



# Uncertainty as commitment



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## ABSTRACT

When governments cannot commit to *not* providing bailouts, banks may take excessive risks and generate crises. At the outbreak of a financial crisis, however, governments are usually uncertain about its systemic nature, and may delay intervention to learn more from endogenous market outcomes. We show such delay introduces *strategic restraint*: banks restrict their portfolio riskiness relative to their peers to avoid being the worst performers and bearing the costs of delay. Hence, uncertainty has the potential to self-discipline banks and mitigate crises in the absence of commitment. We study the effects of standard regulations on these novel forces.

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## 1. Introduction

Few would disagree that bailouts are socially costly. Yet, they are ubiquitous during crises in most countries, dating as far back as the 1800s. In the recent global financial crisis, for example, the U.S. government used a variety of instruments to bail out, on an unprecedented scale, many financial entities that were exposed to systemic risk.

Equally ubiquitous is the uncertainty that governments face at the onset of a financial crisis about its systemic nature. Anecdotal evidence suggests that policymakers are limited in their capacity to acquire and rapidly process information about the scope and severity of an unraveling crisis. This *government uncertainty* is usually considered a shortcoming of policymaking while dealing with crises. We argue, however, that government uncertainty has a positive effect self-disciplining the behavior of financial firms ex-ante, hence mitigating the likelihood and magnitude of financial crises.

At the onset of the recent U.S. crisis, for example, Kelly et al. (2016) document that U.S. policymakers avoided the provision of bailouts ('funds at subsidized rates') until September 15, 2008, when it became evident that financial markets were experiencing a systemic event as Lehman Brothers filed for bankruptcy and no private party was willing to take over its operations. Half a year earlier, on March 14, 2008, the Federal Reserve Bank of New York refused to extend a collateralized loan to Bear Stearns, forcing the company to sign a merger agreement with JP Morgan Chase two days later at \$2 a share (less than 7% its market value just two days before). Similarly, on September 7, 2008, the Treasury announced plans to help Fannie Mae and Freddie Mac, but not with the provision of public funds but rather by placing them into conservatorship. Cochrane and Zingales (2009) argue that the Lehman failure *did not*

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cause the subsequent unraveling of the financial market, but rather was the first convincing signal of a bigger problem.<sup>1</sup>

One of the leading explanations of why bailouts are relatively common despite being costly relies on the time inconsistency of no-bailout policies (e.g. Holmström and Tirole, 1998 and Farhi and Tirole, 2012). If bank failures are costly for an economy ex-post, a government may be tempted to bail out banks in distress. Without commitment, banks internalize this ex-post reaction and hence have no incentive to avoid exposing themselves to risks ex-ante, effectively leading to endogenous crises. Due to this moral hazard problem, the equilibrium outcome obtaining under no commitment is typically inferior to the one in which governments can commit to not intervening and offering bailouts during periods of financial distress.

This paper demonstrates that *government uncertainty* has the potential for sustaining commitment outcomes even when the government lacks commitment. Intuitively, in the absence of systemic problems banks in trouble are usually taken-over by other banks, resolving the distress efficiently 'inside' the financial sector. If at the onset of financial problems governments are uncertain about the actual need for intervention, they may want to *delay bailout* and let the first bank(s) in distress fail in order to observe more signals and *learn* about the nature of the shock, possibly avoiding a potentially costly and unnecessary intervention if the shock is not systemic. Crucially, expected delays make the *relative performance* of banks' portfolios critical in their leverage decisions since no bank wants to be amongst the first in line for government help. We call this effect *strategic restraint*, as banks endogenously restrict the riskiness of their portfolio relative to their peers in order to avoid being amongst the worst performers, inducing a sort of competition that reduces excessive risk-taking.

The paper presents a theoretical model to formally study the role of *government uncertainty* in sustaining commitment outcomes in the absence of commitment. In the model, bankers borrow short-term from households to finance projects that are illiquid. Projects may suffer shocks over time, in which case they require extra funds to bring them to fruition. The shock hitting a project may be idiosyncratic, affecting only certain banks, or aggregate, affecting all banks. High levels of short-term debt allow banks to invest in large projects at the cost of restricting availability of future funds to refinance if a shock hits. A central authority, called the *government*, maximizes total welfare (bankers' plus households') by affecting the cost of borrowing. An intervention that reduces the cost of borrowing to bankers, called a *bailout*, is financed through taxes on households in a way that is socially costly (e.g. due to distortions). The benefits of bailouts, however, is bringing banks' projects to fruition, thus increasing output.

When the government observes a bank in distress, which is defined as the bank running out of cash and ability to obtain loans for refinancing, it does not observe the nature of the shock. If the shock is idiosyncratic, other banks have enough liquidity to take over the distressed bank, and no intervention is necessary. If the shock is aggregate, intervention is the only way to avoid a project failure. Hence, the government's decision to bail out the bank depends on its beliefs about the shock's nature.

If the government is initially optimistic that the shock is not aggregate, then it chooses to learn more by delaying intervention, not bailing out the first distressed bank(s). By delaying bailouts, the government observes further signals – whether the distressed bank(s) are taken-over or not, whether there are more banks showing distress, etc – maintaining the option of intervening at a later time under a more precise belief about the nature of the problem. For banks, however, this delay makes their relative performance relevant, introducing incentives to avoid being the worst performers. In the model, this happens through banks leveraging less, downsizing their projects, and carrying more cash reserves than their peers for the eventuality of being hit by the refinancing shock – that is, through *strategic restraint*.

Our benchmark considers a stark case in which banks can guarantee not being among the first banks showing distress when the shock is aggregate just by choosing slightly less leverage than other banks, giving rise to a Bertrand-type competition. In this stark setup, banks compete away all excessive leverage and the allocation coincides with the one under commitment. Our results, however, are more general, which is demonstrated in an extended environment which introduces shocks to cash holdings of individual banks, such that small deviations in leverage do not guarantee not being among the first banks in distress. In this case, *government uncertainty* and *strategic restraint* forces still operate, moving the allocation closer to the one under commitment, but not completely. In this more general setting, bailouts and crises are observed on the equilibrium path, but are smaller and less frequent than in the absence of government uncertainty.

Since *government uncertainty* has the potential to trigger *strategic restraint* and implement allocations that dominate non-commitment outcomes in terms of welfare, a natural question is how this insight shapes our evaluation of different regulatory proposals. Our mechanism reinforces the benefits of some regulations, such as limiting financial innovation that facilitates cross-insurance and correlation of investments, encouraging entry in the banking industry and restricting bank size. On the other hand, our mechanism discourages other regulatory efforts, such as broadening the government access to detailed balance sheet information of financial institutions or introducing steps toward speeding up intervention decisions in case of financial distress. Our analysis of regulatory proposals is split into three sets of results.

The first set of results characterizes the effects of financial innovation on the likelihood and size of crises. Specifically, we study financial instruments that allow banks to insure away part of their idiosyncratic risk, such as securitized products or

<sup>1</sup> The bailout of Continental Illinois Bank and Trust Company in 1984 provides another example. The FDIC chairman at the time, William Isaac, stressed that the decision to bail out the bondholders was made given 'the best estimates of our staff, with the sparse numbers we had at hand', acknowledging the remaining uncertainty concerning the case at the time of intervention.

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