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Paulson's gift[☆]

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ABSTRACT

We calculate the costs and benefits of the largest ever US government intervention in the financial sector announced during the 2008 Columbus-day weekend. We estimate that this intervention increased the value of banks' financial claims by \$130 billion (bn) at a taxpayers' cost of \$21–\$44 billion with a net benefit between \$86 and \$109 bn. By looking at the limited cross section, we infer that this net benefit arises from a reduction in the probability of bankruptcy, which we estimate would destroy 22% of the enterprise value. The big winners of the plan were the bondholders of the three former investment banks and Citigroup, while the losers were JP Morgan shareholders and the US taxpayers.

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1. Introduction

The 2008 financial crisis witnessed the largest intervention of the US government in the financial sector. The stated goal of this intervention was to "restore confidence to our financial system,"[1] through a massive transfer of resources from the taxpayers to the banking sector. From an economic point of view, such an intervention is justified only in the presence of a market failure that the government could help alleviate. If this market failure is present, then the government intervention should create, not just redistribute, value. Did this intervention create value or was it simply a massive transfer of resources from taxpayers to financial institutions? If it did create value, why? What can we learn about the possible cost of financial distress in financial institutions?

To answer these questions, we estimate the costs and benefits of the US government plan announced on Monday, October 13, 2008. The plan included a \$125 bn preferred equity infusion in the nine (ten if we consider Wachovia still independent) largest US commercial banks joined by a three-year government guarantee on new unsecured bank debt issues. For brevity, throughout the paper we refer to the US Treasury-Federal Deposit Insurance Corporation (FDIC) joint plan as "Paulson's Plan," after the name of the then US Treasury Secretary, Hank Paulson.

Given the worldwide changes in financial markets occurring between Friday, October 10, and Tuesday, October 14, it is impossible to estimate the systemic

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[1] Statement by US Treasury Secretary Henry M. Paulson, Jr. on Actions to Protect the US Economy, October 14, 2008. http://www.financialstability.gov/latest/hp1205.html.

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effects of the intervention. However, it is possible to estimate its effects on the banks involved. If the intervention stopped a bank run, for instance, it should have created some value in the banking sector. To compute the intervention's effect on the value of banks, we do not limit ourselves to the changes in the value of common and preferred equity, but we look at the changes in the entire enterprise value by looking also at changes in the value of existing debt. In fact, by using liquid credit default swap (CDS) rates, we introduce a new way to perform event studies on debt.

To separate the effect of the Paulson Plan from that of other events occurring at the same time, we control for the change in the CDS rates of GE Capital, the largest non-bank financial company. This difference-in-difference approach estimates the total increase in debt value due to the plan at $119 bn. If we add to these changes the abnormal variation in the market value of common equity (−$2.8 bn) and of preferred equity (+$6.7 bn), we obtain that the enterprise value of the ten banks involved in the first phase of the plan increased by $128 bn. If we add the value increase in the derivative liabilities, we come to a total increase of $130 bn.

This increase, however, came at a cost to the taxpayers. By computing the value of the preferred equity and the warrants the government will receive in exchange for the $125 bn investment, we obtain an estimate between $89 and $112 bn. Hence, the preferred equity infusion costs taxpayers between $13 and $36 bn. We also estimate the cost of the debt guarantee extended by the FDIC on all the new bank debt to be worth $11 bn. Adding of the extended guarantee on non-interest-bearing deposits and subtracting the reduction in the value of the FDIC deposit guarantee brings the total taxpayers' cost at between $21 and $44 bn.

Therefore, the plan had two effects: it transferred between $21 and $44 bn from taxpayers to the nine largest banks, but in so doing it created between $86 and $109 billion in value. Even if we account for a 30% deadweight cost of taxation (see Ballard, Shoven, and Whalley, 1985; Feldstein, 1999), the plan created between $73 and $91 bn in value. Where does this added value come from? What frictions did the plan help to resolve? Who are the main beneficiaries of the plan?

To address these questions we exploit the (very small) cross section of results at our disposition. We find that the bulk of the value added stems from the banks that were more at risk of a run. For each bank, we compute a "bank run" index, which measures the difference between the (risk-neutral) probability of default in the year immediately following and the (risk-neutral) probability of default between year one and year two, conditional on surviving at the end of year one. This index is higher when a bank is subject to a run.

We find a very high correlation (96%) between the ex ante value of the bank run index and the percentage increase in a bank enterprise value at the announcement of the plan. The big beneficiaries of the intervention were the three former investment banks and Citigroup, while the loser was JP Morgan whose total asset value decreased even before factoring in the cost of the Paulson Plan. This result is not so paradoxical. In spite of the benefits of the Paulson Plan, banks might lose value because their participation provides a negative signal to the market about the true value of the assets in place, because the future government interference in banks' affairs reduces value, or because intervention has redistributive effects across banks.

Since all the major banks were "forced" to participate by a very strong arm-twisting exercised by Treasury Secretary Paulson, it is unlikely that participation might signal any inside information about the value of the assets in place. A more realistic interpretation is that the government intervention has two conflicting effects: a negative one linked to the government's future interference in banks' affairs, and a positive one, associated with the reduction in the probability of bankruptcy and hence, the expected cost of bankruptcy. Exploiting the firm variation in this latter probability, we estimate that the expected cost of government interference is about 2.5% of enterprise value, while the cost of bankruptcy is about 22% of enterprise value.

Given the extreme volatility of markets during this period, one may wonder whether the observed outcome represents a fair assessment of the intervention's effects. For this reason, we evaluate the plan on an ex ante basis by using the standard Black and Scholes (1973) and Merton (1974) models of equity as an option on the value of the underlying assets. When we keep the assets' value constant (i.e., the intervention neither creates nor destroys any value), the model grossly underestimates the market response. According to the model, the shareholders should have lost $25 bn and instead lost only $3 bn. The debt holders should have gained $49 bn and instead gain $119 bn. To bridge this difference we need to hypothesize an increase in the value of the underlying assets. It is only if we assume an increase in the value of assets of $113 bn that the model can approximate well the actual changes in the value of debt and equity. This alternative method confirms the magnitude of the asset increase.

Finally, we try to evaluate whether the same objective achieved by the plan could have been obtained at a lower cost to taxpayers. If the main goal was to make banks solvent, we assume that the objective is to achieve a reduction in the CDS rates equivalent to the one observed in the data after the plan. We analyze four alternative plans: the original Paulson Plan where banks' assets were purchased at market value, the original Paulson Plan with banks' assets purchased above market (we assume 20% above), a British-style equity infusion without any debt guarantee, and a debt-for-equity swap. We rate these alternatives on the basis of up-front investment required by the government, taxpayers' expected cost, taxpayers' value at risk, and government ownership of banks. While inferior to a debt-for-equity swap, the Revised Paulson Plan appears superior to the other strategies. The approach followed by the Paulson Plan, however, did not require a redistribution of between $21 and $44 bn from taxpayers to banks: the government could have charged more for both the equity infusion and the debt guarantee as Warren Buffett did when he invested in Goldman Sachs three weeks before the Paulson Plan.

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