



# Bank runs, foreign exchange reserves and credibility: When size does not matter

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## Abstract

The paper considers the sizes of banking sectors that are vulnerable to runs when the central bank cares about economic stability and currency peg credibility. It is shown that when banks are small, the central bank will recapitalize unhealthy banks because doing so will not compromise its peg. While recapitalizations of large banking sectors will compromise a peg, central banks will also bailout large banking sectors in distress to prevent great economic instability. Given the central bank's expected response, a range of sizes for banking systems, which are vulnerable to runs, is found along with a condition in which size will not matter. That is, if that condition is satisfied, banking sectors of all sizes will be immune to runs. The experiences of Asia and Argentina are discussed to provide anecdotal support for the model.

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## 1. Introduction

When analyzing the likelihood of bank runs, economists have traditionally thought that size matters, that is, the more important banks, the larger the economic costs of allowing them to fail. Thus, as depositors expect the government to bailout banks that are “too big to fail”, large banks will not be vulnerable to runs. If banks are homogeneous, then the argument can also be applied to banking sectors, that is, large and important banking sectors should also not be vulnerable to

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runs. The present paper studies the relationship between banking sector size and the likelihood of runs in fixed exchange rate regimes.

It is shown that when policy-makers care about bank solvency and currency peg stability, then a run will not occur when banks are either “too big” or “too small” to fail and that only medium-sized banking sectors will be vulnerable to runs. Indeed, if foreign exchange reserves are ample and/or the credibility costs of printing money are small, then size will not matter and banking sectors of all sizes will be immune to runs.

The intuition for these results is based on the amount of new capital needed to recapitalize/bailout the entire banking sector and the economic costs of continued banking malaise, both of which are positively related to the size of the banking sector. When banks are small, a central bank can recapitalize banks without compromising its currency peg. As the costs of recapitalization will be smaller than those of complacency, central banks will recapitalize small banking sectors in distress. While recapitalization of large banking sectors will be more likely to violate a currency peg and result in lost credibility, the economic costs of continued banking fragilities would also be great. If the cost of bank insolvency relative to that of lost credibility is an increasing function of size, then larger banking sectors will also be more likely to receive a capital infusion. As recapitalization restores bank solvency and indicates policy-maker willingness to bailout banks, a run will also not occur when banks are too large to fail.<sup>1</sup> This implies that only medium-sized banking sectors may be vulnerable to runs.

The paper takes its motivation from Miller (2006, 2003, 2000) which studied central bank reactions to bank fragilities in fixed exchange rate regimes. Miller (2006) showed how when foreign exchange reserves are abundant, then central banks could recapitalize banks without compromising a currency peg. However, when reserves are insufficient, then there is a remedial tradeoff between currency stability and bank solvency. Miller (2003) illustrated that when there is this tradeoff, the likelihood of bank runs depends on the central bank’s dedication to its currency peg. The present paper ties these results together and shows how run probability can be expressed in terms of the size of the banking sector.

The paper proceeds as follows. In Section 2, a framework is presented to analyze the options available to central banks/governments faced with a sudden drop in capital adequacy ratios in fixed exchange rate regimes. In response to a drop in capital adequacy, central banks may either do nothing or recapitalize banks. When the central bank recapitalizes, the money supply increases and the equilibrium interest rate falls.

In Section 3, an output equation and government loss function are specified to ascertain how the government will respond to bank fragilities. It is shown that the smaller the banking sector, the more the government will be able to counter banking weakness without compromising the exchange rate. While a recapitalization will likely violate a currency peg when banks are large, the costs of not recapitalizing banks will also be larger and so the government will be more willing to recapitalize large banks. As a run will occur when the government does not recapitalize banks, no run will occur when banking systems are either very small or very large. A range of banking sector sizes for which runs are feasible is found. Finally, a condition is found for the absence of bank runs regardless of the size of the banking sector. If that condition is satisfied, then size will not matter. Section 4 provides some testable implications and anecdotal support for the model and Section 5 concludes.

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<sup>1</sup> The terms recapitalization and bailout are often used interchangeably in the paper since depositors view policy-maker willingness to bailout banks and recapitalization as equivalent. Notice, however, that if a recapitalization occurs, no bailout will actually be necessary since no run will occur.

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