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# Monetary policy in a financial crisis

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## Abstract

What are the economic effects of an interest rate cut when an economy is in the midst of a financial crisis? Under what conditions will a cut stimulate output and employment, and raise welfare? Under what conditions will a cut have the opposite effects? We answer these questions in a general class of open economy models, where a financial crisis is modelled as a time when collateral constraints are suddenly binding. We find that when there are frictions in adjusting the level of output in the traded good sector and in adjusting the rate at which that output can be used in other parts of the economy, then a cut in the interest rate is most likely to result in a welfare-reducing fall in output and employment. When these frictions are absent, a cut in the interest rate improves asset positions and promotes a welfare-increasing economic expansion.

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## 1. Introduction

In recent years there has been considerable controversy over the appropriate monetary policy in the aftermath of a financial crisis. Some argue that the central bank should raise domestic interest rates to defend the currency and halt the flight of capital. Others argue that interest rate reductions are called for. They note that a country that has just experienced a financial crisis is typically sliding into a steep recession. They appeal to the widespread view that in developed economies like the US, central banks typically respond to situations like this by reducing interest rates. These authors urge the same medicine for emerging market economies in the wake of a financial crisis. They argue that to raise interest rates at such a time is a mistake, and is likely to make a bad situation even worse. One expositor of this view, Paul Krugman [20] (pp. 103–105) puts it this way:

But when financial disaster struck Asia, the policies those countries followed in response were almost exactly the reverse of what the United States does in the face of a slump. Fiscal austerity was the order of the day; interest rates were increased, often to punitive levels.... Why did these extremely clever men advocate policies for emerging market economies that would have been regarded as completely perverse if applied at home?

We describe a framework that allows us to articulate the two views just described. The framework has two building blocks. First, we assume that to carry out production, firms require domestic working capital to hire labor and international working capital to purchase an imported intermediate input. Second, we adopt the asset market frictions formalized in the limited participation model as analyzed in [14,15,19,21]. The limited participation assumption has the consequence that an expansionary monetary action makes the domestic banking system relatively liquid and induces firms to hire more labor. To the extent that the imported intermediate input complements labor, the interest rate drop leads to the increased use of this factor too. This is in the spirit of the traditional liquidity channel emphasized in the closed economy literature, which stresses the positive effects of an interest rate cut on output. So, absent other considerations, the model rationalizes the Krugman view outlined above.

Our model has an additional feature which may be particularly relevant during a crisis. We suppose that a crisis is a time when international loans must be collateralized by physical assets such as land and capital, and that this restriction is binding. To understand how collateral affects the monetary transmission mechanism in our model, it is useful to consider a simplified version of our collateral constraint expressed in units of the foreign currency:

$$\frac{Q}{S}K \geq R^*z + B.$$

Here,  $B$  represents the stock of long-term external debt;  $z$  represents short-term external borrowing to finance a foreign intermediate input;  $R^*$  represents the associated interest rate;  $K$  represents domestic physical assets like land and capital;

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