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The Risk on Banks' Books



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The Occasional Paper Series

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The Risk on Banks' Books

By now we all know that the financial crisis degenerated into a meltdown because banks were carrying far too much risk on their balance sheets. However, given the complexity of the assets they hold and the limited transparency of balance sheets, few seem to have had a real understanding of how much risk they were really carrying, not even bankers and regulators themselves. Both are still in denial and far behind the curve because they still cannot understand how a banking system operating well within the limits set by so called “*prudential regulation*” can suddenly fail so catastrophically. Through some reverse financial engineering and the data the banks do publish, it is still possible to get a clearer picture of the severity of the situation.

Under BIS's Basel II regulations banks must have total qualifying capital equal to at least 8% of their risk-weighted assets. Banks are basically allowed 3 methods to calculate their risk-weighted assets. The most basic and conservative method assigns fixed weights to assets not held for trading. These weights are, for instance, zero for governments bonds, 25% for AAA bonds and 125% for equities. In other words, banks are allowed infinite leverage on government bonds held to maturity (!), or 50 times leverage on AAA bonds (!!) or 10 times leverage on stocks (!!!). And these are the “*conservative*” ratios. If the assets are held for trading, Basel's ratios allow a somewhat higher leverage on the strange assumption that a bank can dynamically manage its portfolio by selling assets in falling markets to limit its losses. Large banks are allowed to use their own internal models to calculate risk-weighted assets and those models allow still higher leverage since they make full use of the extra risk reduction that diversification among less than perfectly correlated assets can supposingly provide.

Incorporating the benefit of diversification into prudential minimum capital requirements for banks is a fallacy of composition: the financial system cannot diversify away from itself and neither can the banks who dominate it. As the current banking crisis demonstrates, diversification is in fact a free lunch that cannot be eaten, which is reassuring from the point of view of economic theory, but also implies that large banks' capital requirements are even more underestimated.

The graph shows the risk profile of major banks as of June 2008. The regulation offered banks a trade-off between huge leverage on a seemingly low risk portfolio, like bank X (not to name any) or somewhat lower leverage but on riskier assets, like bank Y. Competition ensured that almost all banks positioned themselves in a band between the Basel II minimum capital requirements and twice that minimum in order to achieve a high return on equity.

Bank X, for instance, has 30 times leverage on risk weighted assets of 30% of its total assets. Using the most conservative Basel II criteria, and assuming it only owns AAA bonds and equities, it would have invested 28.5 times its equity capital in AAA bonds and in addition also 1.5 times in equities - an extraordinarily leveraged and risky portfolio. Banks grouped around bank X on the graph own different portfolios, but they carry at least a similar unsustainable degree of risk. Bank Y is only leveraged 13 times, but on risk weighted assets of 70% of its total assets. If it only owned AAA bonds and equities, it would own 7.15 times its capital in bonds and 5.85 times in stocks. Again an insane amount of risk, but one that regulators and bankers apparently felt at ease with, or probably did not comprehend.

Obviously banks surrounding X and Y on the graph do not own only AAA bonds or equities but more complex portfolios whose risk is, though, roughly similar to that of banks X and Y which we

can more readily understand. The benefit of correlation that the major banks' models incorporate to calculate their own risk weighted assets outweighs other capital requirements, such as those for operational risks, which this simplified analysis does not consider, leaving us underestimating, in this exercise, the actual risks on banks' books.

The red dots on the graph mark the banks that needed outside help before Sept. 30th 2008 (all of them have received government help since). The dots are randomly distributed, indicating that all balance sheets were systemically unsustainable and that idiosyncratic crisis struck those who had the bad luck of having liabilities coming due earlier and weren't able to refinance them.

How much equity injection is required to make bank balance sheets sustainable? Putting a hypothetical aggressive directional hedge fund balance sheet through Basel II modelling, we estimate directional hedge funds rarely, if ever, have less than 4 times the minimum Basel II capital. In other words, if they were to run the same portfolio as banks, directional hedge funds would feel comfortable only with roughly 3 times more capital than a bank would (relative value hedge funds, that operate more as shadow banks, run on smaller capital but probably still far higher than most banks).

Once one has a clearer picture of the real risk carried by banks, it becomes obvious that the capital injections needed to allow them to continue to perform their crucial role in the payment systems, and possibly also to make some loans, are most likely to be at least 3 to 4 times their book value before the crisis. In the present environment this money cannot be raised through the markets and is still a multiple of public funds made available so far.

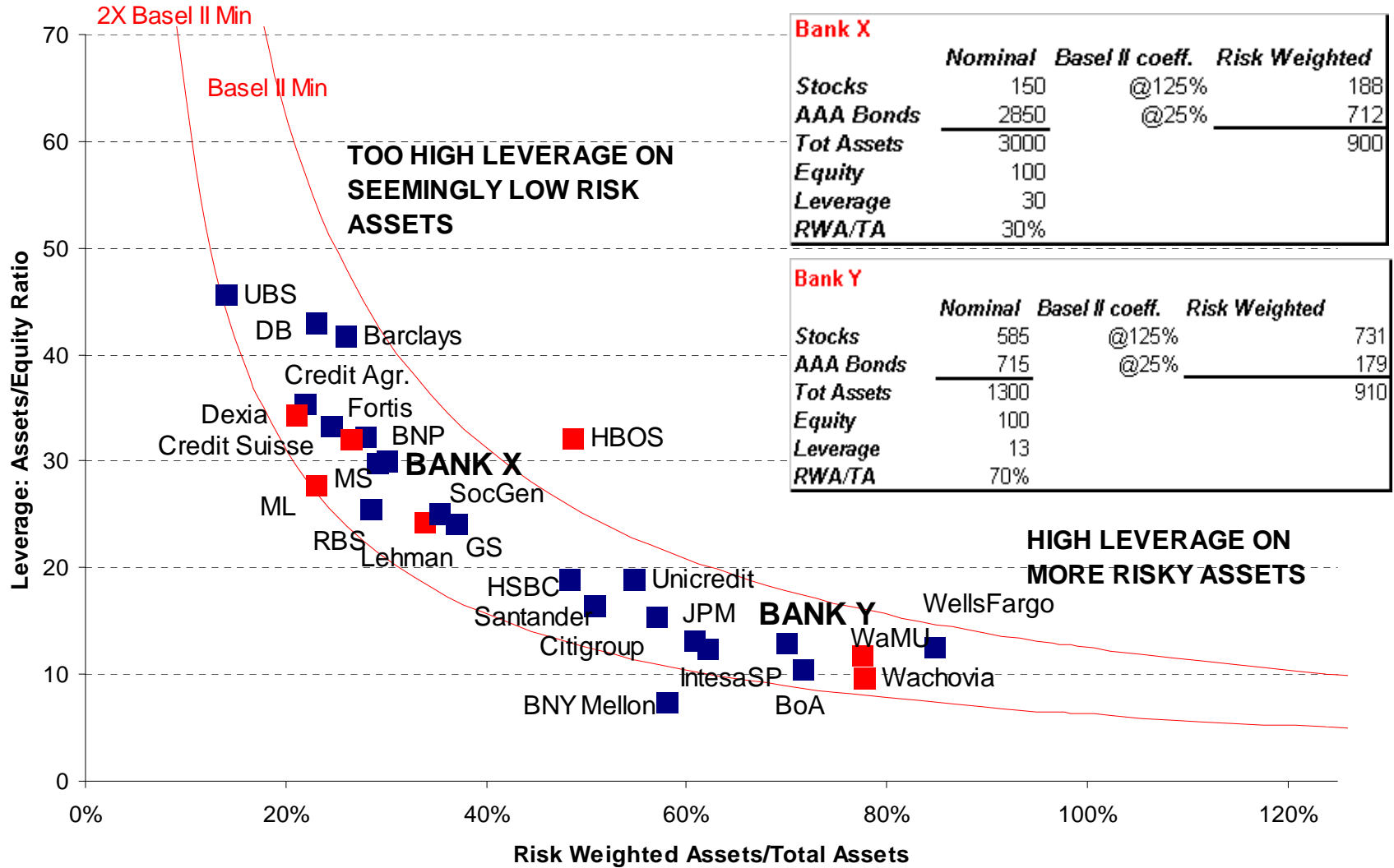
We probably need a broader plan to make banks viable again. The risk of the current small steps approach is a loss of faith in governments as well, since broken promises to get the banks lending again can undermine the fragile confidence they are trying to rebuild with a patchwork of band-aids which might prove be worse than outright nationalizations until the mess is sorted out. The banks' current unsustainable financial position was caused by an amazing collective breakdown of common sense among politicians, regulators, bankers, financial academics and analysts over the past several decades at least. The errors have been so appallingly widespread that the cost of repairing the system should be socialised.

Containing the damage from ongoing uncontrolled debt deflation to the economy should be the priority. The wisdom of allowing financial intermediation to be carried out by tightly regulated and overleveraged and extremely complex intermediaries "*too big to fail*" should be reconsidered soon after. True market discipline should be reinstated on a sector that has in fact been protected from it for too long.

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RW - Basel II : GVT bonds = @0 AAA bonds = @25 A bonds = @50 BBB bonds = @100 Stocks = @125

Source: Bank's balance sheets - Q2/08

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