Andreas Krause

Debt-triggered currency crises

Reliance on foreign investments

- Many countries rely on foreign investments, their reduction might cause an economic crisis which will also affect the exchange rate
- Capital inflows can reduce for reasons unrelated to the country itself
- It might be a crisis in the country providing much of the investment that makes them reduce their foreign investments
- It might be the opening of other markets or a re-evaluation of investment portfolios in general

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Consumption decisions

- The production of goods requires capital and labour with capital and labour elasticities summing up to unity
- $Y = K^{\alpha} L^{1-\alpha}$
- Wages are set according to the marginal product of labour, $w = \frac{\partial Y}{\partial L} = (1-\alpha)\frac{Y}{L}$
- The total income $wL = (1-\alpha)Y = C$ is fully consumed
- The demand for goods consists of domestic consumption goods and domestic investment goods, and the exports at the prevailing exchange rate, either in form of good exported or capital imported
- $Y = \mu C + \mu I + eX = \mu (1-\alpha) Y + \mu I + eX$

$\Rightarrow$ $e = \frac{(1-\mu(1-\alpha))Y - \mu I}{X}$

$Y = \frac{eX + \mu I}{1-\mu(1-\alpha)}$

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Investments and wealth

- Investment is limited by wealth in the economy as there is a maximum leverage
- $I \leq I^* = (1+\theta)\, W$
- Given alternative investments, for example abroad, investment opportunities will be limited
- Wealth is the income from the capital, which is given by its marginal product: $r = \frac{\partial Y}{\partial K} = \alpha \frac{Y}{K}$ and $rK = \alpha Y$
- From the capital income, servicing of any outstanding domestic debt and foreign debt is to be deducted
- $W = rK - D - eF = \alpha Y - D - eF$

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Equilibrium investment

- As investment increases production, the aim is to achieve the highest possible investment I^*, but this depends on the wealth, which in turn depends on the actual investments conducted
- $\frac{\partial W}{\partial I} = \frac{\partial W}{\partial e}\frac{\partial e}{\partial I} = -F\left(-\frac{\mu}{X}\right) = \mu\frac{F}{X}$
- $\frac{\partial I^*}{\partial I} = \frac{\partial I^*}{W}\frac{\partial W}{\partial I} = (1+\theta)\,\mu\frac{F}{X}$
- Consider the case that $I^* = 0$

$\Rightarrow$ As no investment is conducted, no goods are produced, hence $Y = 0$

$\Rightarrow$ As $Y = 0 = \frac{eX+\mu I}{1-\mu(1-\alpha)}$, we require $I < 0$

- Assume that $\frac{\partial I^*}{\partial I} > 1$
- This is the case leverage is high, domestic consumption high, or foreign debt high relative to exports

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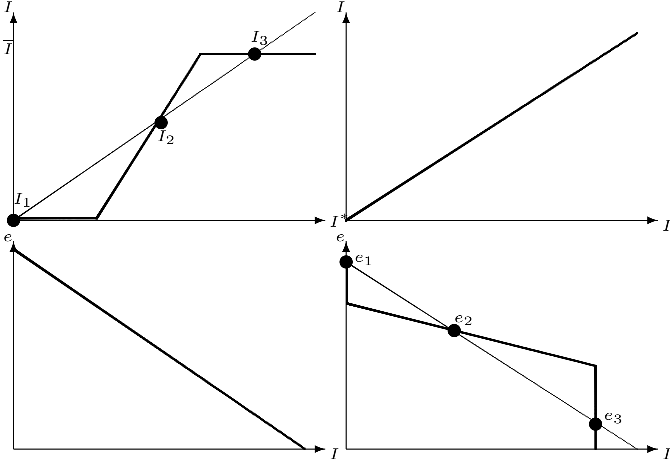
Multiple equilibria



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Reduced capital inflows

- Assume capital inflows are reduced

$\Rightarrow$ From $e = \frac{(1-\mu(1-\alpha))Y - \mu I}{X}$, the exchange rate increases

$\Rightarrow$ From $W = rK - D - eF$ the higher costs of servicing foreign debt reduces wealth

$\Rightarrow$ From $I^* = (1+\theta)W$ investment will reduce

$\Rightarrow$ From $e = \frac{(1-\mu(1-\alpha))Y - \mu I}{X}$, the exchange rate increases

$\Rightarrow$ A downward spiral of reducing investment and depreciating exchange rate commences

$\Rightarrow$ A new equilibrium emerges with a devalued exchange rate

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Reaching a new equilibrium

- The devaluation in the new equilibrium can be interpreted as a currency crisis
- A small reduction in capital inflows can cause a large change in the exchange rate that is not justified by the lower demand for the currency from lower capital inflows
- The effect of the lower capital inflows on the wider economy, especially investments, causes the currency to devalue and reach a new equilibrium

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Vulnerability to currency crises

- Multiple equilibria are only possible if $\frac{\partial I^*}{\partial I} > 1$
- This is achieved in an economy with high leverage
- It also requires low imports for consumption and hence a reliance in domestically produced consumption goods
- High foreign debt, relative to the income from exports, increases the costs of foreign debt from a devaluation of the currency and reduces wealth
- Countries with such characteristics are vulnerable to currency crises if capital flows reduce

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Andreas Krause
Department of Economics
University of Bath
Claverton Down
Bath BA2 7AY
United Kingdom

E-mail: mnsak@bath.ac.uk