The Credibility of Government Policies

Conference in Honor of Guillermo Calvo

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In the late 1970s and early 1980s, Guillermo Calvo was a leading member of a group of economists that revolutionized the field of Macroeconomics by modeling how each agent's microeconomic incentives and the anticipation of future policies shape the current macroeconomic equilibrium. In celebration of his work, a conference was held in his honor at the New York Federal Reserve Bank and at Columbia University on February 22-24, 2023. The conference's program, videos, and papers can be found on the website.

The conference's program and participants represented Guillermo Calvo's interests and legacy in academia and policy circles. The conference featured the presentation and discussion of seven academic papers, five invited lectures, and five policy round tables.

The conference celebrated the 45th anniversary of the publication of the paper "On the time consistency of optimal policy in a monetary economy", (Calvo, 1978). This paper shows how a conflict between the interests of the current government with those of a future government, both of which share the same objective of maximizing social welfare, gives rise to a credibility problem. This seminal paper kickstarted a broad research agenda, which includes, for example, the problem of inflation stabilization, the unintended consequences of non-credible policies, balance of payments crises, sovereign debt crises, and the design of sustainable public debt management strategies.

Several presentations at the conference circled around the theme of optimal policies and their credibility. Nobel laureate Christopher Sims's "Fiscal and Monetary Policy when Government Liabilities Carry a Liquidity Premium", Giancarlo Corsetti's "Gambling to Preserve Price (and Fiscal) Stability" (Corsetti & Maćkowiak, 2022), Marina Halac's "A Theory of Fiscal Responsibility and Irresponsibility", (Halac & Yared, 2022), Şebnem Kalemli-Özcan's "Monetary policy cyclicality in emerging economies", (De Leo et al., 2022), and Pablo Ottonello's "Fiscal stimulus under sovereign risk", (Bianchi et al., 2019).

The conference also celebrated the 40th anniversary of the publication of Calvo's "Staggered prices in a utility-maximizing framework", (Calvo, 1983) - the paper behind the term "Calvo Pricing". Two presentations at the conference were motivated by the slow adjustment of prices. Fernando Alvarez's "Price Setting and Strategic Complementarities", (Alvarez et al., 2022), and Ivan Werning's "Expectations and the Rate of Inflation", (Werning, 2022).

Guillermo Calvo's practical interest in the emerging economies of Latin America led him to work as a senior advisor in the International Monetary Fund´s research department led by Jacob Frenkel (1988-1993) and as Inter-American Development Bank's Chief Economist (2001-2006), and a perennial sounding board for policymakers. The conference policy panels "Monetary Tightening, Inflation, and Debt Sustainability", "Fireside Chat on Taming Inflation", "Managing External Shocks: Global Inflation Pressures, Supply Disruptions, and Global Monetary Tightening", "Back to 2% Inflation?", and "Decision-making with Limited Credibility" reflected this interest. The panelists included former or current central bank governors/finance ministers from Argentina, Brazil, Chile, Colombia, Israel, Mexico, the United Kingdom, and Venezuela, chief economists of the International Monetary Fund, high-ranking policymakers for presidents Bush and Obama, an advisor to the Italian prime minister Mario Draghi, three members of the Federal Reserve's FOMC, and a former president of Mexico.

Inflation was the focus of attention for most panelists. John C. Williams reiterated the Fed´s commitment to the 2% inflation target and stressed the importance of keeping expectations anchored. James Bullard argued that this anchoring of inflation expectations makes analogies with the Volker disinflation misguided. The Fed had very little credibility back then and as a result, had to take costly steps that

may not be required in the current environment. Mervyn King analyzed the role of expectations in pinning down the inflation rate and argued that past credibility alone cannot maintain price stability in the face of a large and unwarranted expansion of the broad money supply. Francesco Giavazzi and Silvana Tenreryro emphasized the role of supply shocks on the economy. Giavazzi discussed the role of fiscal policy in mitigating supply shocks, while Tenreyro stressed that the rise in energy prices was a large terms-of-trade shock that could not be fully offset without running the risk of substantial overtightening and undershooting of the target in the medium term. Federico Sturzenegger, on the other hand, warned against reading too much into specific shocks as relative price adjustments cannot be the source of prolonged inflation and highlighted the danger of focusing on high-frequency data for a complex phenomenon like inflation. Jacob Frenkel argued that it is the goal of monetary policy to ensure that shocks are transitory rather than permanent and that discussions on the nature of the shock cause policymakers to "fall behind the curve" by construction. Richard Clarida argued that both the Fed and US fiscal policymakers had the wrong assessment of supply conditions and engineered a demand level that was too high for price stability. Pierre Olivier Gourinchas also focused on fiscal policy during the pandemic as a driver of imbalances between nominal spending and actual production resulting in price adjustments.

The closing policy session was composed of distinguished policymakers in Latin America and dealt with the issue of decision-making with limited credibility. Ernesto Zedillo discussed his past experience as President of Mexico during a run on Mexico´s public debt and how Calvo´s academic papers helped Mexican authorities to understand and navigate the crisis. José Antonio Ocampo, Colombia's current finance minister, tackled the issue of earning credibility during a time of complexity due to multiple competing shocks. Ilan Goldfajn also shared his experience in policymaking to stress the enduring relevance of Calvo's insights.

Three of Calvo's colleagues at Columbia in the 70s and 80s, Maurice Obstfeld, John Taylor, and Michael Woodford, and his student Carmen Reinhart gave special lectures during the conference.

Michael Woodford and Maurice Obstfeld discussed (Calvo, 1978) in their presentations. According to Woodford, the paper is one of the key references in the de-

velopment of one of the biggest ideas in macroeconomics in the latter part of the 20th century. The recognition that if people's expectations are endogenously shaped by the predictable character of government policy, then conventional optimal control approaches to the design of an optimal policy are invalid. The problem with applying Bellman's principle of optimality to the choice of an optimal policy reaction function is that it would lead the optimizing policymaker to choose actions that do not continue the plans that were the basis for their own previous calculations of optimal policy - giving rise to the time inconsistency that is in the title of Guillermo's paper. This might seem like only a technical issue related to the correct way to calculate optimal policies using theoretical models, but it has profound implications for one's entire way of thinking about policy and monetary policy frameworks in particular. The works of (Kydland & Prescott, 1977) and Guillermo's 1978 paper here, imply that a purely discretionary approach to policy can lead to very sub-optimal outcomes, even when the discretionary policy is being calculated using a model that is precisely correct, the state of the economy is recognized with total precision at all times, and optimal policy is correctly calculated using a correct loss function to evaluate alternative outcomes. Instead, they show that there are, at least in principle, large potential gains from commitment in advance to constraint policy.

Maurice Obstfeld offered his conjecture on the origins of Calvo's time consistency paper, which even if it is wrong, reflects his vision of the world. Robert E Mundell, another colleague at Columbia, published the paper "The Optimum Balance of Payments Deficit" in 1972, (Mundell, 1972). In this paper, Mundell tried to model a vision of the international monetary system in which the United States, by issuing a global currency, extracts seignorage from the rest of the world. Calvo built on the paper and took the conversation in a completely different direction. Mundell was looking at an empire that provided money to a colony. It was largely a steady-state analysis. Calvo, building on insights from (Auernheimer, 1974), who studied the revenue-maximizing rate of inflation, started to look at the dynamics of this problem and he quickly found that, under rational expectations, if you write down an optimization problem you find a time inconsistency result. He took the further step of arguing that money demanders would anticipate this, and this would result in a very unfortunate equilibrium far from any sort of optimum that a central planner with

commitment would pick. This is the original working paper version from February 1976 of the work in (Calvo, 1978). At some level, the fundamental idea fed into the *Econometrica* paper made crystal clear, as his first paper did not, that even if you are a benevolent planner, even if you are maximizing the representative consumer's welfare, you will still run into this problem. In a sense, for governments, the road to hell may be paved with good intentions.

Obstfeld's lecture then pursues the implications of this literature for the international monetary system. He argues that the literature on the dollar's global role has gone down the path pioneered, perhaps unwittingly, by Bob Mundell and by Guillermo Calvo. A modern branch of the literature on the US's exorbitant privilege stems from the fact that US public debt serves as the world's liquid asset. Effectively the U.S. government is producing and, in some sense, selling the liquidity services of these bonds (Chris Sims' keynote presentation at the conference touched on this issue). The credibility problem is central because saying safe assets implies a commitment to make them safe. And how this commitment takes place is not at all clear. This is what has been called the "new Triffin problem" by (Farhi et al., 2011). It is deeply related to Calvo's classic paper on servicing the public debt (Calvo, 1988), and the possibility of multiple equilibria and runs on the public debt when the issuer cannot commit to making it safe. Corsetti's presentation at the conference visited this problem, pointing out that the government's inability to actually commit to the safety of its "safe" assets results in welfare losses all around. There are some other even more recent contributions, still in working paper form, on this theme that the supply of U.S. safe assets may be inadequate when the U.S. determines the supply in a way that maximizes some policymaker's occasional objective. See, (Coppola et al., 2023), and (Choi et al., 2022).

Obstfeld went on to pose yet a new dimension of the time inconsistency problem. A new vintage of external liability devaluation takes place through interference with the foreign government's official international reserves. This is a big issue with Russia, Afghanistan, and, going back in history, Iran when their reserves were frozen. This is Central to the Triffin problem of whether the U.S. would be able to meet its obligation to redeem official reserves in gold at thirty-five dollars an ounce. If you go back to 1940, the U.S. froze Japan's foreign reserves when Japan moved militarily further into

southeast Asia, and this helped set off the attack on Pearl Harbor. With the seizure of reserves of a major player like Russia, we may be entering new territory and we do not know yet the ramifications for the global system.

Reinhart's presentation paints the garden of insights that sprouted from (Calvo, 1978). She toured over the important work of the Calvo crowd in Washington in the late 1990s including contributions on inflation stabilization, the determinants of capital flows, contagion, public debt management, the transition of eastern Europe to a market economy, sudden stops, and the Mexican financial crisis (see references).

John Taylor's presentation assessed the current monetary stance in the United States through the lens of a simple Taylor-type interest rate feedback rule. He argued that given the current rate of inflation, to achieve its inflation target of two percent, the Fed should continue to tighten monetary conditions. His speech highlighted the value of following a rule as a way to build and maintain credibility, a theme that is present in much of Calvo's work.

We now turn to another topic in Woodford's lecture that is central to Calvo's thought. Woodford's lecture emphasized the influence that Calvo's paper "Staggered prices in a utility-maximizing framework", (Calvo, 1983), has had on all the modern literature on the theory of monetary policy and on the kind of model-based policy analysis that goes on in central banks. The paper contributed to literature initiated by Ned Phelps and John Taylor who were both colleagues of his at Columbia. This literature pointed out that (Lucas Jr, 1972) had obtained a strong conclusion about the pointlessness of monetary stabilization policy, not simply by assuming rational expectations, but based on the additional assumption that wages and prices were determined in instantaneously clearing spot markets. Phelps and Taylor pointed out that one could assume rational expectations but have wages or prices that were not constantly adjusted to fit current market conditions, and still have a role for monetary stabilization policy. Guillermo's paper was an important step forward in two dimensions. On the one hand, it had much more explicit micro-foundations for the problem of the price-setting firm on those occasions when a firm reconsidered its prices, as well as explicit micro-foundations for the rest of the macro model. But the influence of the paper on the new Keynesian literature is probably, due even more to its progress in making models with sticky prices/wages analytically solvable in a

way that provides insight into how they work. (Calvo, 1983) had the advantage over the previous literature of yielding (quantitative) dynamics that were independent of any arbitrary period length, a parametric degree of price flexibility that could be set to be empirically realistic values, and a clever choice of an exponential distribution of time intervals between price changes. It was a model that aggregated very neatly, allowing the dynamics of the model to be written in terms of a very small state space. This allowed for the construction of fully articulated Dynamic Stochastic General Equilibrium models that remain simple enough to be computed and estimated on the basis of a few time series, usually using relatively straightforward econometric methods.

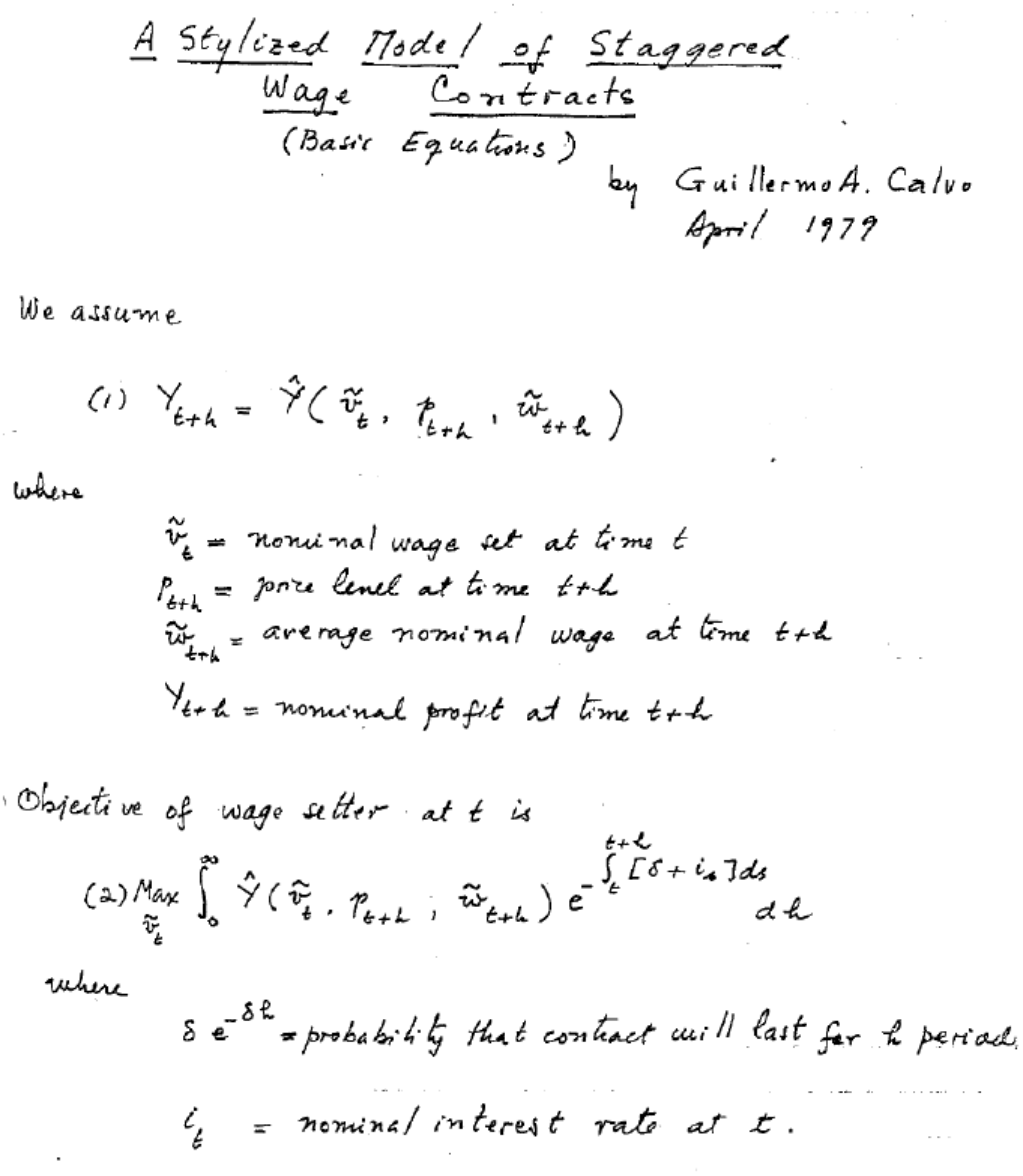

Figure 1: Obstfeld's handwritten notes of an early draft of (Calvo, 1983)

Calvo's model of staggered prices not also provides a rationale for monetary stabilization policy, but also developed a new approach to evaluate the welfare costs of inflation. Having a micro-founded tractable model with staggered price adjustment also implies that there are welfare losses from deviations in the inflation rate from zero. Specifically, a deviation of the overall inflation rate from the rate at which prices

are changing when they are not being reoptimized by the price setters. It implies welfare losses when the inflation rate deviates from a rate such as zero and not just from deviations of the inflation rate from whatever rate was expected at an earlier point in time, which is what the Lucas-type model of the Phillips curve trade-off would imply. This provides micro-foundations for a policy needing to aim at targeting a low rate of inflation and not simply at ensuring that the inflation rate is predictable at whatever level it has. Thus, the Calvo model of price adjustment yields a welfare-theoretic theory of optimal monetary stabilization policy.

The conference closed with Calvo's reflections on the three days of discussions. Here we focus on the lessons he drew from the development of macroeconomics from the mid-1950s to the 1970s. Macroeconomics at the time did not have a framework to think about the future. Dynamic macroeconomics started to grow when it tried to liberate itself from the IS-LM static model. The problem was that at the time we did not know how to deal with the model when you had a future and perfect foresight. The dominant model at the time was one with adaptive expectations, and adaptive expectations keep you looking backward. Calvo recalled that he was personally concerned because he was always obsessed with issues of credibility so he could not even formulate the problem. The exercise of credibility and time consistency was impossible. Models with perfect foresight were dismissed because the natural assumption at the time was that prices cannot jump (since they are sticky), so dynamic models with perfect foresight and an initial condition for the price level led to hyperinflations or hyper-deflations even with a constant money supply. We now know that (Sargent & Wallace, 1973) fixes this problem by solving the same dynamic equations forward and letting the initial price level be a free variable. In their new framework, the equilibrium price level was the only one that did not explode. Calvo reflected that this paper was written in 1973, and the paper by Phillip Cagan on hyperinflation was written in 1956, (Cagan, 1956). It took macroeconomics two decades to grow out of backward-looking economics. The part of the rational expectations revolution that he recovers as a positive addition, independently of many other things, is precisely that it helped to develop a framework where we can talk about the future and that rationality makes sense. Of course, one can disagree on the details, which is interesting because **models are there to be changed, not to be admired.** He

always thinks of models as the thing you use to have insights into the real complicated world. But sometimes, in Calvo's own words, "***models are also cages. Golden cages*** *that prevent you from seeing beyond them. That is why thinking in a more outside-of-the-box way is good. One must be doing that exercise constantly. By the way, for the young generation who are still very productive, that is one very simple way of writing a paper that may be influential.* "

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