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09/13/2008 08:40 PM

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Subject: AIG's Financial System Risk

Here is the systemic risk analysis from market prices. Note that this is only the financial system risk captured in current market prices, so it should be viewed as a lower bound.



AIG Financial System Risk Evaluation.pdf

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## AIG's Financial System Risk<sup>1</sup>

### Intro:

By lending to AIG, the Fed will further extend the universe of institutions with discount window access, thus changing expectations about future Fed behavior. This note discusses some of the pros and cons.

### The case for lending to AIG:

Fed wants to limit the systemic risk externalities, and the potential spillover onto the real economy (the "Adverse Feedback Loop"). Estimates of systemic risk losses are potentially large. The quantitative assessment of financial system spillovers is in the Figures starting on page 3. Note that these might be underestimates, as systemic risk events of the current magnitude are not in the historical data.

Figure 1: This figure plots the default probabilities implied by the CDS spreads of AIG, Lehman Brothers, and the primary dealer universe (PD). Implied default probabilities of both AIG and Lehman have been rising rapidly in recent weeks. The default probability of AIG is lower than Lehman's, but has risen more rapidly in recent days.

Figure 2: This plot is a measure of risk spillover from AIG to the PDs, from Lehman to the PDs, and the average spillover risk for the whole PD universe. The spillover risk is computed from CDS returns, and converted into a default probability.<sup>2</sup> The probability of default in Figure 2 is the additional likelihood of defaulting due to risk spillovers (i.e. systemic risk). The Figure shows that the systemic risk of AIG relative to the PD universe is smaller than the systemic risk of Lehman. Caveat: these results are not value weighted.

Figure 3: Plot of the VaR and CoVaR of the investment bank universe. The difference between VaR and CoVaR is a measure of financial system risk. The difference between CoVaR and VaR measures the increase in VaR due to exposure to the financial sector. In this figure, the financial sector is proxied by the S&P financials sub index, and the CoVaR and VaR is in percent, for equity returns (more negative numbers correspond to larger risk).

Figure 4: Figure 4 shows that in equity space, the CoVaR is, on average, smaller than the VaR, implying that the tail covariance of AIG with the financial sector is negative. So, based on historical data, AIG is not systemically important. The caveat here is that current equity prices might not fully price adverse feedback loop dynamics.

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<sup>1</sup> Prepared by Tobias Adrian, ext 1717, with comments by Josh Frost.

<sup>2</sup> The measure is based on [http://newyorkfed.org/research/staff\\_reports/sr348.html](http://newyorkfed.org/research/staff_reports/sr348.html).

The case against lending to AIG:

1. AIG could fix its problem by selling its mortgage portfolio. This might lead to further declines in mortgage valuations in the market place, but the institutions that we judge systemically important all have discount window access (either DW or PDCF).
2. Discount window borrowing might increase the likelihood of AIG's default as it reveals to the market that AIG is in worse shape than previously assumed.
3. Fed sends signal to the market that the market fragility is greater than currently priced in.
4. By lending to AIG, Fed signals that existing universe of facilities is not enough to assure financial stability.
5. Fed's lending will change the behavior of other insurance companies (and the lenders to other insurance companies), who will assume that they will get similar loans in future situations.
6. Fed's hands are tied for future situations.
7. The Fed crowds out private market solutions, and distorts price discovery.
8. Future backlash against Fed powers ( as Fed will be seen as captured by Wall St.).
9. Every dollar that Fed lends to AIG is a dollar that cannot be used for other purposes: the Fed's balance sheet constraints might be binding at some point.
10. Treasury will have to issue more debt to allow Fed to lend to AIG in size. That has adverse effects on inflation, capital flows, and US credit ratings.

Alternatives to lending to AIG:

1. Lend to the counterparties of the CB and PD universe who already have discount window access.
2. Have Treasury or NY State, not Fed make a loan to AIG.

Figure 1: CDS implied Default Probabilities

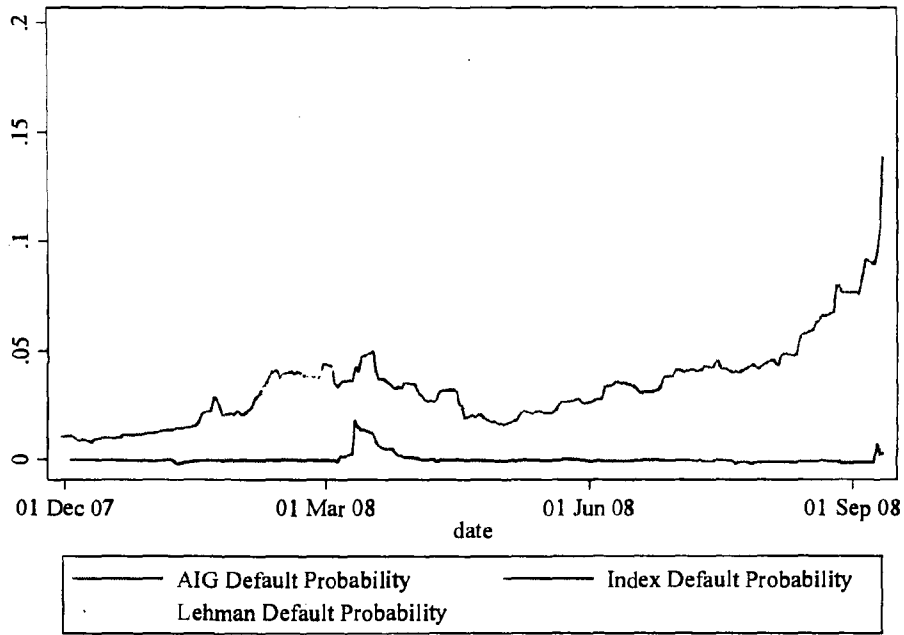


Figure 2: Systemic Risk Default Probability Spillover Component (from CDS)

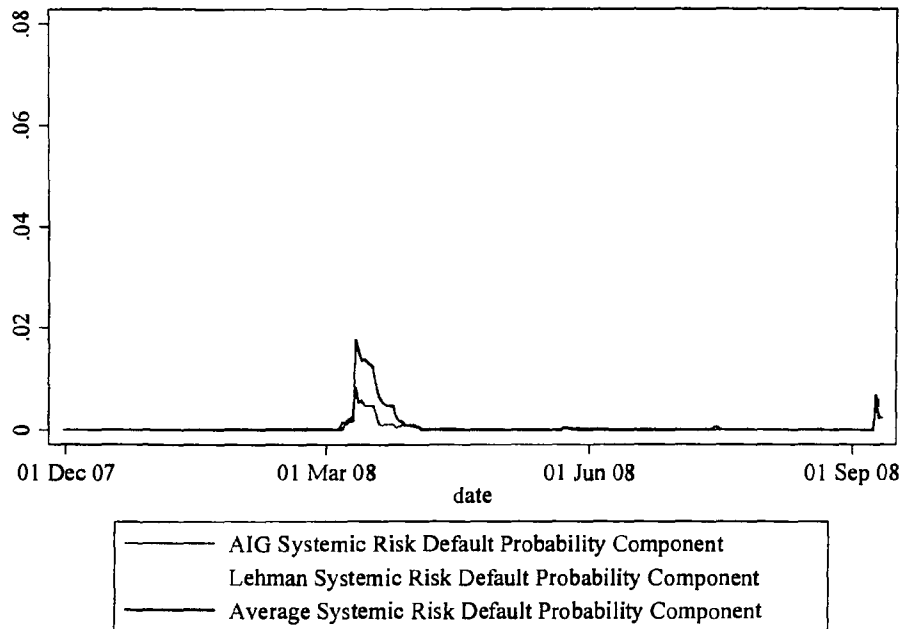


Figure 3: VaR and CoVaR of Investment Bank Equity Returns

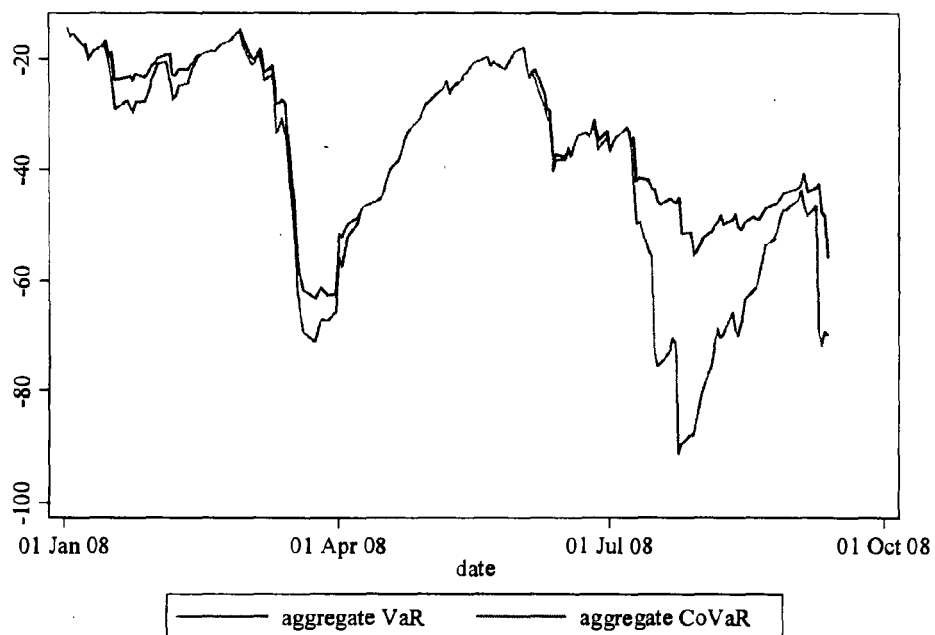


Figure 4: VaR and CoVaR of AIG Equity Returns

