



# Stress tests and information disclosure <sup>☆</sup>

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## Abstract

We study an optimal disclosure policy of a regulator that has information about banks (e.g., from conducting stress tests). In our model, disclosure can destroy risk-sharing opportunities for banks (the Hirshleifer effect). Yet, in some cases, some level of disclosure is necessary for risk sharing to occur. We provide conditions under which optimal disclosure takes a simple form (e.g., full disclosure, no disclosure, or a cutoff rule). We also show that, in some cases, optimal disclosure takes a more complicated form (e.g., multiple cutoffs or nonmonotone rules), which we characterize. We relate our results to the Bayesian persuasion literature.

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## 1. Introduction

In the new era of financial regulation following the crisis of 2008, central banks around the world will conduct periodic stress tests for financial institutions to assess their ability to withstand

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future shocks. An important aspect of this regulation is that the results of these stress tests are meant to be disclosed publicly. A key question that occupies policymakers and bankers is whether such disclosure is indeed optimal and, if so, at what level of detail.<sup>1</sup>

A classic concern about disclosure is based on the Hirshleifer effect (Hirshleifer, 1971). According to the Hirshleifer effect, disclosure might be harmful because it reduces future risk-sharing opportunities for economic agents. This is indeed a relevant concern in the context of banks and stress tests. A vast literature (e.g., Allen and Gale, 2000) studies risk-sharing arrangements among banks. If banks are exposed to random liquidity shocks, they will create arrangements among themselves or with outside markets to insure against such shocks. Public information about the state of each individual bank and its ability to withstand future shocks could limit these hedging opportunities, thereby generating a welfare loss.

Given this logic, one would think that no disclosure is desired. Yet, during the crisis, interbank markets were not performing well, and there was a sense that some disclosure was necessary to prevent a breakdown in financial activity. Such a breakdown can occur when market participants have asymmetric information (e.g., Akerlof, 1970) but can also occur when market participants share the same information. For example, in Leitner (2005), risk-sharing arrangements among banks can break down when the aggregate endowment in the banking system is expected to be low.

Hence, disclosure involves a tradeoff and may be desirable in some circumstances but not in others. Indeed, this is apparent in the choices of policymakers during the crisis. While the Federal Reserve revealed the results of its stress tests, it did not reveal the identities of banks that used its special lending facilities.<sup>2</sup>

We set up a simple stylized model that captures the two forces above. In our model, disclosure can destroy risk-sharing opportunities for banks. Yet, there are cases in which some level of disclosure is necessary for risk sharing to occur. We study how optimal disclosure looks like in this setting under different circumstances. We distinguish between two cases, as described below. In the first case, the entire tradeoff originates from risk-sharing concerns, which provide the cost and benefit of disclosure. In the second case, we add another force: the bank has private information. We show that, in general, this force pushes for more disclosure.

In the model, banks suffer losses if their capital falls below a certain level. Part of a bank's capital can be forecasted based on current analysis and will become clear to the regulator examining the bank. However, there are also future shocks that cannot be forecasted. Banks can engage in risk sharing to guarantee that their capital does not fall below the critical level. The regulator sets a disclosure policy to minimize expected losses in the banking system.

We first consider an environment in which the information discovered by the regulator is not already known to the bank. We show that if banks are perceived, on average, to have capital above the critical level ("normal" times), it is possible to achieve risk sharing without any disclosure; so, the regulator does not need to disclose anything. Consistent with the Hirshleifer effect, disclosure can even be harmful because it can prevent optimal risk-sharing arrangements from taking place. However, if banks are perceived, on average, to have capital below the critical level ("bad" times), then risk-sharing arrangements that insure them against falling below that level cannot arise without some disclosure. In this case, optimal disclosure is in the spirit of the Bayesian persuasion literature, as in Kamenica and Gentzkow (2011).

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<sup>1</sup> The debate over this question is illustrated in "Lenders Stress over Test Results," *Wall Street Journal*, March 5, 2012.

<sup>2</sup> Gorton (2015) provides more examples of suspension of information during a crisis.

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