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Shareholders' preference for excessively risky projects, equilibrium debt contracts, and bailouts



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A B S T R A C T

I show that bailouts can reduce excessive risk-taking. After receiving debt financing, a limited-liability firm chooses between two projects. The safe project results in higher expected cash flows. The excessively risky project results in lower expected debt repayments because default occurs more often. In equilibrium, the creditor anticipates the risk choice of the firm and sets the debt repayment to obtain its required rate of return. The implicit bailout subsidy allows the creditor to lower the debt service payment. As a result, the incremental default benefit of the risky project is lower, leading to less risk-taking. The results inform the ongoing debate about the determinants of risk-taking by firms.

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1. Introduction

The global financial crisis of 2008 has highlighted the importance of understanding the factors underlying firms' choices of risky investments. In particular, dozens of financial institutions, both in the United States and in other countries, received government bailouts during this period. I address the riskiness and scale of investment when the investment characteristics and loan terms are chosen jointly in a rational expectations equilibrium, providing a modeling vehicle for studying the effects of bailouts. A common criticism of bailouts is that they create moral hazard; firms will choose excessively risky projects, reaping high rewards in the event of success and passing the costs to taxpayers in the event of failure.

Ted Kaufman, a former Democratic Senator from Delaware, says that, had Congress been aware of the extent of the Fed rescue, he would have been able to line up more support for breaking up the biggest banks. According to Kaufman, the cost of borrowing is less for too-big-to-fail banks than for

smaller firms because lenders believe the government won't let them go under. They then take greater risks because they'll enjoy any profits while shifting losses to taxpayers.¹

In my theoretical analysis, I find that the expectation of a bailout does not generally induce more risk-taking. In many settings, it leads to a less risky equilibrium investment choice.

In the model, a firm chooses the riskiness (safe or risky) and scale (high or low) of an investment. The model seeks to capture the perception of financial services firms as casinos, i.e., relying on an implicit government guarantee to make excessively risky investments.² Thus, the risky project is a gamble; its expected cash flows net of the cost of motivating a risk-averse manager to select it are lower than the safe projects. In this sense, the project is excessively risky. Also, the incremental return from the high investment is less than the cost of capital. As a result, the low investment in the safe project is socially optimal and would be the choice of an all equity financed firm.

I assume that the firm cannot commit to a project at the time of debt contracting. Risk neutrality, then, implies that a leveraged firm, given a fixed debt service payment, prefers the risky casino-type project if the probability of avoiding the debt service payment through default is high enough. This is the familiar “go-for-broke” strategy.³ If the risky project was not excessively risky, i.e., if its expected cash flows net of compensation were weakly higher than the safe projects, then the firm would optimally choose the risky project and the expectation of a bailout would not affect its risk choices. Excessive riskiness is a necessary condition for the existence of a meaningful trade-off between the two projects that can be influenced by a bailout. In equilibrium, the creditor anticipates the firm's project choice and sets the debt service payment high enough to earn its required rate of return. The shareholders trade off the incremental default benefit associated with the risky project against the higher expected cash flows net of compensation associated with the safe project. If leverage is high or the incremental cash flow is low, the shareholders prefer the risky project. Because the equilibrium debt service payment internalizes the cost of capital in the firm's profits the firm never overinvests.

The expectation of a bailout changes the equilibrium. Because the creditor is paid regardless of the project outcome, eliminating the need to “gross up” the rate of return over the non-default states, the debt service payment for a given scale of investment is lower. A lower debt service payment implies a less valuable default benefit. As a result, some firms choosing the risky project without a bailout prefer the safe project with a bailout. If the bailout has no effect on the scale of investment, which occurs if the marginal return to the incremental investment is low, it leads to weakly lower risk-taking. The bailout represents a subsidy, however, that reduces the firm's financing costs. As a result, overinvestment in either or both types of projects may be optimal. The higher principal amount is a countervailing force to the lower effective interest rate in determining the size of the debt service payment. If the difference in risk across the two projects is not too great, then the debt service payment is lower and the bailout leads to weakly lower risk-taking even if overinvestment occurs. Otherwise, the debt service payment is higher, leading to a higher default benefit and weakly higher risk-taking.

The results contradict the conventional wisdom about bailouts inducing moral hazard in project selection. The intuition for the result is that it is debt itself that creates the moral hazard, not the bailout. A hypothetical all-equity firm would always invest in the safe project. It is only the possibility of avoiding repayment of the debt that provides the rationale for the excessively risky project. The risky investment, therefore, is more attractive for higher debt service payments. By reducing the size of the debt service payment, a bailout makes the risky investment less attractive. The premise underlying the conventional wisdom seems to be that bailouts shield firms from the consequences of their risk choices. Leverage already acts as a shield for limited liability firms, however. My model shows that an expected bailout can make default through risky project selection less tempting.

In the modeling heretofore, I assume that the firm ceases to exist in the event of default. This is consistent with many of the most prominent bailouts in the financial crisis. Shareholders in Bear Stearns, Fannie Mae, Freddie Mac, AIG, for example, lost virtually their entire stake in the reorganized companies. There is a perception, however, that bailouts produce a “win/win” scenario in which firms

¹ Big Banks: We Earned Billions from Fed Bailout—Yahoo! Finance 28 November 2011.

² See Schumer (1987) and Delamaide (2013) for representative characterizations of banks.

³ See, for example, Bebchuk and Spamann (2010).

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