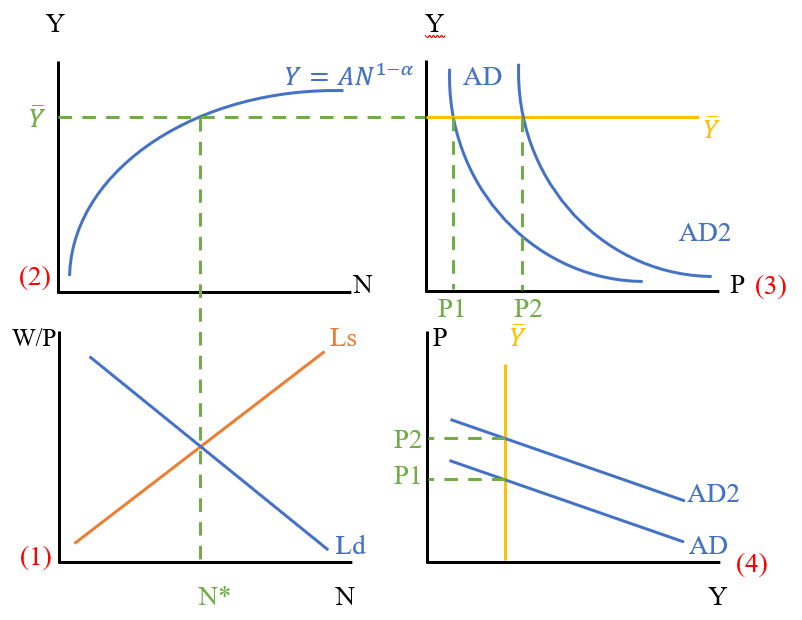
Assume an economy that starts with 𝑌 = 𝑌𝑛. Illustrate graphically, explain, and critically discuss the impact of an expansionary monetary policy shock (e.g., arise in the money supply or a fall in the interest rate) depending on whether we use a Simple Classical Model, the Blanchard IS-LM-PC model with anchored expectations and endogenous money, or the Anti-Blanchard IS-LM-PC model with anchored expectations and endogenous money where firms have the power to adjust the economy after a shock. You can assume that nominal interest rates will not reach the zero lower bound. Considering empirical evidence and the model’s theoretical assumptions, provide a full and broad critical discussion of the strengths and limitations of the Blanchard IS-LM-PC model.

Plan:

* Introduction
* What is the impact of the shock?
  + Simple classical model
    - No effect – monetary policy can only have effects on aggregate demand, whereas output is only determined by the labour market equilibrium. Since output is equal to M/P, this means that whenever the money supply increases, the price level must also increase.
  + Blanchard IS-LM-PC with anchored expectations and endogenous money
    - A fall in the interest rate causes the LM curve to shift downward, which causes *Y* to rise and we consequently find ourselves in an inflationary period due to the Phillips curve relation. This will affect the income distribution in the labour market.
  + Anti-Blanchard IS-LM-PC
    - Same as Blanchard, but when it comes to the labour market, firms and workers will adjust their habits to lower inflation. If workers have more controls, wages will rise – if firms have more control, mark-up will rise.
  + Criticisms of Blanchard IS-LM-PC
    - Empirical evidence for hysteresis?
    - Wildauer et al. paper emphasising importance of factoring in wage changes into the IS curve,
  + Strengths of Blanchard IS-LM-PC
    - Endogenous money
    - The anti-Blanchard model assumes that workers and firms will work to combat inflation, however that may not fit neatly with the behavioural equations which are supposed to govern their behaviour.

In this essay, I will demonstrate that the Simple Classical Model (SCM) takes the position of monetary neutrality, meaning that it predicts that a monetary shock will have no impact on output in an economy. I will show that both the Blanchard and anti-Blanchard IS-LM-PC models model expansionary monetary shocks as impactful with respect to current levels of output, inflation and wages and profit. Finally, I will consider a broad range of points for and against the Blanchard IS-LM-PC.



*Figure 1*

In figure 1.1, we find that the equilibrium between labour supply, *Ls*, and labour demand, *Ld,* determines the amount of labour currently being employed, *N\**. In figure 1.2, the equilibrium between N\* and our production function determines current output ; this determination is possible because we are assuming that .

Output in the economy isdetermined by labour supply and demand, which, in the SCM, have no relationship with the money supply or the interest rate. Instead, changes in monetary policy only affect aggregate demand, which is defined by the relationship between money supply and the price level, , where we assume . In figure 1.3, AD is defined by the equation , however this relationship is often approximated to the straight line seen in figure 1.4. In the SCM, *Y* is always fixed where , so we substitute . This implies that, to maintain output fixed at , a rise in the money supply requires an equal rise in the price level and vice versa, so P1 shifts to P2. To summarise, the SCM predicts that an economy experiencing an expansionary monetary shock will face an increased price level, while their level of output will stay the same.

Blanchard’s IS-LM-PC model models expansionary monetary shocks as influential with respect to current levels of output, inflation and wages and profit.

A diagram of a mathematical equation

Description automatically generated with medium confidence

*Figure 2*

In figure 2.1, an expansionary monetary shock is modelled as the central bank decreasing the interest rate from to . In endogenous money theory, the LM curve is perfectly elastic at the real interest rate, so the LM curve also shifts downwards. The IS-LM relationship, previously determining output at Yn, now determines output at level Y. When , the Phillips curve relationship models an inflationary period in the economy, exemplified in figure 2.4. In figure 2.5, we model the impacts of inflationary interest rates on workers and firms in the economy. Before the monetary shock, the total product in the economy is represented by the blue and yellow areas. The yellow portion is given to workers in the form of wages, and the blue portion earned by firms in the form of profit. After output increases, the total product of the economy is represented by blue, green, yellow, and orange areas, with workers and firms gaining the orange and green areas, respectively. The distribution of the total product of the economy, then, is dependent on the price setting curve, as this curve delineates the workers’ section from the firms’ section. To summarise, Blanchard’s IS-LM-PC model posits that an expansionary monetary shock will lead to inflation and an increase in the total output of the economy. The benefits of this extra output will be distributed to workers and firms depending on the price-setting relation, and thus the mark-up.

The anti-Blanchard IS-LM-PC agrees with the Blanchard model, insofar as it concerns the process I have already explained. However, the anti-Blanchard model argues that following this process, the potential output Yn in figure 2.5 will adjust to the output Y, because of a desire among workers and firms to lower inflation. This adjustment can happen in two different ways, and will be determined by whether firms or workers have the most power in a given economy.

A diagram of a mathematical equation

Description automatically generated with medium confidence

*Figure 3*

In figure 3, we see what happens when firms dominate the economy. Rather than reduce mark-up, firms force workers to accept lower wages, which is modelled as a fall in their bargaining power. This shifts WS to WS2, causing Yn(t-1) to shift to Yn and PC to shift to PC2, ending the inflationary period as seen in figure 3.4.

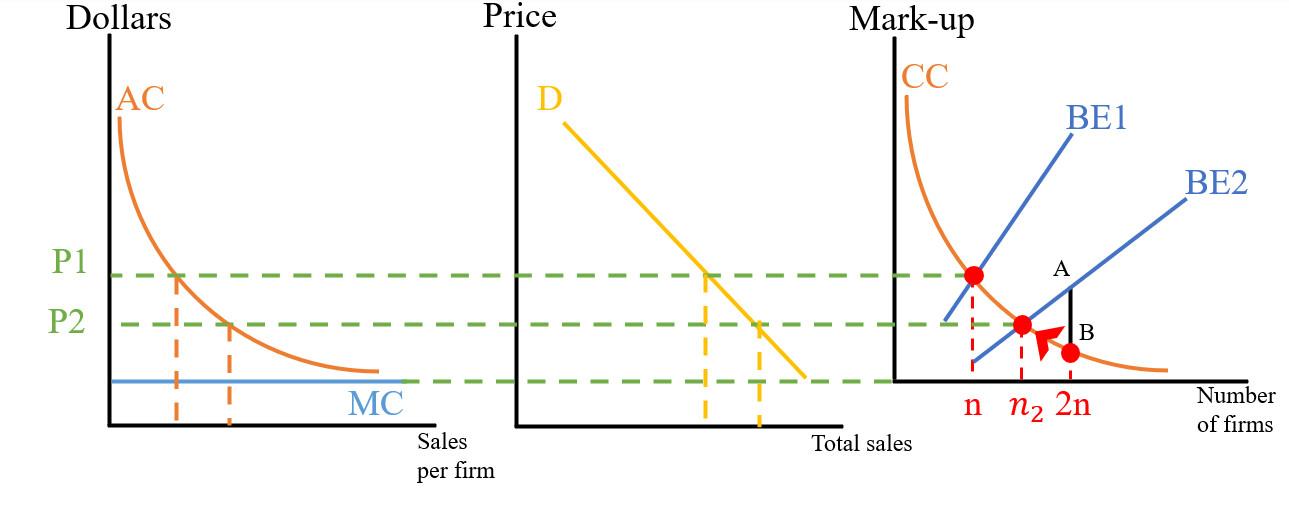
In general, Blanchard’s IS-LM-PC model has a few key strengths over other models, when realistically modelling economies. First, considering the assumptions of all models, both IS-LM-PC models share a strength over the SCM, since the formers’ implicit time dynamics and assumption of imperfectly competitive markets are more realistic than the latter’s completely static model and assumption of perfect competition. Second, considering empirical data, the consensus on monetary neutrality seems to be that it is false, i.e., contrary to what the SCM predicts, monetary shocks do affect output. This is supported by Romer and Romer (1989), Christiano et al. (1999, 2005) and Coibon (2012).

The Blanchard IS-LM-PC model also has some weaknesses. First, Blanchard’s IS-LM-PC differs from the simple IS-LM-PC model in an important way, that it includes the theory of hysteresis, pioneered by Blanchard. Essentially, the theory suggests that a shock in the economy may continue to have an effect, even after the shock has been dealt with, e.g., unemployment may bounce back *lower* after a full recovery from a recession. However, this theory lacks strong evidential support: Liew et al. (2009) found that an analysis of 14 different OECD countries rejects the hysteresis hypothesis. Another weakness exists in the fact that changes in wages in the labour market in figure 3.5 don’t lead to a change in consumption in the economy, which would shift the IS curve, making the model less realistic.

Use the three-panel internal economies of scale diagram to show the overall impact of trade integration between two identical economies. Now, assume the UK was at 𝑌 = 𝑌𝑛 when the UK left the European Union. Given the change in the average mark-up in the UK due to Brexit implied by your analysis in the first part of your answer, use the Blanchard IS-LM-PC model alongside a graph of inflation over time to explain the impact of this change in the mark-upon the UK economy under two scenarios: i) if the central bank responds by raising interest rates versus ii) if there is higher immigration to the UK. Discuss the overall macroeconomic impact of Brexit on the UK economy between 2016 and 2022.

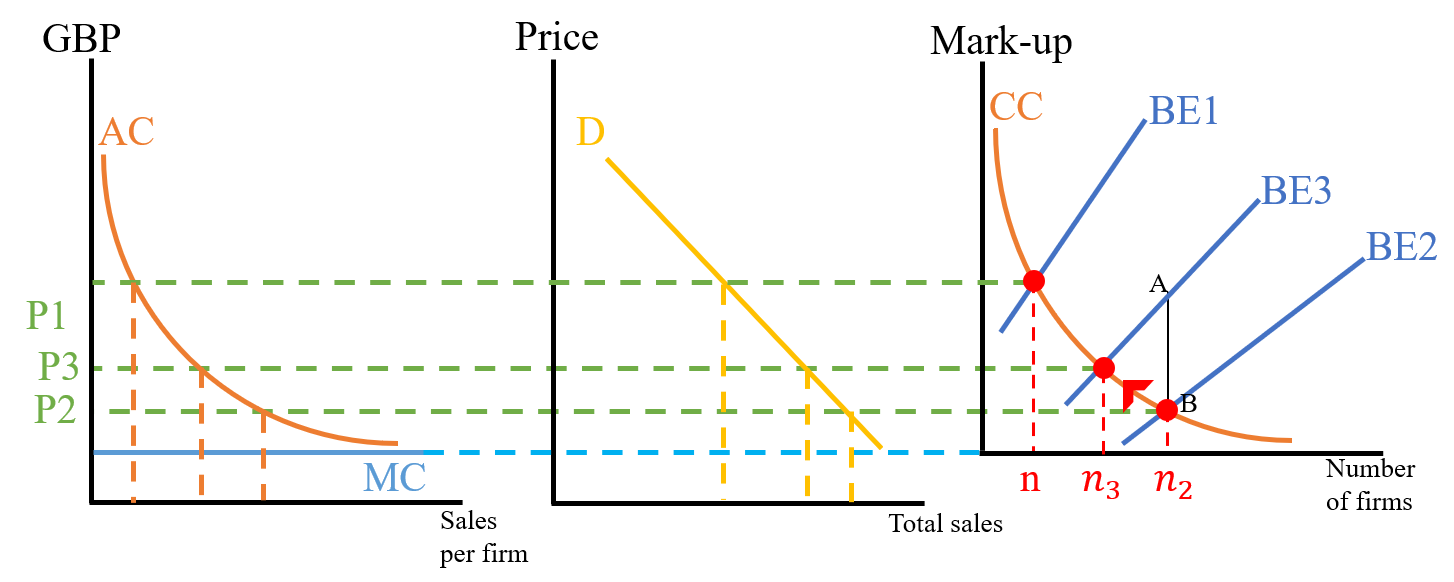
* Introduction
* Curve of mark-up and number of firms, number of firms doubles but they cannot all be supported because the price dictated by competition is less than the necessary break even price.
* Moving to the UK and the EU, the UK leaving is more a form of disintegration. Because of the free trade agreement with the EU, the break even point will not reduce back to pre-EU levels, because UK firms will still have access to a larger amount of customers than pre-EU levels. However, the number of firms will still have to adjust to this new break-even point. This leads to a higher mark-up across the UK economy
* This higher mark-up will have two different impacts:
  + i) with rising interest rates: the mark-up causes a reduction in Yn, meaning we will be in an inflationary period with the same IS-LM relation. The central increases interest rates to end the inflationary period, getting IS-LM output back to the natural rate.
  + ii) with immigration: the increased mark-up causes a reduction in Yn. Immigration into the economy would shift WS downwards and increase Yn.

In this essay, I will demonstrate that the overall impact of trade integration in two identical economies is a decrease in mark-up and an increase in the number of companies, however this increase is less than double. Next, I will show the implications of this theory in relation to the trade *disintegration* between the UK and the EU during Brexit, that being that mark-up is increased and the number of firms decreases, although not to pre-EU levels. As a result of this increased mark-up, the UK economy could respond in one of two ways. First, I will show the effects of the central bank responding by changing interest rates, and second, I will show the alternative effect of increase immigration. Finally, I will demonstrate that the overall macroeconomic impact of Brexit on the UK economy has been negative.



*Figure 1*

In figure 1, the effect of integrating two identical economies is expressed by internally analysing one of the two economies. There are two important effects when it comes to integration: first, the customer base which firms sell to doubles in size, meaning it is easier for firms to break-even as they sell more products and can retain the same level of revenue even while lowering mark-up. This has the effect of shifting the break-even curve from BE1 to BE2. Second, the total number of firms doubles from n to 2n. At this number of firms, the competition curve CC determines that they must sell at price B, but they require price A to break even. So, firms either leave the market completely, or are acquired via mergers until the number of firms decreases and the equilibrium between CC and BE2 is reached – at this point, the price given by competition is enough to break even and we reach a steady state. To summarise, integration of two identical economies will lower prices and increase the number of firms, however this number will not be double the original number.



*Figure 2*

In figure 2, we see the effects of the UK disintegrating from the EU. BE1 represents the break-even curve *before* the UK joined the EU, BE2 represents the break-even curve during EU membership, and BE3 represents the break-even curve *after* Brexit. BE3 lies between BE1 and BE2 because, post-Brexit, the customer base for firms is still greater than the customer base pre-integration due to the post-Brexit free trade agreement with the EU. Furthermore, I have placed it closer to BE2 since the current trade agreement is closer to EU membership than what came before. Following disintegration, the number of firms is unstable at because firms require price A for their goods but can only set price B because of competition. Like before, firms leave and are acquired until a new equilibrium is reached at . Thus, Brexit results in a higher mark-up, larger and fewer firms, and less total sales in the British Economy.