurred in the absence of broader fiscal support would thus have necessitated their cutting back on their expenditures, exacerbating the downturn.[10] (It would have been difficult if not impossible to raise taxes in the midst of the pandemic.)

Wage rigidity

Wage and price rigidities – which feature prominently in modern macroeconomics of the conventional sort – were not the central problem in the pandemic recessions, as I have noted, and making wages and prices more flexible would not have been an important part of the solution. Indeed, it would have been counterproductive, because it would have weakened aggregate demand. Fortunately, no government undertook this strategy in the heat of the pandemic.

9. The termination of the rent and loan moratorium served as a counterweight to the possibility of the expansion of consumption as a result of the buildup of cash balances. Indeed, since rent and loan payments were simply postponed, a correct analysis of 'cash balances' would have deducted the increases in liabilities.
10. As it turned out, because of the strong fiscal response, the downturn in GDP was limited, and accordingly, the fall in tax revenues was limited, in some cases more than made up for by federal grants.

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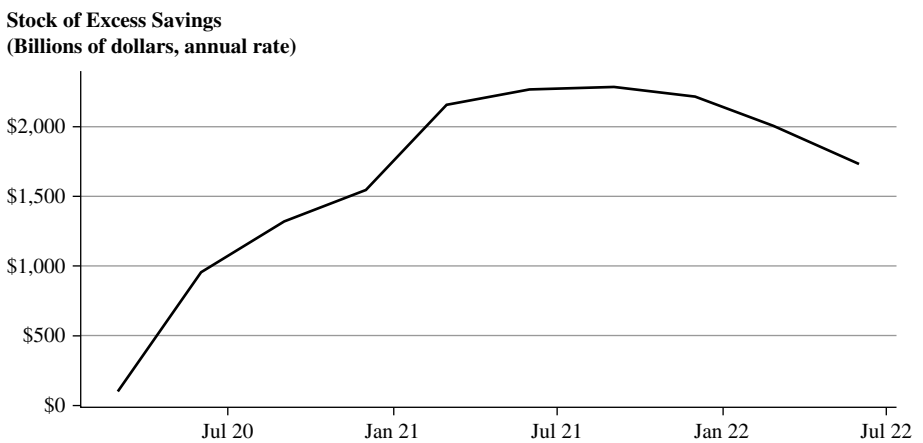
Deep uncertainty[11]

At the center of the failure of the standard models, however, was the deep uncertainty associated with the unprecedented shocks the economy experienced. Here, the Knightian distinction between risk and uncertainty is crucial. Standard theory is based on individuals having rational expectations in a world with shocks with well-defined distributions. The economy can be described by a stationary stochastic process. But with Knightian uncertainty, one can't simply assume stationary stochastic processes. We hadn't in modern history had anything like the shock of the pandemic, the 2008 financial crisis, Russia's invasion of Ukraine, or the election of Trump, with his tearing up of international agreements. In each case, we had no way to know the depth or duration of the shock.

Uncertainty, not intertemporal substitution, is key in discussing the response of the private sector, whether households or firms. The focus should have been on understanding precautionary savings and the impact of uncertainty of investment, but that has been given short shrift.

The permanent income hypothesis

The large increases in 'excess savings' have been spent down only gradually, as Figure 4 shows, and this helps explains why high fiscal spending did not have the inflationary effects anticipated by the critics of the American Rescue Plan (ARP). This is no surprise, either. The permanent income hypothesis (or any model involving smoothing consumption over time) predicted that this would be so. (This provides another example of the incoherence of key Neoliberal policy stances: the reason that individuals might not smooth consumption is that they are credit-constrained – contrary to the underlying assumption of well-functioning markets).



Source: Excess savings during the COVID-19 pandemic, Federal Reserve (Aladangady et al. 2022).

Figure 4 Stock of savings during COVID-19

11. For a more extensive discussion of the implications of deep uncertainty for macroeconomic policy, see Orszag et al. (2021).

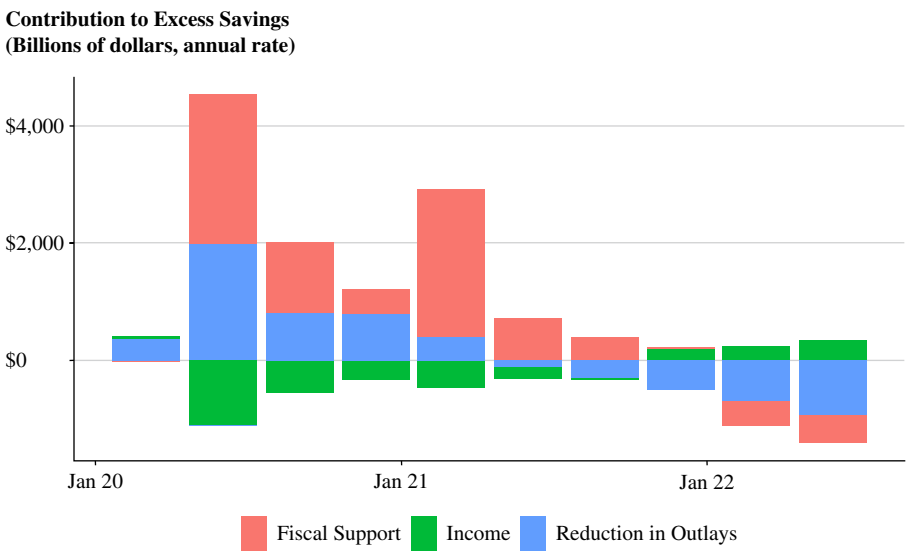
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Additionally, individuals reduced their spending, partially because of the direct effect of the pandemic (traveling, for instance, was less attractive),[12] and partially because of the precautionary motive (Figure 5).

Much of the decrease in excess savings was to pay taxes – effectively a transfer from the private sector to the public sector, which was, if anything, deflationary (see Figure 6). This too was predictable, given the emergency actions taken in 2020 to lighten the immediate tax burden.

The deep uncertainty also depressed investment. And, importantly, the deep uncertainty almost surely reduced the responsiveness of investment or consumption to changes in the interest rate. In light of the deep uncertainty, a decrease in the interest rate by even a few percentage points would have a limited effect in inducing firms to undertake more investment or households to undertake more consumption, especially of durables. Better to wait to see how matters resolve, whether the worst scenarios are avoided, than to undertake heavy commitments now. There is an option value in postponing such commitments; in the presence of deep uncertainty, individuals wish to maintain their flexibility.[13] Thus, in such circumstances, one should not expect monetary policy to be very effective.



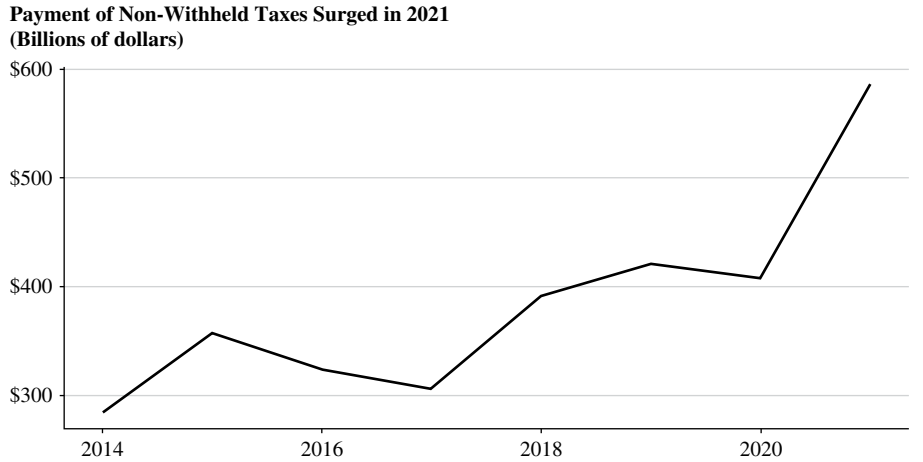
Source: Excess savings during the COVID-19 pandemic, Federal Reserve (Aladangady et al. al. 2022).

Figure 5 Contribution to excess savings

12. Individuals who enjoy travelling, for instance, would naturally postpone travelling until after the pandemic. The pandemic changed the intertemporal rate of substitution between travelling during the pandemic and traveling after the pandemic. In the standard macroeconomic models, any additional wealth that resulted from this constrained spending would be spent only gradually over the rest of the individual's life – it would not lead to any significant inflationary pressures.
13. See Kreps (1979).

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Source: NIPA Table 3.4, Bureau of Economic Analysis, and Stiglitz and Regmi (2023).

Figure 6 Payment of non-withheld taxes surged in 2021

Responding to unprecedented shocks

The deep uncertainty not only affected how households and firms behaved, it should have been central in determining the policy response.

Even though the shocks were unprecedented, we do know something: if there is high unemployment, fiscal policy is likely to work. Automatic stabilizers can be very effective.

The challenge is to identify the idiosyncratic aspects of any shock, to differentiate between transitory versus permanent effects, and if transitory, to ascertain how long the effects will last.

Refuting standard presumptions

COVID-19 reinforced insights from the 2008 financial crisis in refuting several presumptions that had come to dominate during the era of Neoliberalism. We've already discussed how it showed that fiscal multipliers are large and fiscal policy could be timely and effective – more effective, and even more timely, than monetary policy with its long and variable lags.

It also provided new insights into labor supply effects, in particular to the disincentives of UI (unemployment insurance). There were large variations in benefits across states providing the opportunity for making clear inferences. Contrary to right-wing rhetoric, incentive effects were very low. The seeming labor shortage that appeared as the economy recovered was *not* a result of excessively generous unemployment benefits.[14]

But there were worries that large separations of individuals from firms might have longer-run adverse consequences.[15] These worries proved correct. It has taken a long

14. See Coombs et al. (2022).
15. See, e.g., Stiglitz (2020).

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time for labor force participation to return to more normal levels. And the large number of separations may account for some of the aberrations in the Beveridge and Phillips curves – transitory effects ignored by those who argued that we needed large increases in unemployment to bring down inflation. Europe, New Zealand, and others did a much better job in keeping workers attached to firms, which kept the unemployment rate low. There were other benefits of this alternative model. The unemployment insurance authorities in the US were not equipped to handle the surge in applications, resulting in many individuals not getting any benefits for a while. In the US, this alternative model was even more important than in other countries, because so many rely on employer-provided health insurance. Individuals were left without health insurance just at the time it was vitally needed.

3 RESPONDING TO THE POST-PANDEMIC INFLATION

As inflation soared in the post-pandemic recovery, policy makers faced the difficult task of determining what to do. Answering that question in turn required assessing the source of the inflation and the extent to which the pandemic had affected underlying macroeconomic relations – and whether whatever shifts seemed to be observed in the short run were transitory. Policy responses also drew on prior beliefs about economic structure, e.g., the role of expectations and the nature of wage–price dynamics. Conventional economists – including too many central bankers – responded to the post-pandemic inflation with a kneejerk reaction. Following Friedman's doctrine that inflation is always a monetary phenomenon, they raised interest rates. But from what we have already said, an appropriate response needed a deeper analysis, and in particular, an understanding of the underlying drivers – the disturbances to the economy – that were causing the increased inflation.

Unprecedented disturbance: two alternative hypotheses about the duration of effects

The analysis should have begun by realizing that the pandemic represented an unprecedented disturbance, and accordingly, it would be hard to predict short-term and long-term consequences. This deep uncertainty affects the behavior of both firms and households, and, as we have already explained, should have been critical in determining the policy responses.

One natural hypothesis was that the economy would *largely* return to prior behavior – but one simply couldn't know how long it would take.

Some argued, to the contrary, that the economy had been deeply scarred, and it would not (for the foreseeable future) be the same. There were those who felt that the trauma had led to soul searching, inquiries into the meaning of life, and this would lead to a permanent shift downward in labor force participation, especially in low-paid areas of work.

There was no disagreement that there would be some changes. Video conferencing was here to stay, the five day in-office work week would be a thing of the past for those who could work from home, and to some extent, Zoom meetings would replace face-to-face meetings. But the real question was about the impact on the fundamental macroeconomic relationships, such as the Phillips curve and Beveridge curve. Some, like Summers, claimed that, while the high unemployment rate during the post-2008 era had not resulted in disinflation (as the Phillips curve might have suggested), there had been a permanent

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shift to the Phillips curve, so that *only* high unemployment would bring disinflation.[16] And even then, it would take a long period to do so. Such arguments seemed to have influenced the Fed, which seemed obsessed with increasing the unemployment rate as the necessary and sufficient condition for reducing unemployment.

It was perhaps natural that the standard macroeconomists had more faith in the stability of the economic relationships upon which they relied so much – in spite of the evidence to the contrary[17]; and that economists rooted more in microeconomics – and especially in microeconomics outside the competitive paradigm – would be more skeptical, especially given the sectoral shifts and shocks of the magnitude associated with the pandemic and war in Ukraine.

While there are many nuances in the positions taken by different economists, for simplicity we lump them into the 'conventional macroeconomists' and the 'Structuralists' (akin, perhaps, to the Structural macroeconomics of Latin America). Ironically, both laid claim to deriving their work from micro foundations, but one, those assuming a single sector, took out the heart of microeconomics from micro foundations, that is, aspects of economic behavior arising from the interactions of heterogenous individuals and firms working in different sectors, especially behavioral responses to unprecedented shocks that affected different individuals, different sectors, and different firms differently.

The debate about the sources of inflation

There was simultaneously a debate about the source of the increase in inflation, with one group arguing that the inflation was, for the most part, standard – excessive aggregate demand, this time caused by excessively expansionary fiscal policy, which needed countervailing monetary policy to tame it. The Administration had pushed for an excessive rescue package after it took office (The American Recovery Plan), so it was claimed, and it was this that was to blame. (The political overtones were obvious, though, somewhat surprisingly, some of the most forceful articulations came from the economic advisers to President Obama, whose record in guiding the economy in the recovery from the 2008 crisis was far from stellar. See, e.g., Stiglitz (2010)).

Another group (to which I belong) saw the inflation as largely arising from pandemic-induced supply-side shortages and demand shifts[18] – not from an excess *aggregate demand.* Addressing these through policies aimed at aggregate demand would be a mistake. The magnitude of the decrease in aggregate demand – and therefore of societal wellbeing – required to alleviate sectoral imbalances could be enormous. Monetary policy, in particular, is a blunt instrument, with differential effects on different sectors. It could, and did, effectively target the wrong sectors. It would be far better to have more targeted responses.

16. See Stein (2023).
17. The Phillips curve had, for instance, exhibited so much instability that many argued that it was not a reliable tool for macro policy. See, for instance, Storm and Naastepad (2012).
18. In addition, there were demand shifts that arose from the supply shortages. Some studies attempting to assess the importance of demand versus supply factors looked for sectors where output increased as prices increased – something that would only occur in the presence of an outward shift in that sector's demand curve. But identifying the existence of such sectors and assessing their importance didn't answer the question at hand: a sector's demand curve could shift out even the presence of a deficiency in aggregate demand because of a change in the relative preference for different goods or because of substitute good shortages.

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This group also thought that the natural workings of the market would eventually alleviate these supply-side–driven gaps, setting in motion disinflationary forces. How fast that would occur depended on the confidence one had in the market economy.

It was perhaps not inevitable or pre-ordained that there would be a high correlation between those who held the view that there were stable macroeconomic relationships, and those who believed these had now encountered a one-for-all change (at least for the time being), implying high unemployment would be necessary to bring down inflation, e.g., Summers; similarly, there was a strong correlation between the Structuralists of the previous section and those who thought, by and large, the economy would return to the preceding trends.

Designing policy in the midst of deep uncertainty

Because this was an unprecedented shock, there was no way one could be *sure* which of the alternative hypotheses was more likely to be correct. Accordingly, one was necessarily making decisions about policy in the midst of deep uncertainty. But an appropriate response required: (i) thinking carefully about what the *evidence* said about the likely drivers of the inflation and tailoring policy to respond to the likely cause; and (ii) thinking carefully about hysteresis effects and side effects. Will there be a long legacy of adverse effects if one's judgments are wrong? Or will the policy have 'co-benefits' that, even if the policy is not optimally designed to respond to the inflation, are still welfare-enhancing? In preceding sections, for instance, we've described how raising interest rates too far and too fast can have long-lasting adverse effects on growth and inequality. That should make one particularly cautious in using that instrument in the face of the deep uncertainty that I've described.[19]

What the sectoral data show

Our measures of inflation are nothing more than the average of the rates of inflation of the various commodities and services which we consume. Macroeconomists are wedded to thinking with models with a single commodity – and in such a world inflation has to arise from an excess of aggregate demand. But our earlier analysis emphasized that macroeconomics has paid insufficient heed to sectoral shocks. 'Normally' relative prices don't change much, so there is little harm done by thinking about the aggregate. But the pandemic, as we have said, was not a normal perturbation. It had massively different effects on different parts of the economy, and anyone trying to assess the sources of inflation needs to begin by looking at the sources of inflation.

In the beginning, automobiles played a disproportionate role. It wasn't that we didn't have the factories or the labor or the know-how. It was the lack of chips – the companies hadn't ordered them, and it would take a considerable amount of time to get them.[20] There were a host of other related supply chain problems, in autos and elsewhere, that gave rise to inflationary pressures.

An unexpected shortage of one commodity can, of course, give rise to unexpected shortages in others, as demand shifts and short-run supply inelasticities

19. This is an aspect of what is sometimes referred to as instrument uncertainty: we don't fully know the consequences (both positive and negative) of the actions undertaken.
20. *Ex post*, it was clearly a planning error. Whether *ex ante* it was a bad decision is harder to ascertain.

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and rigidities – aggravated by the pandemic – impose impediments to a quick expansion of production.[21]

Later on, a significant part of inflation was attributable to housing. It was not as if there was an increase in the aggregate demand for housing – after all, under Trump's leadership, over a million Americans had succumbed to COVID-19 and migration was significantly down from what had been projected before the pandemic.[22] Normally, such an unexpected decrease in population, a key driver in the demand for housing, would have led to a decrease in the cost of housing. But the pandemic had induced a massive shift in the pattern of demand – a decrease in the demand for housing in urban areas, an increase in the demand in areas like Southampton and the Hudson Valley in New York. But markets respond asymmetrically, with increases in prices where there is excess demand being large, decreases in prices where there is excess supply being small, so that even when there is a decrease in *aggregate* demand, there can be inflation.

Unfortunately, the pandemic was not even over when Russia invaded Ukraine, sending energy and food prices soaring. Again, it was a supply-side shock – not excess demand – that caused these dramatic increases, which occurred long after Biden's fiscal support.

On top of these 'forces' were several idiosyncratic shocks. Many places were affected by climate change, decreasing food production, and a bird flu variant that had a devastating effect on the supply of eggs. But now, even egg prices have normalized.

Market power[23]

The pandemic supply-side interruptions and the deep uncertainty about the future had one more consequence: firms had more market power and they could exercise it. The standard theory is that if a firm raises price above the competitive level, others rush into to supply the good or service. But that can't happen in the presence of an array of supply-side constraints.

Moreover, firms balance the benefit of exercising their market power now by raising prices, with the cost, the loss of customers as a result of the induced search for alternative suppliers, but an increase in uncertainty, like an increase in the interest rate, puts greater weight on the present, inducing price increases. Thus, one should have expected a period such as the post-pandemic recovery to be characterized by large markup, but that these wouldn't be sustained in the post post-pandemic world unless the economy was jolted into more mergers and jolted the anti-trust authorities into new laxities at a significant scale.

Conventional macroeconomists didn't like this emphasis on market power because their models assumed no market power or at least no variability of market power.

21. This shift in demand helps explain why some of the methodologies commonly use to estimate the relative importance of demand versus supply in inducing inflation are misguided. The inflation in the sector where demand has been increased *because of a supply shortage in automobiles* will be wrongly attributed to an excess of aggregate demand.
22. There is one possible countervailing force: there may be an increase in the demand for square footage from individuals who could work remotely.
23. For a broader discussion of market power and markups in the context of the pandemic, see Konczal and Lusiani (2022) and Korinek and Stiglitz (2022). This is, of course, in addition to the secular rise in market power discussed in Stiglitz (2019), for which Philippon (2019) and De Loecker et al. (2020) have provided further evidence.

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To be sure, there were temporary scarcities, such as of oil, and the price of oil would then increase relative to cost. Technically, there was an increase in markup, but the price of oil was determined competitively and when the shortage was alleviated, markups would come down to the competitive level. In reality, the price of oil was determined by OPEC in response to its judgment of its market power – the supply of alternative non-OPEC energy and the elasticity of demand – which could be affected by fear, fear that prices might be even higher tomorrow. OPEC, too, took advantage of the situation to exert its temporary increase in market power. New Keynesian DSGE models employed the Dixit–Stiglitz model, with its implicit assumption of fixed mark-ups.

To the Structuralist, the marked increase in market power was not sustainable, though as with the supply shortages, no one had a precise crystal ball to see how long it would last. But what that meant is while prices had increased faster than wages in the earlier years of the pandemic, just the reverse would occur later, so that the standard assumption that wage increases would necessarily translate into price increases was wrong and it would have been sad for the economy were it true. It would have meant that the pandemic and the post-pandemic inflation had permanently lowered real wages. It was bad enough that during the pandemic ordinary workers were more likely to die from the disease directly (not a surprise since they were in poorer health, given the country's abysmal healthcare system) and they had high losses in income. Then in the post-pandemic inflation, wages didn't keep up with prices – reflected in the increased mark-ups just discussed and implying a lowering of real wages. But after this lowering of real wages, the Fed, in effect, seemed to say that *to prevent inflation, wage increases had to remain low – implying real wages had to remain low.* Workers were asked to bear even more of the costs of the pandemic, both through low wage increases and high unemployment. And all of this was justified on the grounds that wage increases *had* to be translated into price increases, and only high unemployment could mute wage increases. But neither hypothesis had strong economic justifications – especially not strong enough to justify the welfare losses borne by workers that the Fed demanded. The relationship between wage inflation and unemployment was not strong enough to justify imposing the hardship of high unemployment. And as we discuss further, the hypothesis that wage increases necessarily translate into price increases proved wrong. There could be, and eventually was, a reduction in markups. (One almost suspects that there was a political/distributive agenda behind the argument that workers had to suffer to save the economy from inflation.)

The data provide clear support to the notion that the inflation was driven by particular structural factors affecting the economy in the pandemic and post-pandemic era.

Transitory?

To an economist focusing on the structure of the economy, there were many reasons to believe that disinflationary processes would eventually set in to reverse the post-pandemic inflation, and these would, by themselves, bring down the inflation rate. Prices would not return to pre-pandemic levels (a fact that has important implications for the *perceptions* of inflation, as individuals constantly observe prices that are much higher than pre-pandemic levels), but the rate of change of prices would come down. Because energy prices affect the prices of all goods in the economy, increases in energy and other critical input prices would seep into core inflation. But the evidence on wage–price, price–wage, and price–price dynamics strongly suggested that price inflation would not be explosive. It would come down, perhaps not as fast as some

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would have liked, but it would decline to a manageable level. That has now occurred. (We'll discuss these dynamics later.)

With renewables offering energy at a fraction of the cost of oil at $120 a barrel, it seemed inevitable that energy prices would come down, and down they came – a key driver of disinflation. Markets should respond to the existence of other shortages by increasing supplies, again bringing about disinflation.

There were reasons, too, to believe that wage increases would be muted. One might expect in this moment of labor market adjustment some anomalies in the labor market to be corrected. Workers earning below a livable wage might demand higher wages so wages *initially* in such sectors might increase rapidly; but after a while, when the abnormality is corrected, wage increases would return to more normal levels. This is precisely what happened.

The increase in the cost of housing, as we have noted, was an important part of the increase in CPI. This was driven by a demand shift induced by the pandemic. Supply responses combined with the end of the pandemic that might even largely reverse the demand shifts would set in motion disinflationary forces in this important component of CPI.

Theory and data thus provide clear support to the notion that the sectoral disturbances that had given rise to the inflation would be reversed and disinflationary processes would be set in motion.

Of course, theory gave no clear answer to how fast all of this would occur – and determining that was impossible, since (in, say, 2020) we couldn't predict how long the pandemic would last, how deep it would be, or how long the war would last, or how devastating it would be.

The conventional macroeconomic model fails

Not surprisingly, the aggregate approach has not fared well. The standard way is to look at each of the components of aggregate demand – Consumption, Investment, Public Expenditures, and Net Exports – and see how they contrast with aggregate supply, and in particular with what was expected before the pandemic. Straightforward calculations (presented in Stiglitz and Regmi 2023) show that real aggregate demand remained consistently below potential output.[24]

Of course, if aggregate demand were sufficiently weak, most of the shortages would have gone away. But if there have been large shifts in demand and supply, a tool focusing on macroeconomic variables is simply too blunt and inefficient. Assume, for instance, that the chip shortage had reduced car production by just 20 per cent. Then, to bring the demand for cars into balance with the supply without a change in prices (i.e., so auto inflation wouldn't be contributing to overall inflation) would have required reducing aggregate demand by 20 per cent (if the demand for automobiles has a unitary income elasticity). Yes, killing the American economy is one way of decreasing the demand for say automobiles, but it's surely not the best way.[25]

24. Aggregate supply for the pandemic is problematic, since in some sectors there were large closures, but by now CBO has made some adjustments.

25. When American car manufacturers couldn't meet the demand for cars, some buyers turned to foreign cars as a second choice. In our approach, this is registered as a reduction in domestic aggregate demand, showing up as an increase in net exports. Foreign purchases are one of the many cushions in the economy enabling it to weather slight volatility in aggregate demand supply without price changes. Goods purchased abroad don't add to America's inflationary

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The conventional macroeconomic model failed a second test: the standard model predicted a surge of inflation just after the passage of the American Rescue Plan. Aggregate demand was being bloated at the same time that aggregate supply was being constrained. The passage itself (according to the adherents of this theory) was a defining moment because households' lifetime incomes suddenly expanded, so their demand should, too.[26] It didn't happen.[27]

The models failed a third test: since the least elastic supply curves were for non-traded goods, presumably price increase would be greater there. Not so. Automobiles had the highest price increases.

A fourth test: because the fiscal impetus under the American Rescue Plan was so much greater than under other countries' recovery plans, inflation should have been significantly higher. Not so. (See Stiglitz and Regmi 2023.)

The ultimate test: the disinflation[28]

The most telling failures have occurred as the economy has gone through a period of disinflation. Upfront we need to acknowledge (as we did earlier in this lecture) that inflation of even non-core goods, like food and oil, seeps into core inflation, so an extended period such as we have had of high non-core inflation will begin to have high core inflation. But that does not mean that the economy has embarked on an uncontrollable inflation binge. Looking at the wage–price and price–wage dynamics (i.e., the extent to which wages increase with prices (they don't fully, which is why real wages fall – workers suffer, at least in the short run) and the extent to which prices increase with wages or other input prices (normally, they don't fully – there is not full pass-through – but occasionally, as we have noted, input price increases may be a sign of supply-side interruptions and more market power, in which case they would be more than passed through).[29]

We've now entered this second phase of the post-pandemic era, in which market power is coming down as supply-side/supply-chain interruptions are being addressed, and it is unambiguous: the wage–price dynamics are stable.

As I observed, the Structural approach predicted that as these supply-side problems were addressed there would be disinflation, and this disinflation would not need an increase in the unemployment rate. The contrast with the prediction of the conventional macroeconomics couldn't have been cleaner: they claimed that only through an increase in the unemployment rate could inflation be reduced.

pressure. But there was a concern that the US demanded so many goods from China that China faced a supply shortage – there was a global problem – and this led to inflation in the US. But the story that excess pandemic spending in the US led to a level of excess aggregate demand that could account for global inflation of the magnitude observed is even more implausible, given that US constitutes but a fifth of the global economy.

26. Again, there is a tension between theory and conventional policy 'wisdom'. In the standard models, Ricardian equivalence holds, so debt-financed expenditures do not increase consumption.

27. There are further 'timing' tests: one can construct, in the manner described above, total aggregate demand, and compare it with estimates of aggregate supply. Did periods of high inflation occur when there was large excess demand? No. The conventional macro approach failed still another test.

28. Recall that disinflation is simply a reduction in the rate of inflation, not deflation.

29. Towards the end of this lecture, we'll discuss the role of expectations in these dynamics.

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The answer is now upon us: aggregate inflation has come down dramatically, and there has been massive disinflation while unemployment has remained very low.

The key policy debate

At the onset of the unprecedented inflation, economists largely broke into two groups: the 'conventional macroeconomists' and the Structuralists described earlier, with the former calling for the standard monetary policy recipe, the latter asking for a more nuanced approach. As we have noted, the former group seemingly didn't realize the sectoral nature of the inflation and how that might put into question the stability of the standard macroeconomic relations, making them a weak reed upon which to base policy. Indeed, they didn't even realize how, in these circumstances, monetary policy may be not just ineffective but counterproductive. It could even exacerbate inequality that was already at unacceptable levels before the pandemic and only worsening since then.

Monetary policy wouldn't resolve the underlying problems

If, as we contend, inflation was not due to excess aggregate demand but supply-side shocks and pandemic-induced demand shifts, monetary policy wouldn't address the underlying source of the problem: supply bottlenecks. It wouldn't create more oil, more gas, more energy from any other source, more food, more chips to make more cars, more houses or land in the places where the pandemic had led people to want to live.

Only if there were sectoral credit allocations – which there weren't – would credit policies help address the supply-side problems. But such sectoral allocations were not part of monetary/financial policy and, under the prevailing Neoliberal orthodoxy, were a taboo.

Monetary policy may be counterproductive

There are several reasons that raising interest rates may have made matters worse. First, it discourages investment required to resolve supply-side shortages. In the US, as already noted, a major source of inflation was housing. To the extent to which the increase in rental rates was due to a shortage of housing, raising interest rates discourages production of houses – one of the strongest channels by which tighter monetary policy normally works – and thus worsens the problem.

Moreover, when competition is imperfect, and, in particular, in 'customer markets' (Phelps/Winter/Greenwald/Stiglitz) increases in interest rates induce firms to raise prices (Greenwald and Stiglitz 2003; Phelps and Winter 1970).

Monetary policy increases inequality

The adverse effects of monetary policy even extend to increasing inequality. Standard treatments of monetary objectives *ignore* these inequality effects, arguing that monetary policy should focus on inflation, employment, and financial stability. Moreover, the adverse effects on inequality are seldom reversed by fiscal policy, and even were it possible to reverse them, it is not costless to do so. Hence, any reasonable policy, based on widely accepted inequality-averse social welfare functions, would take into account any adverse effects on inequality.

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There are several channels through which inequality is increased. There is the obvious and direct effect of increased unemployment from tightened monetary policy – indeed, the chair of the Federal Reserve has explicitly stated the objective of monetary policy is to increase unemployment. Moreover, there is a wealth of evidence that those most likely to join the ranks of the unemployed are those with the lowest wages.[30] With marginalized groups having unemployment rates typically stuck at two to four times that of the average, an increase in that of the average unemployment rate by one percentage point can translate into an increase in that of the most marginalized groups by four percentage points – from an already high base. When the Fed sets a target of increasing the average unemployment to 5 per cent or more, it is aiming at an unemployment rate of 20 per cent and more for such groups – with really harmful long-run effects on these individuals and our society. Of particular concern is that there are large hysteresis effects – there is strong evidence of scarring by those forced into unemployment, even for a relatively short period of time, with lifelong effects. It can have scarring effects too on their families – education interrupted, never to be continued, with individuals never being able to attain their potential. To the Fed, these may be just 'statistics', the necessary collateral damage in the war on inflation. But they are real people, and a main message of this lecture is that we don't have to have this costly collateral damage. The alleged intent of raising unemployment is the belief that it is the best or only way to reduce inflation, through reducing wage pressures. We've already explained what's wrong with the theories on which this pernicious policy is based.

Further adverse effects

A large, fast, and widely unanticipated increase in interest rates has a further adverse effect on financial stability. This effect is especially strong when there has been a long period of low interest rates, such as in the decade and a half after the global financial crisis. Many companies undertook high levels of debt, and a sudden increase in the cost of borrowing can force some into stress, or even into bankruptcy; but even without such extreme effects, there can be strong adverse macroeconomic consequences, including steep decreases in productive investment. (Thus, while the complaint of the macroeconomists blaming the American Rescue Plan was that there was excessive consumption, turning to monetary policy as a cure might disproportionately lead to a lowering of investment, harming growth – perhaps even more than the inflation purportedly would.)

In the absence of good regulation and supervision, banks and others in the financial sector may have undertaken a 'search for yield'. Using depositor money, on which they paid low or no interest, they purchased long-term bonds, the value of which would suddenly fall as interest rates increased. This led to the very costly bankruptcy of Silicon Valley Bank (SVB), exposing the dangers of the deregulation that had been undertaken under Chairman Powell and pushed by the Republicans, and rolling back the Dodd–Frank regulations that had been passed in the aftermath of the 2008 crisis. Moreover, in the aftermath of the failure of SVB and several other regional banks, the laxness of the supervision, the presence of conflicts of interest, and, most importantly, the inadequacy of the stress tests became evident. The Fed had not sufficiently assessed the effects of the changes in interest rates that it was imposing, a knowable and known risk.

30. See Furman and Stiglitz (1998).

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Globally even more adverse

Globally, there were still more adverse effects of the rapid and large increases in interest rates associated with the Fed's response to the post-pandemic inflation. Many countries had become overindebted – the pandemic had imposed enormous fiscal costs, and so had soaring food and energy prices after the pandemic. The increased interest rates, aggravated by declining exchange rates (which made it more difficult to service dollar-denominated debt) and the global slowdown to which the Fed's high interest rate policy contributed (see below) pushed innumerable countries to the edge. The absence of any framework to resolve sovereign and cross-border debt implied a long period of stress for these countries.

Moreover, the rapid rise of interest rates was associated with other countries' exchange rate depreciating, putting them under more inflationary pressure, even as there was a slight decrease in inflationary pressure in the US. It was a new form of 'beggar-thy-neighbor policy', but rather than exporting unemployment (as had been the case in the Great Depression), this time it was exporting inflationary pressure.

But there was still another set of adverse consequences. While in the US, strong fiscal policy offset tight monetary policy, elsewhere the scope for countervailing expansionary fiscal policy was limited. Countries were faced with a Hobson's choice: either raise their interest rates and risk a recession or leave interest rates unchanged and risk more inflationary pressures. The EU and many other countries chose to tighten monetary policy, and their economies slipped into marked slowdowns and recessions. These compounded China's slow recovery from the pandemic, based as it was on flawed and misguided pandemic and post-pandemic policies.

With climate change the existential issue of the day, requiring massive investments, the high interest rates were particularly troublesome; and even more so because combatting climate change would require strong actions by developing countries, and the knock-on effects of high US interest rates on these countries reduced both their ability and willingness to take the strong actions required.

All of this was seemingly viewed as collateral damage, necessary in the fight against inflation – though whether regulators had fully taken on board these costs was questionable. But these were costs we didn't need to bear. We are bearing them because of a flawed ideology and a flawed economic analysis.

There were alternatives

The Structuralists argued that, at least for the major structural problems seemingly giving rise to the post-pandemic inflation, targeted policies could help resolve the supply-side bottlenecks, and perhaps partially alleviate the inflation. Many of these would have long-term benefits *even if the diagnosis turned out wrong* (in contrast to increasing interest rates, which could lead to long-term scarring).

Consider each of the major alleged shortages, beyond the chip shortage leading to a shortage of automobiles or other particular supply chain interruptions. Especially after the Russian invasion of Ukraine, we saw energy prices soar. We would have, of course, been better off if before the pandemic we had moved more rapidly to green energy; but even after the invasion we could have made much greater investments in green energy, especially if we had been willing to use the Defense Procurement Act. These investments would have moderated energy inflation – and the commitment to further investments might have tamed inflationary expectations if that had been a problem, which it was not. And obviously, these investments would have facilitated

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the green transition. (More controversially, we could have pushed fracking gas, which can come online, and go offline, quickly: given that investors couldn't know how long the war would last, and therefore, how long energy prices would be elevated, such investments would have been very risky; but say a four-year price guarantee would almost surely have quickly brought on significant increases in supply.)

Food prices also soared. For a half century we have paid farmers not to grow to limit their supply. If one really believed that the high prices were more than a short-term aberration, we could have reversed this policy and paid farmers to grow their crops, and, with perhaps temporary export restrictions, alleviated the food-price pressure in the US. If Europe had joined in, and there was a concerted effort to address fertilizer prices, global food prices would have come down.

Especially in the US, there was discussion of a labor shortage. According to some, there was something called the Great Resignation that signified that many workers had seemingly changed their attitudes to life and work. They didn't want to work, at least at the old level of wages and in sectors with no flexibility in their schedules and where firms engaged in practices (like split schedules) that made life difficult. The labor shortage, it was alleged, gave rise to wage inflation, which in turn gave rise to price inflation.

There were many problems with this 'story', most importantly, in the face of a seeming labor shortage, real wages seemed to be declining – something that one wouldn't expect if there were really a labor shortage. And the fact that wages lagged prices strongly suggested a different causality: price increases (caused, in our interpretation, by the structural problems discussed above) led to wage increases, moderated as a result of weak labor market power of workers. The wage–price dynamics, instead of being explosive, were in fact muted.

There was an alternative, more plausible story for the Great Resignation, one more consistent with the subsequent evolution of the labor market. US pandemic policy had resulted in a huge spike in unemployment – in contrast to other countries where bonds between workers and their firms were better maintained. The result was that more workers in the recovery were working at new firms, resulting in higher turnover: higher quits, higher vacancies, with some firms posting 'precautionary vacancies', i.e., in anticipation of quits, especially since the cost of posting was so low; some firms may have even engaged in precautionary hiring.

To the extent that there was a real labor shortage, there were direct, low-cost measures that could have been taken to expand labor supply and reduce wage pressure – far more effective than the interest rate increases, with far better consequences for society both in the short run and the long. These measures include better childcare, family leave policies, increased wages, and immigration reform. These measures, combined with better education and health, would also increase productivity, i.e., the 'effective labor force'.

We noted that a source of inflation was the increased mark-ups, reflecting an increase in market power. Stronger and better enforced anti-trust policies would both reduce market power and the actions firms engage in to take advantage of their market power.

The post-pandemic inflation hit hardest at some of the poor (though real wages in some sectors that were particularly poorly paid managed to increase nonetheless). To mitigate these adverse effects, it would have been desirable to have better 'protective' policies, like temporarily introducing more progressivity into the tax and expenditure system, partially financed by a windfall profits tax. Such a tax would have few if any adverse effects (a windfall profits tax is *not* a tax on corporate capital, but on 'pure

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profits', such as those associated with monopoly rents). Indeed, it may be possible to design the windfall profits tax in a way that discourages price increases, e.g., by penalizing firms that increase their mark-ups more.

The policies I've described in the last few paragraphs have long-term benefits, even if inflation turns out to be more transitory than seems to be the case now.

More broadly, structural policies for addressing macroeconomic disequilibria, such as that associated with the post-pandemic inflation, can be better targeted and incorporate better macroeconomic externalities than a blunt instrument like monetary policy (Korinek and Stiglitz 2022).

4 CONCLUDING REMARKS

As noted in the beginning, the pandemic and the Russian invasion of Ukraine were unprecedented shocks to the economy. Understanding how things would proceed and formulating the appropriate policy responses entailed a combination of art and science – knowing systematic aspects of firm and household behavior in the presence of deep uncertainty, and making judgments about how behavior *in this instance* might be similar or different from past behavior. Good policy is always based on risk analysis. In a dynamic context, this entails understanding when there are hysteresis effects, which dictate if mistakes can have long-term consequences or if they can be corrected. Prudent policymaking also involves understanding when mistaken policies could have serious negative effects or if the benefits simply might be less than they otherwise would be.

Back in 2021, as we noted, economists were divided into two groups. The first comprised those who saw the inflation as largely driven by supply-side interruptions (and the increase in market power that that gave rise to) and demand shifts. Both trends were associated with the direct effect of the pandemic and the supply shortages that it engendered. The second group focused on an excess of *aggregate* demand, induced in particular by too-large government recovery spending. The former group thought the inflation was transitory, and some members of the latter group accordingly referred to the former group as 'Team Transitory'. As the inflation persisted, the demand-side group claimed victory. But they were wrong, on so many levels, as this paper has tried to clarify; and understanding how and why they were wrong provides insights into many of the failures of modern macroeconomics. Godley and Tobin would have been (and were) disappointed at the turn that economics took beginning in the late 1970s and early 1980s.

Team Transitory did make a mistake: it thought that the market economy was more resilient than it was, and that the forces of competition were stronger than they in fact were. The short-sightedness that had been so evident in the 2008 financial crisis was pervasive. The just-in-time inventory system had great virtues in a smoothly working economy, but it presented real problems in a world with production of commodities by means of commodities during the pandemic: commodity A couldn't be produced without B, and B couldn't be produced without C, but C couldn't be produced without A. (See Stiglitz 2020.)

The supply chain bottlenecks were eventually resolved. The price of oil couldn't continue to go up at the rate it had – and with the backstop of renewables and gas, it was inevitable that its price relative to other goods would go down. In both cases, it was predictable and predicted that there would be disinflationary forces in play.

Similarly, the supply chain interruptions were eventually resolved, especially after the pandemic was brought under control. Once that happened, the temporary demand

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shifts in housing, for example, which the pandemic had induced were largely reversed The process was slow, so that housing inflation remained elevated for a long period, but as this paper goes to print, things have largely normalized and housing inflation is down markedly.[31]

The labor market has also normalized. Quits and vacancies (conditional on the unemployment rate) appear to be back to where they were pre-pandemic. The fear of a significant permanent shift in the Phillips or Beveridge curves – to the extent that these represent stable relationships at all – appears to have been unfounded. (It was a guess, made on the basis of a couple of observations, but with little enquiry into the deeper questions of why there should be a sudden break in labor market behavior; to be sure, there were trends associated with changing sectoral composition of the economy and changing demographics, but those trends could easily have been incorporated into the analysis. And, to be sure, the pandemic was a trauma to the economy. It was not inconceivable that it would have larger effects on the labor market than it did. But it does a disservice to economics as a science to have made claims that that were so on the basis of observations immediately after the peak of the pandemic.)

The key failures of the central bankers

To me, the key failure of central banks was not acting too slowly, but not realizing the special nature of this episode, that this inflation was not due to excess aggregate demand. Seeing the problem as a standard one with excess demand, they raised interest rates too far and too fast, and in doing so they may have made matters worse. They denigrated the role of market power (they live in a world of competitive markets where, by assumption, there is no market power) and how changes in market power might affect wage–price dynamics, and they thought that the pandemic had brought on changes in underlying macro relations (Phillips curve, Beveridge curve) that would be long lasting, as permanent as anything is in economics. These beliefs necessitated that the workers had to bear the brunt of the cost of disinflation, not the corporations that were increasing their mark-ups.

Those calling for strong monetary policy often talked about 'anchoring expectations', worried about a wage–price spiral induced by soaring expectations of inflation. They persisted in these worries even as all the data showed that inflationary expectations were muted.

There is a simple explanation for why expectations remained (and remain) muted: a widespread understanding that the interpretation of inflation provided by this paper was correct, and that the wage–price dynamics assumed by those demanding higher interest rates does not describe today's economy, even if it might have described the economy in earlier decades.

Expectations play a large role in macroeconomics. One important strand of macroeconomics *assumes* expectations are 'rational', even in the face of overwhelming evidence that that is often not the case and even in contexts where even the meaning of rational expectations is questionable. Here, there is deep uncertainty and widespread disagreement about the evolution of the economy (so evident in the very debate around which this paper centers).

31. There are still worries that there will be deflation in commercial real estate – which doesn't enter the CPI directly. Deflation in commercial real estate will eventually pass through to commodity prices.

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In the standard models, expectations drove inflation because of nominal rigidities – wages and prices had to be increased today in order to make up the inability to raise them for an interim. But that assumes, for example, that workers have the market power to raise wages when they see their purchasing power declining. With increasing corporate power and decreasing union power, is that plausible? And when inflation becomes significant, workers and firms can change contracts and behavior to index wages and prices on relevant inflationary metrics. In short, inflationary expectations might be relevant, but only when inflation is not important; and then its effects are swamped by a host of other factors that affect wage negotiations.

Big lesson of COVID-19 and its aftermath

In short, one of the big lessons of COVID-19 and its aftermath is that the basic Keynesian models, as amplified in subsequent decades by economists like Wynne Godley and James Tobin, provide far more insight into what is going on in the macroeconomy and how to sustain the economy at near full employment with stable inflation than do the models that have become more standard in macroeconomics (whether of the RBC, New Classical, DSGE, or NKDSGE form). And this is especially so of those Keynesian models that emphasize the role of distribution, sectoral shocks and impediments to intersectoral mobility, precautionary savings, credit rationing, market power, disequilibrium, and macroeconomic externalities.

There have been important advances in macroeconomics in the decades since Keynes' pathbreaking work – including the important work in the middle and late twentieth century by Godley and Tobin and the scholarship they inspired. But too much of the intellectual effort in macroeconomics in the past four decades has been squandered. Hopefully, the 2008 financial crisis and the pandemic have shown the limitations of the prevailing models – and hopefully we have reached a turning point, both in theory and policy. We need sharper models and policies that are more micro-based – that look at sectoral shocks, market power, and the effects of inequality. These policies should provide a wider range of more finely tuned instruments, going beyond the blunt instrument of monetary policy, which may be appropriate when there is a simple shock to aggregate demand, but is not well-attuned to the myriad of real shocks that the economy experiences again and again.

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