A diagramatic solution of the NK model with fixed prices (based on Williamson's book)

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1   Introduction

The details of the mechanisms were discussed in the lectures so this file just formalises the diagrams and provides a brief sketch of the rationale behind the results. In all cases, we start from the steady state where the equilibrium is the same as that under flexible prices.

The assumption is that prices are fixed in the short-run so any effects below that differ from their RBC counterparts are temporary.

1.1   A decrease in interest rates

The central bank controls the nominal interest rate. If the central bank decreases the nominal interest rate

- This leads to a one-for-one decrease in the real interest rate; we move along the Y^d curve.

- The new equilibrium is one with Y_2, r_2.

- This leads to an increase in labour supply. For the level of employment we work backwards from Y_2 up to the new labour supply curve. This also provides us with the real wage.

- The decrease in interest rates and increase in income lead to an increase in money demand so M rises (supply is endogenous).

1.2   Expansionary fiscal policy

With an increase in G

- Y^d rises (even if consumption falls) but interest rates do not change by assumption.

- Labour supply rises. We therefore work backwards from Y_2 to find the level of employment and wages under the new labour supply curve.

- Interest rates do not change but income rises: money demand increases.

1.3   Persistent increase in TFP

Both z and z' increase.

- The latter causes an increase in Y^d so output rises while interest rates remain unchanged.

- Again, work backwards to find the level of employment and wages, but bearing in mind that the production function has changed (as a result of z rising). In principle, we could find that employment falls (if the increase in Y^d is not very large and that of the production function is).
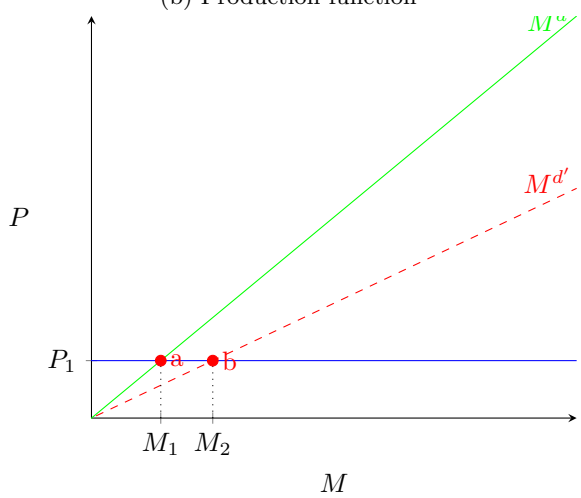
- Money demand rises given the increase in income.
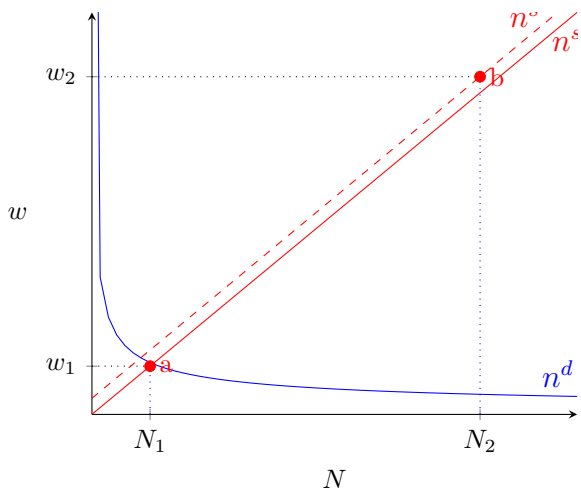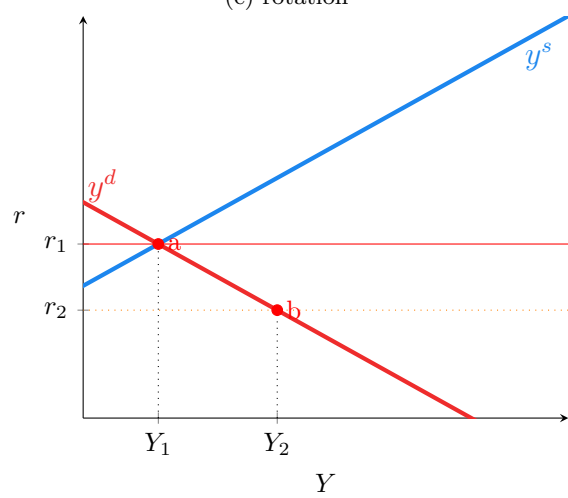
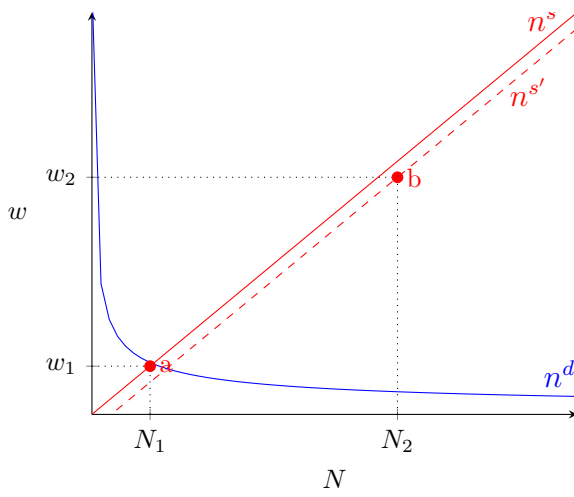(a) Labour market
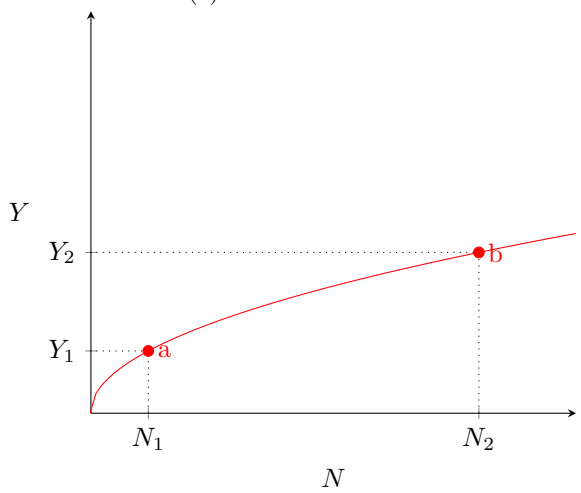
(b) Production function
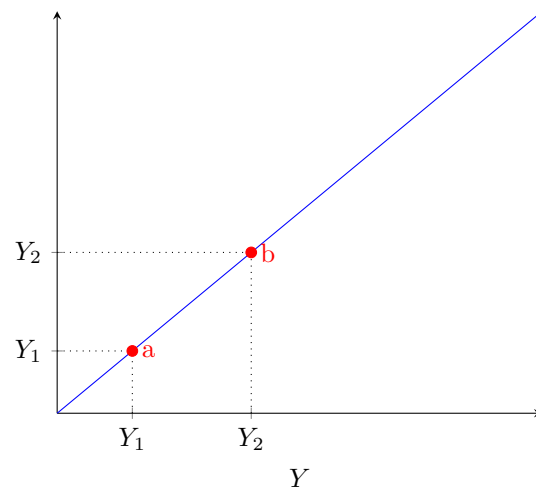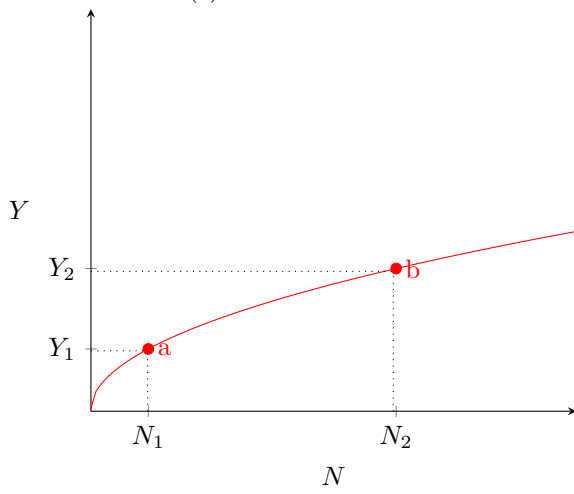
(c) rotation

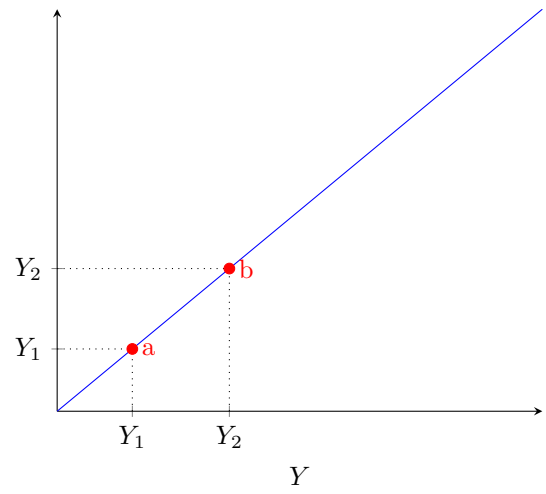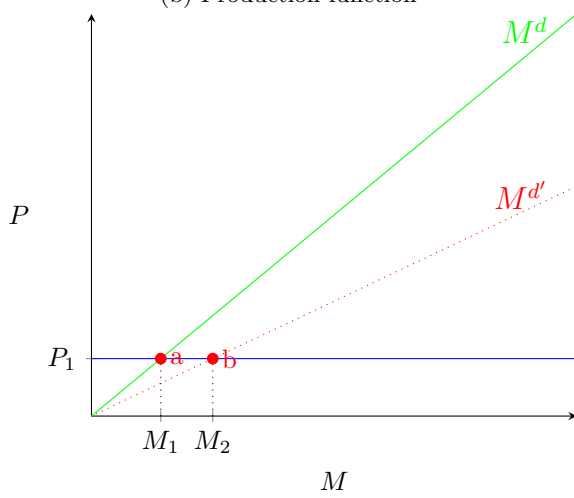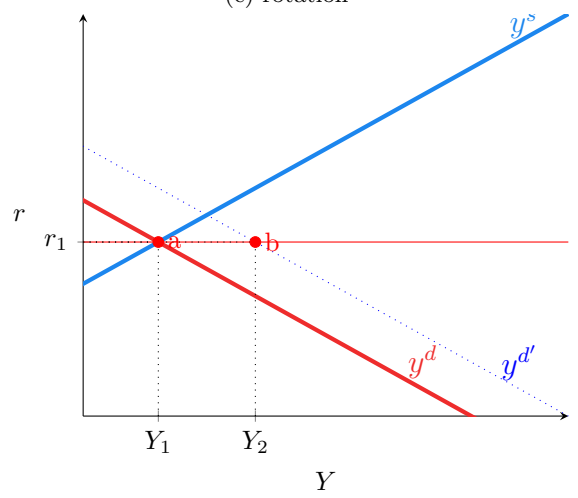(d) Money market

(e) output supply and demand

Figure 1: Effects of change in nominal interest rate
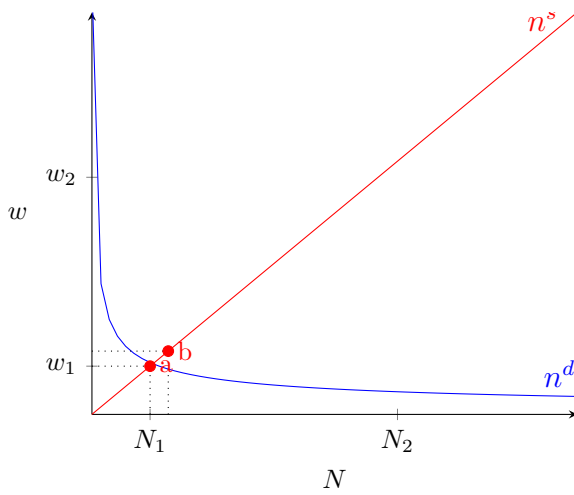
(a) Labour market

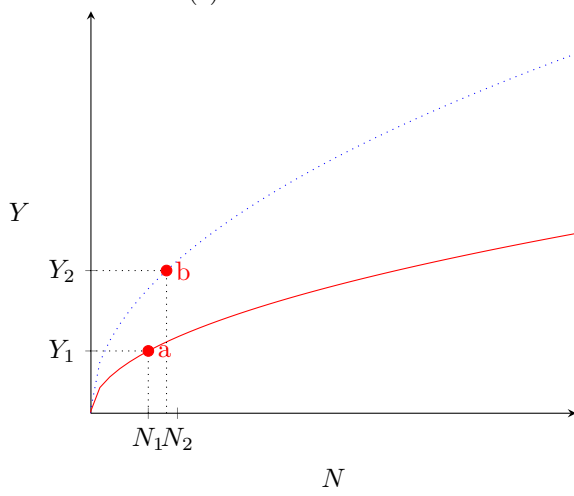(b) Production function

(c) rotation

(d) Money market
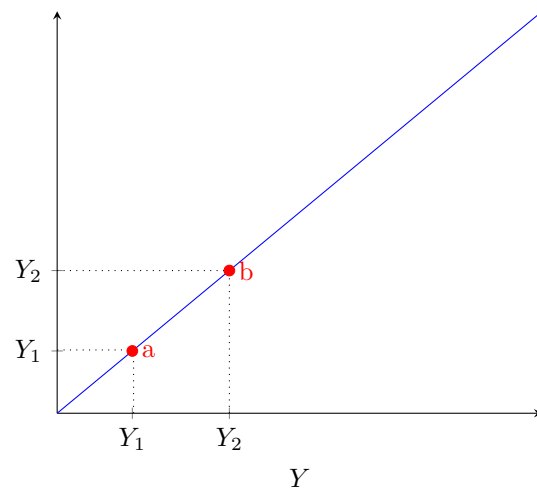
(e) output supply and demand

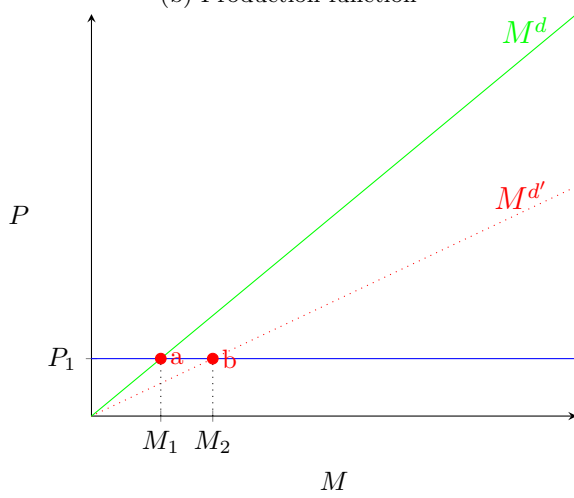Figure 2: Effects of increase in G

4

(a) Labour market
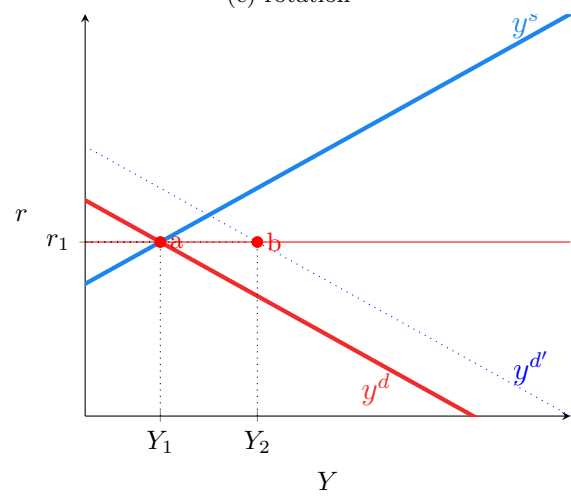
(b) Production function

(c) rotation

(d) Money market

(e) output supply and demand

Figure 3: Effects of a persistent increase in z