

ECN320 Open Market Macroeconomics

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Date: 20 May 2019
Time: 14.00-17.30

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INSTRUCTIONS

Examination aids: Code A2.

There is no need of any type of calculator. ~~You are allowed to use a two-way Norwegian (or any other foreign language) – English dictionary and/or an English – English dictionary (excluding a dictionary of economic concepts).~~

Instructions: Look over the exam to ensure that there are three pages (including this page).

Please keep your answers to Part 1 separate from your answers to Parts 2 and 3, and your answers to Part 2 separate from those to Part 3.

Avoid unnecessary information as this will negatively affect the quality and value of your answer. When asked to provide a graph (part 3), be sure to label it carefully, be neat, make all assumptions explicit, and give an explanation. Graphs are required only when specifically asked for, but you can use graphs whenever you think it helps your answer.

FORMAT

Examination format: The exam consists of three parts for a total of 100 points.

Part 1: (25 points) true, false, depends format, 5 each worth 5 points.

Provide a brief explanation (no more than three sentences are required) to explain why the statement is either true, false, or whether it depends. Defend your answer in all cases and provide an example if it helps. You may use a graph to defend your answer.

Part 2: (45 points) short answer format, 3 questions, each worth 15 points.

Provide short answers to the questions or statements and define relevant concepts. You may use a graph in your answer, but be sure to explain your graphs if you choose to illustrate your points in that way. Each problem is divided into sub-parts. If asked for a *list*, a few bullet points related to the concept is what is required.

Part 3: (30 points) detailed answer format.

The question involves modelling a specific trade and/or macroeconomic policy situation. You are instructed to provide a graph(s). Be sure to provide an explanation and any supporting assumptions that clarify what you are demonstrating in the graphs.

Part 1. Explain whether the statements are true, false, or whether it depends. Defend your answer. If depends is your answer, be sure to explain upon what it depends. (25 points)

- 1.1 Expansionary fiscal policy can result in a crowding out effect (when lower investment levels offset the effect of higher government spending). Such crowding out is a feature of both the degree of capital mobility and type of exchange rate regime (fixed or flexible).
- 1.2 Consider an external shock affecting Home's macroeconomy. For Home's balance of payments to be in equilibrium, all internal prices will need to adjust to the external shock regardless of the type of exchange rate regime (fixed or flexible) used by Home.
- 1.3 Dollarization (accepting a foreign currency, usually the US dollar, as the legal means of settling domestic transactions) would make more sense for the economy of a small, open country rather than for a large economy.
- 1.4 Consider a country with a history of both budget deficits and current account deficits (negative balance of trade). Policy aimed at reducing the budget deficit would only reduce the value of the local currency.
- 1.5 The possibility of exchange rate overshooting is one reason for the enhanced effectiveness of monetary policy under flexible exchange rates.

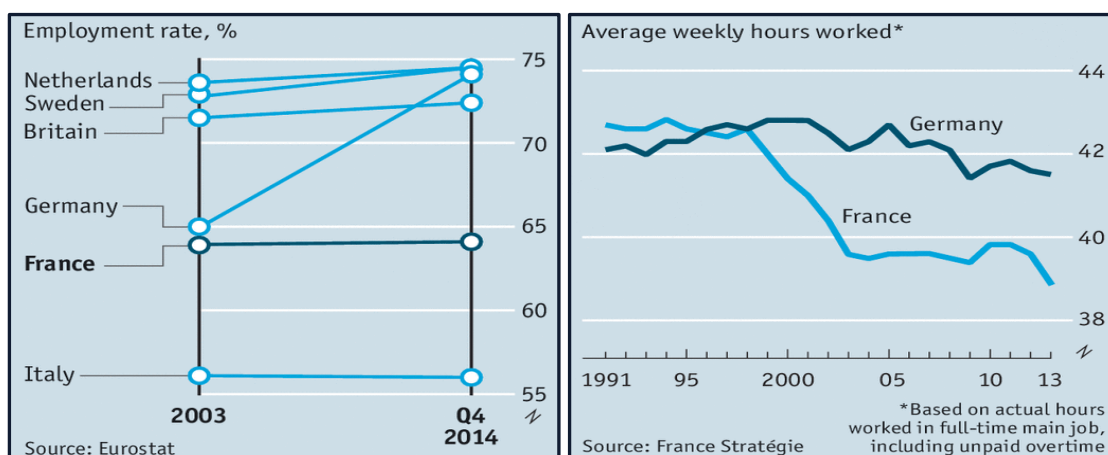
Part 2. Answer each of the following questions or respond to the specific statements. Relate your answers to concepts discussed in class and avoid unnecessary information! (45 points)

- 2.1 A question facing a country choosing to fix the value of its currency to a foreign currency (or a basket of currencies) must be how it will defend the exchange rate target. In doing so, the country has various options: (a) loosening the peg (fix), gradually devaluing or revaluing; (b) intervening by buying/selling currencies; (c) imposing foreign exchange controls; (d) altering monetary policy to change the supply-demand position affecting export supply, import demand and/or international capital flows; and (e) altering fiscal policy to change the supply-demand position affecting export supply, import demand and/or international capital flows. Use this information to answer the following:
 - 2.1.1 Suppose there is pressure for the exchange rate ($E_{lc/fc}$) to increase. *List* reasons why the equilibrium exchange rate might be affected. Be specific. (5 points)
 - 2.1.2 Consider your list in 2.1.1 and rank the policy options from best to worst. Explain your ranking of the policy responses. If it helps, provide a simple model to help illustrate the changes in the exchange rate equilibrium. (10 pts)
- 2.2 The global financial crisis of 2007 exposed the excessive debt buildup and brought a lack of confidence in financial institutions, resulting in a liquidity crisis. A reluctance of firms to borrow and invest and households to spend was a feature of the macroeconomic situation. The central banks of many mature economies (UK, US, Japan and the Eurozone area) responded with unorthodox monetary policy. Keep in mind the macroeconomic conditions that existed and why unorthodox monetary policy was necessary when answering the following:
 - 2.2.1 Why do some argue that unorthodox monetary policy blurs the distinction between monetary and fiscal policy and affects central bank independence? Explain. (8 pts)
 - 2.2.2 Some argued that unorthodox monetary policy would be a "first shot fired" in a currency war. How could unorthodox monetary policy in mature economies affect global currency markets and what evidence could point to its negative effects? Be specific. (7 pts)

2.3 The wage-setting (WS) and price-setting (PS) behavior describes how labor markets work by providing a model that links prices, wages, employment (unemployment) and output. Keep in mind the underlying processes that help determine wages in the WS-PS model when considering the following:

2.3.1 Describe the features of the WS-PS model. (5 pts)

2.3.2 During 2008-16, wages in France increased in real terms by 1% per year while the unemployment rate increased. In Germany (and many other countries), by contrast, unemployment decreased and wages remained unchanged. The graphs below highlight other differences in France and Germany's labor markets. How could the WS-PS model be useful in explaining these differences in the labor market situations in France and Germany? [Hint: You do not need to know anything about the actual processes of the French or German labor markets – it is enough to identify possible factors causing these differences.] (10 pts)



Part 3. Answer the questions related to the macroeconomic scenario described. Be specific and explain your answers to the best of your ability. Label and explain your graphs clearly. Define concepts you think will support your answer and make explicit your assumptions. (30 points total)

3.1 Consider how the macroeconomic situation in a country called Home changes with a permanent expansion of fiscal policy by Home's government. Use the AA-DD model from Krugman, Obstfeld and Melitz (and developed in class) to show the effects of the permanent increase in fiscal policy on output, exchange rates and interest rates. [Note: this is a permanent increase in $G-T$ rather than successive increases in $G-T$ over time.] Be sure to link the AA-DD model to the model of interest parity (the interest-exchange rate relationship or the asset market equilibrium). Explain the short- and long-term changes in equilibrium. (10 pts)

3.2 Use a simple aggregate supply-demand (AS-AD) model to show the macroeconomic implications of the permanent increase in fiscal policy expansion. How do the short- and long-run macroeconomic results of this model relate to those in 3.1? Explain. (10 pts)

3.3 Use the three-equation model (i.e., investment-spending, Phillips curve, monetary rule, or the IS-PC-MR curves) developed in class to show the effects of a permanent increase in aggregate demand. Discuss the changes in equilibrium. In your discussion, explain the underlying assumptions and the policy objectives driving the policy responses. How might the results differ from the situation(s) in 3.2 and 3.3? (10 pts)

Summary solutions – May 2019

Result stats: N = 28; mean= 72.7 incl. only non-zero scores (23). Grades: 3A, 7B, 5C, 5D, 3E, 5F

- 1.1 Expansionary fiscal policy can result in a crowding out effect (when lower investment levels offset the effect of higher government spending). Such crowding out is a feature of both the degree of capital mobility and type of exchange rate regime (fixed or flexible).

T. In general, $\uparrow G \rightarrow \uparrow i$, which negatively affects I (under both fixed and flexible E regimes), but the issue relates to the net effect on Y . If int'l K is mobile, then it is correct to say i_H will not be affected as much as when K is immobile. However, more importantly for the crowding out effect is that the $\uparrow i \rightarrow \downarrow I$ and $\rightarrow \downarrow Y$. Under a fixed E , MP might have to contract, making the crowding out effect stronger. Under a flexible regime, the $\uparrow i \rightarrow \downarrow E$, which $\rightarrow \downarrow (X-M)$ which instead reduces the effect of Y .

- 1.2 Consider an external shock affecting Home's macroeconomy. For Home's balance of payments to be in equilibrium, all internal prices will need to adjust to the external shock regardless of the type of exchange rate regime (fixed or flexible) used by Home.

F. Recall that $E_{lc/fc} = P_H/P_F$. An external shock affects P_H relative to P_F . Under a fixed E internal prices do need to change in response to an external shock. This relates to the need for internal devaluation (changes in prices and wages) since E is not supposed to change. Under a flexible E regime the external shock can affect E without having all internal prices having to adjust.

- 1.3 Dollarization (accepting a foreign currency, usually the US dollar, as the legal means of settling domestic transactions) would make more sense for the economy of a small, open country rather than for a large economy.

T. Dollarization is a type of fixed E regime. $E_{lc/fc} = P_H/P_F$ and a fixed E implies $P_H = P_F$. That is, general inflation is more likely to follow the anchor country when/if a country is small (is a price taker from the anchor country) and open (trade's share of GDP is high, especially with the anchor country). Stability in E will ensure $\% \Delta GDP$ will be more stable. For a large country, it might not make sense for the country to accept P_F or the anchor country's inflation rate. A larger country tends to have smaller share of trade activity and more domestic activity (meaning E stability and trade activity is less important). Thus, dollarization would tend to make sense in the case of a small country.

- 1.4 Consider a country with a history of both budget deficits and current account deficits (negative balance of trade). Policy aimed at reducing the budget deficit would only reduce the value of the local currency.

D. The M-F model would predict that a budget deficit would raise i -rates and the value of the local currency to encourage K -inflow (borrowing from abroad). This would especially be the case if savings were also lower than investment. Thus, a reversal of the budget deficit should do just the opposite, i.e., lowering the value of the currency. However, for a country with a history of twin deficits one should also consider the effect of the overall debt position (asset-liability position of the country). At some point, debt levels should affect risks and the willingness of investors to hold lc debt, requiring even higher i -rates. If expectations on a higher likelihood of default take hold then the reduction of the debt by reducing the deficit could strengthen the value of the currency. The point is to say something about expectations resulting from the "history of both the budget and current account deficits". Relate this to overshooting and the cause(s) of the -BOT.

- 1.5 The possibility of exchange rate overshooting is one reason for the enhanced effectiveness of monetary policy under flexible exchange rates.

T. If E overshooting is a possibility (under either fixed or flexible E regimes), then MP control over i, P would be a means of preventing overshooting. Overshooting is the result of changes in investor expectations. If MP can curb expectations on P (which might be slow to change) and $[i_F]^e$, then overshooting will be less likely. Under fixed E regimes, MP has less room for maneuver and E can overshoot more easily. Need to relate MP to expectations.

Part 2.

2.1 A question facing a country choosing to fix the value of its currency to a foreign currency (or a basket of currencies) must be how it will defend the exchange rate target. In doing so, the country has various options: (a) loosening the peg (fix), gradually devaluing or revaluing; (b) intervening by buying/selling currencies; (c) imposing foreign exchange controls; (d) altering monetary policy to change the supply-demand position affecting export supply, import demand and/or international capital flows; and (e) altering fiscal policy to change the supply-demand position affecting export supply, import demand and/or international capital flows. Use this information to answer the following:

2.1.1 Suppose there is pressure for the exchange rate ($E_{LC/FC}$) to increase. *List* reasons why the equilibrium exchange rate might be affected. Be specific. (5 points)

E, the price of one currency in terms of another, is determined by S+D. ΔE will be caused by change in demand, supply and changes expectations.

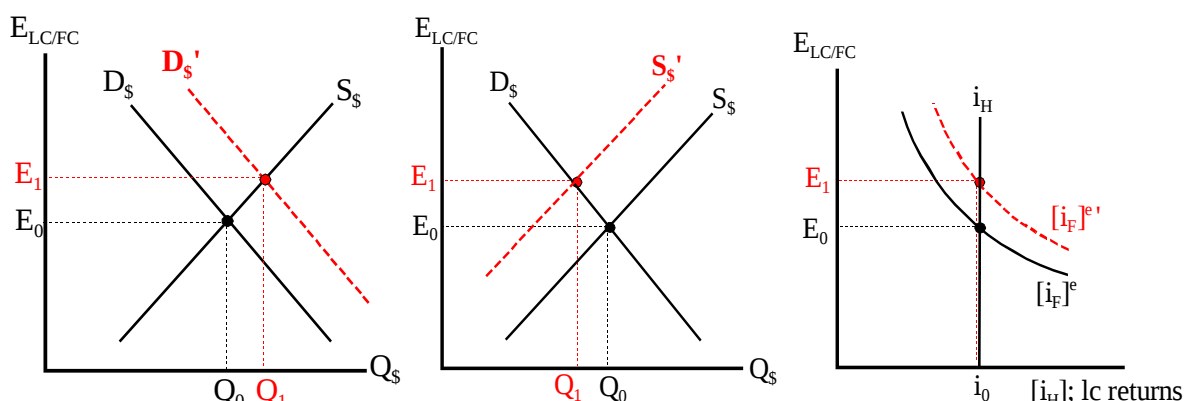
- Change in demand for foreign currency
 - $\uparrow$ imports of goods + services
 - $\uparrow$ K-inflow into Home (FDI, portfolio investment and borrowing from abroad)
 - Change in Home's policy affecting the above
- Change in supply of foreign currency
 - $\uparrow$ Home's exports of goods/services
 - $\uparrow$ Home's K-outflows
 - Change in Foreign's policy
- Changes in expectations on E, P, i_F

2.1.2 Consider your list in 2.1.1 and rank the policy options from best to worst. Explain your ranking of the policy responses. If it helps, provide a simple model to help illustrate the changes in the exchange rate equilibrium. (10 pts)

Ranking depends on particular explanation given. The focus here is on ΔD side in Home:

- * Buy/sell foreign currency
- * Changes in MP esp when coordinated with FP
- * Changes in FP esp when coordinated with MP
- * Applying exchange controls esp if the issue related to K-outflows
- * Loosening the peg – likely to affect expectations.

The ranking applies most to the ΔD_s because it is where Home's policy intervention is most likely to affect a change. The ranking is based on an indirect means of affecting change without resulting in unintended consequences (K-controls or loosening peg).



2.2 The global financial crisis of 2007 exposed the excessive debt buildup and brought a lack of confidence in financial institutions, resulting in a liquidity crisis. A reluctance of firms to borrow and invest and households to spend was a feature of the macroeconomic situation. The central banks of many mature economies (UK, US, Japan and the Eurozone area) responded with unorthodox monetary policy. Keep in mind the macroeconomic conditions that existed and why unorthodox monetary policy was necessary when answering the following:

2.2.1 Why do some argue that unorthodox monetary policy blurs the distinction between monetary and fiscal policy and affects central bank independence? Explain. (8 pts)

Unorthodox MP consists of QE and negative i-rates. Focus on how QE is like FP. QE involves asset purchases of various forms by the central bank. The asset purchases can be of risky gov't bonds and/or firms' bonds. The asset purchases can serve as a means of facilitating borrowing (easing credit) to gov'ts, investors and firms. This can be viewed as a subsidy to investors/firms. By facilitating borrowing by gov't QE can be a means of monetizing the debt (printing money) acting just like FP. In so doing, the bank is blurring the distinction between MP and FP (printing money to expand government spending). By facilitating borrowing by firms or investors, the central bank can be subsidizing targeted firms (large firms or banks that are too big to fail). In so doing the CB is making a decision on whose welfare within society to help (large firms or bankers as opposed to households in debt).
The more the CB must rely on QE the more politicized the decisions become and the more congressional or parliamentary approval and oversight the bank comes under. This adversely affects its independence and transparency. The date of "tapering" (ending QE) has been politicized in both the US and Euroarea. The decision to help only particular segments of society is both political and encroaches on fiscal policy.

2.2.2 Some argued that unorthodox monetary policy would be a "first shot fired" in a currency war. How could unorthodox monetary policy in mature economies affect global currency markets and what evidence could point to its negative effects? Be specific. (7 pts)

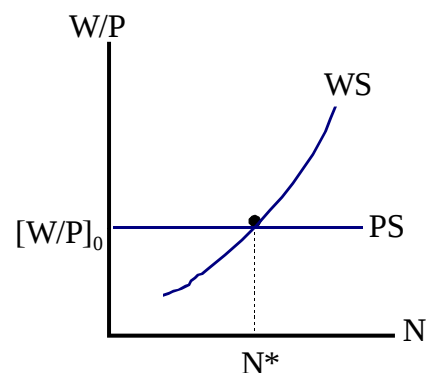
QE increased MS of the ¥, £, \$, and € and lowered the value of these currencies relative to other foreign currencies. Raising the value of emerging mkt currencies could have negatively affected their current account and GDP growth rates by hurting their exports. QE ↑ asset purchases, but there were no conditions on domestic asset purchases on lc denominated assets. Thus, some of the money went to purchase assets of emerging mkt economies (K-outflows that further raised the currency values in emerging mkt economies) and contributing to fc borrowing/debt in LDCs. This raised their borrowing and fc debt levels making them more vulnerable when the QE began to be phased out.

2.3 The wage-setting (WS) and price-setting (PS) behavior describe how the labor market works by providing a model that links prices, wages, employment (unemployment) and output. Keep in mind the underlying processes that help determine wages in the WS-PS model when considering the following:

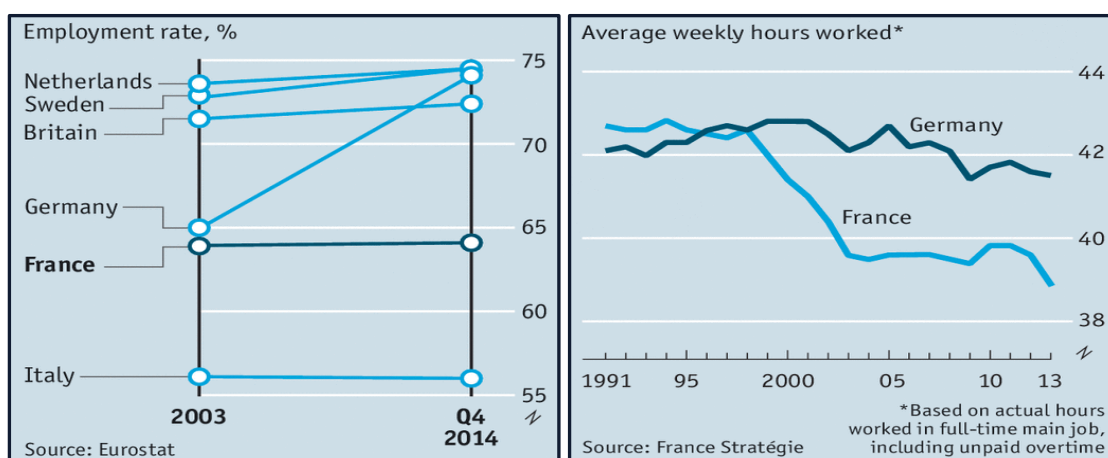
2.3.1 Briefly describe the WS-PS model. (5 points)

WS: $W/P = F(u; z)$ where u is unemployment and z is a catch all variable for factors that affect real wages (gov't policy and L-related regs) and labor's bargaining power. Upward shift in WS implies real wages are positively affected).

PS: $W/P = [1/(1 + \mu)]$; horizontal PS reflects constant prodvty; firm is able to extract surplus value of labor from workers; the constant margin of value, μ , reflects bargaining power of the firm. Downward shift in PS implies increased bargaining power by firms. N^* corresponds with real wage rate and non-accelerating rate of unemployment and full employment level of output.

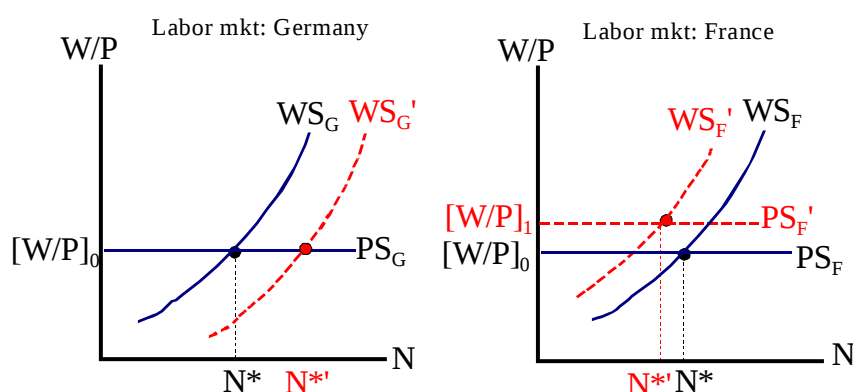


2.3.2 During 2008-16, wages in France increased in real terms by 1% per year while the unemployment rate increased. In Germany (and many other countries), by contrast, unemployment decreased and wages remained unchanged. The graphs highlight additional differences in the Franco-German labor market. How could the WS-PS model be useful in explaining these differences in the labor market situations in France and Germany? [Hint: You do not need to know anything about the actual processes of the French or German labor markets – it is enough to identify possible factors causing these differences.] (10 points)



In Germany, the employment rate has increased even as the population has increased (and perhaps the labor force). Average number of hours worked a week has fallen slightly but not during 2008-16. Wages have remained largely unchanged suggests either that bargaining power has neither favored workers nor firms. The substantial increase in the employment rate could suggest that some compromises were made.

In France, by contrast the workers have had a real wage increase despite the employment rate staying about the same and hours worked having decreased. Higher real wages (from some regulation or an improvement in labor's bargaining position relative to the firms') is consistent with a reduction in employment. While employment does not decrease, overall hours worked have decreased. France's employment has been shown as falling in the graph because the population and the labor force is assumed to have increased over the period and hours worked have decreased.

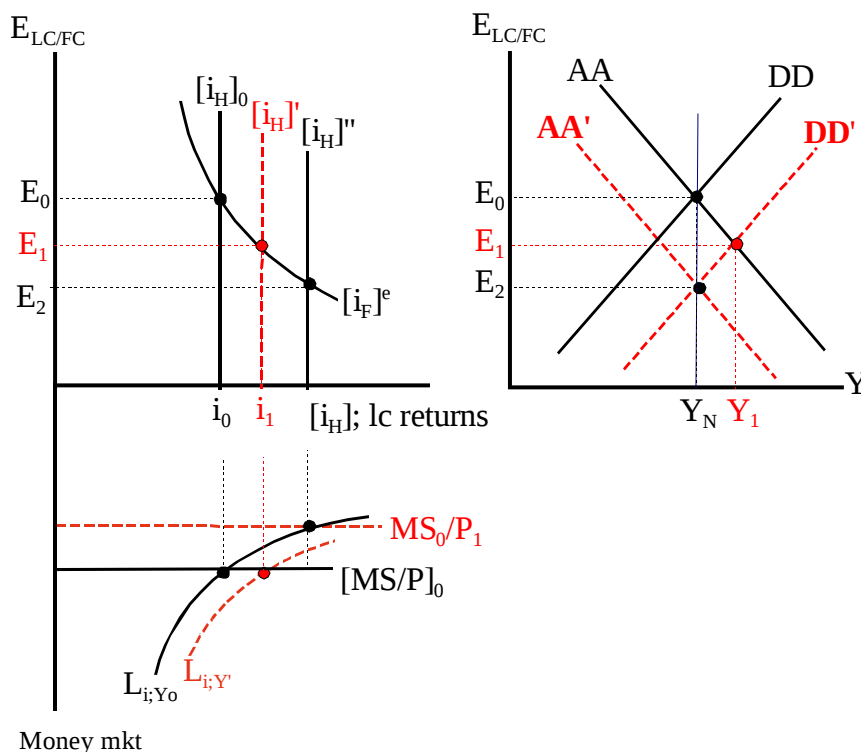


Part 3. Answer the questions related to the macroeconomic scenario described. Be specific and explain your answers to the best of your ability. Label and explain your graphs clearly. Define concepts you think will support your answer and make any assumptions you have explicit. (30 points total)

3.1 Consider how the macroeconomic situation in a country called Home changes with a permanent expansion of fiscal policy by Home's government. Use the AA-DD model from Krugman, Obstfeld and Melitz (and developed in class) to show the effects of the permanent increase in fiscal policy on output, exchange rates and interest rates. [Note: this is a permanent increase in G-T rather than successive increases in G-T over time.] Be sure to link the AA-DD model to the model of interest parity (the interest-exchange rate relationship or the asset market equilibrium). Explain the short- and long-term changes in equilibrium. (10 pts)

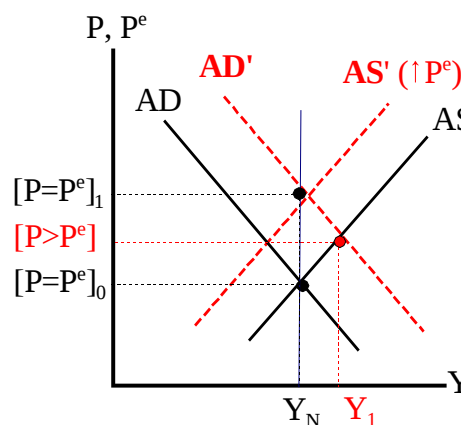
Permanent $\uparrow G \rightarrow$ DD curve shift to the right and $\downarrow E$. MP does not change, but increased AD without a change in the real sector $\rightarrow \uparrow P$.

$\uparrow P \rightarrow \downarrow [MS/P]$ causing AA curve to shift left until Y_N is restored at the lower E ($\uparrow$ value of lc). Y is restored at the natural rate of output at a faster rate of inflation.



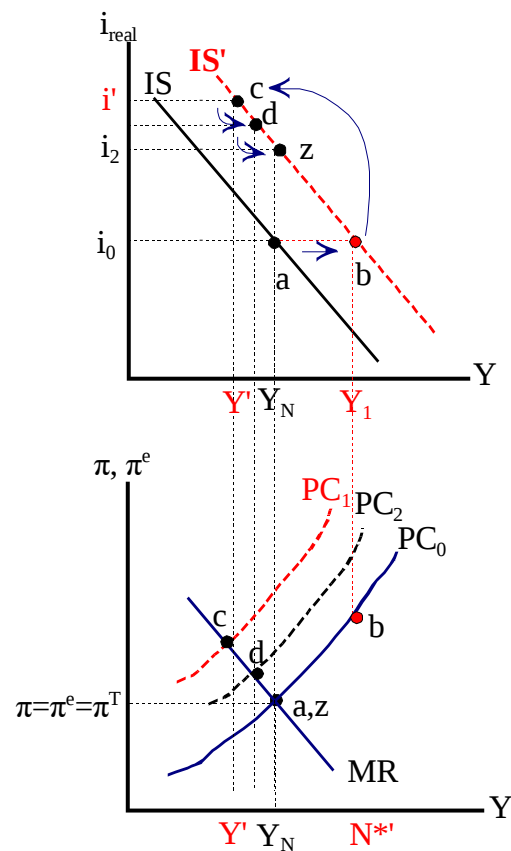
3.2 Use a simple aggregate supply-demand (AS-AD) model to show the macroeconomic implications of a permanent increase in fiscal policy. How do the macroeconomic results of this model relate to those in 3.1? Explain. (10 points).

The permanent $\uparrow AD$ ($\uparrow G$) $\rightarrow \uparrow P$ in short run, but increases Y before P^e causing Y to increase. Y expands until $\uparrow P^e$ catches up with $\uparrow P$ at which point the AS curve shifts to the left, restoring Y to the natural rate of output at a higher rate of inflation. The results in this graph are exactly the same as what is presented in 3.1: higher inflation and Y at Y_N .



3.3 Use the three-equation model (i.e., investment-spending, Phillips curve, monetary rule, or the IS-PC-MR curves) developed in class to show the effects of a permanent increase in aggregate demand. Discuss the changes in equilibrium. In your discussion, explain the underlying assumptions and the policy objectives driving the policy responses. How might the results differ from the situation(s) in 3.2 and 3.3? (10 pts)

In this case, one uses the IS-PC-MR to reflect the CB has an inflation target, π^T (suppose at 2%). The $\uparrow$ AD causes the rightward shift in the IS curve (which has real interest rates on the vertical axis). The $\uparrow$ IS at i_0 is too low and allows $\uparrow Y > Y_N$ in the short run. This causes employment to increase and pushes up wages and prices. The higher prices (as occurs in graphs in 3.1 and 3.2) is movement along the PC curve here. As expected price increases $> \pi^T$, the CB must take action to slow the economy, raising nominal interest rates faster than the inflation rates ($\uparrow i_{\text{real}}$ to i'). As the economy adjusts, the CB can lower nominal interest rates as inflation and expected inflation fall. This happens until Y is restored at Y_N . Inflation is returned to its target (not as in 3.1 or 3.2) but real interest rates are higher.



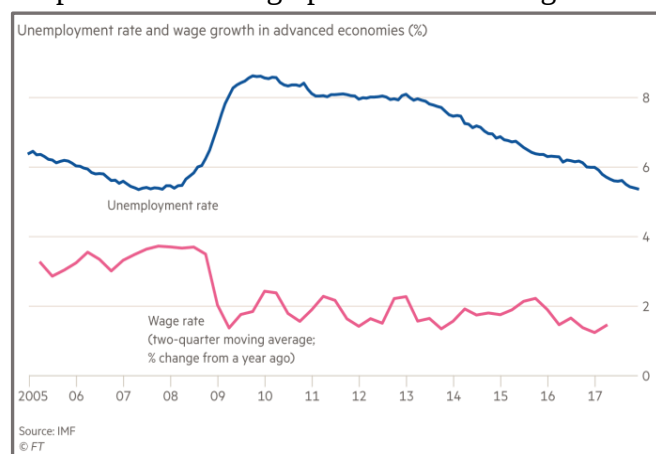
Part 1. Explain whether the statements are true, false, or whether it depends. Defend your answer. If depends is your answer, be sure to explain upon what it depends. (25 points)

- 1.1 Consider the Marshall-Lerner condition and the J-curve effect associated with a devaluation of the local currency. If trade volumes (export and imports) do not react initially to a change in the exchange rate, then the Marshall-Lerner condition to improve the trade balance will not hold and reserves decrease in the short-run.
- 1.2 A currency crisis is a conflict between domestic and external macroeconomic objectives, particularly when a government must choose a policy response between these objectives.
- 1.3 A central bank charged with targeting inflation has more discretion (autonomy) in its use of monetary policy. Thus, by targeting inflation rather than the exchange rate, the central bank's policy action is more likely to give rise to conditions that can cause overshooting.
- 1.4 Interest rate parity occurs when the returns on deposits (investments) of all currencies offer the same expected rate of return. This occurs because interest rates across countries tend to converge.
- 1.5 A 10 percent depreciation of the local currency would be equivalent, in its overall macroeconomic effect, to a 10 percent tariff across all imported goods.

Part 2. Answer each of the following questions or respond to the specific statements. Relate your answers to concepts discussed in class and avoid unnecessary information! (45 points)

- 2.1 The *Financial Times* recently reported that there was strong global economic growth (“Times are good now, but the fragility is real”, 18 Apr 2018, p. 9). Although growth rates were not as high as during 2003-07, growth in 2017 and the International Monetary Fund’s 2018-19 forecasts were higher than in any year since the crisis, except for 2010 and 2011, the years of post-crisis recovery. This, it was argued, “is a time of fragile recovery.” Keep this in mind and the information presented in the graph when answering the following:

- 2.1.1 List factors that affect inflation (4 pts).
- 2.1.2 List factors that affect wages (4 pts).
- 2.1.3 Explain how inflation and wages are expected to relate to employment (unemployment) – do your expectations match what is presented in the graph? In the explanation, discuss whether there is link between the inflation-wage-employment and monetary policy. Be specific (7 pts).



- 2.2 On 18 September 2014, Scotland held a referendum on independence from the United Kingdom (UK). Scotland’s economic integration with the rest of the UK (England, Wales and Northern Ireland), lasting more than 300 years, involves full economic union and monetary union (comprising a single-currency area that uses the pound sterling). It narrowly voted to remain in the UK. On 23 June 2016, the UK held a referendum to leave the European Union (EU). The UK voted to leave the EU. Suppose that the vote to leave the EU occurred before Scotland’s referendum to leave the UK and that Scotland voted to leave the UK as a result. Keep in mind the relationship between monetary union and economic union when answering the following:

- 2.2.1 Despite its independence, Scotland's central bank decided to continue using the pound sterling as its currency. What would be the advantages/disadvantages of keeping the pound? *List* the criteria one would need to consider to determine whether Scotland remaining in a single currency area with the UK would make sense. Briefly explain why the criteria on your list matters. [Note: Even if you are not familiar with Scotland's actual economy or its relationship with the rest of the UK, focus on the criteria and on what it could/should/might imply.] (10 points)
- 2.2.2 Think about the type of exchange rate regime this might resemble. Would the lessons of the recent Eurozone experience serve as a relevant model of what could happen if an independent Scotland kept the pound sterling? Explain. (5 points)
- 2.3 The US and the Eurozone's initial policy response to the 2007 financial crisis (and the subsequent euro crisis) were quite different. For the US, it was linked to mortgage (housing) debt that went bad following the bursting of a bubble. The Eurozone saw it as an issue of excessive government spending (e.g., Greece) and as an overly liberalized and deregulated capital market (e.g., Ireland). As such, the policy responses were different by the central bank and governments. Keep in mind the different role the US central bank has within the US and the European central bank's within the Eurozone when answering the following:
- 2.3.1 Despite the initial difference in policy responses, unconventional monetary policy became a principal component of the response. Think about the macroeconomic conditions that existed to explain why the policy response was unconventional and why it was necessary. (10 points)
- 2.3.2 Why was the Eurozone's response so much slower in its implementation (why did it start much later than elsewhere)? Be specific. (5 points)

Part 3. Answer the questions related to the macroeconomic scenario described. Be specific and explain your answers to the best of your ability. Label and explain your graphs clearly. Define concepts you think will support your answer and make any assumptions you have explicit. (30 points total)

- 3.1 Consider a situation where in a country called Home there is a stock-market boom (that is, there is greater interest among investors in Home's stock market). Use the Mundell-Fleming modeling framework (IS-LM-BP and the AA-DD graphs) and graphs of the related money-market-foreign-exchange (asset) markets to consider the implications of the stock-market boom for Home's domestic macroeconomy and its international transactions. Explain your results. (10 points)
- 3.2 Think about the macroeconomic effect(s) that the stock-market boom might have for Home in the longer run (longer than what is happening in 3.1). How might the macroeconomy adjust to what happens in response to the boom? (Hint: do not assume that the boom results in a bubble that bursts, creating macroeconomic chaos.) Present the macroeconomic adjustment using an aggregate demand and supply model. Explain your results and make your assumptions clear. (10 points)
- 3.3 Think about the potential role for macroeconomic policy from the results you obtained under 3.2. Present and explain the macroeconomic situation of 3.2 using the three-equation model (IS-PC-MR). Incorporate the macroeconomic policy in the model if appropriate. In the explanation, make clear any other additional assumptions (10 points).

Summary solutions – May 2018

Result stats: N = 23; avg score, incl. only non-zero grades (20) = 68.3, no. of A-grades: 2

Part 1. Explain whether the statements are true, false, or whether it depends. Defend your answer. If depends is your answer, be sure to explain upon what it depends. (25 points)

- 1.1 Consider the Marshall-Lerner condition and the J-curve effect associated with a devaluation of the local currency. If trade volumes (export and imports) do not react initially to a change in the exchange rate, then the Marshall-Lerner condition to improve the trade balance will not hold and reserves decrease in the short-run.

D/T. It was important to define Marshall-Lerner condition and J-curve effect. Marshall-Lerner conditions says $\xi_{ES}^E + |\xi_{ED}^E| \geq 1$ – the sum of the elasticities of ES and ED w.r.t. E must be more than one for a devaluation of local currency to improve BOT. The J-curve says that BOT worsens in S-R because (1) P are slow to change, (2) import P change faster than export P in local currency terms and (3) that trade volumes are inelastic in S-R. It is not enough for trade vol to be inelastic. If conditions (1) and (2) also hold, then BOT does worsen in S-R, then reserves position of CB could decrease.

- 1.2 A currency crisis is a conflict between domestic and external macroeconomic objectives, particularly when a government must choose a policy response between these objectives.

T. Good to start with definition of macro objectives: (1) domestic, e.g., GDP, employment, low/stable inflation, stable financial mkt; (2) external, e.g., stable E (fixed in this case), manageable external debt. A currency crisis arises when a country's BOP is not in eqblm, i.e., $BOP = 0 = BOT - \text{net K acct} - \Delta R$ not maintained. This happens when a trade deficit ($-BOT$) cannot be financed from K-inflows or foreign exchange reserves. The $-BOT$ [external imbalance] = $(S^P - I) - (G - T)$ [internal imbalance] – implying $\uparrow (I > S)$ and/or $(G > T)$. The crisis arises when the currency comes under speculative attack because of the underlying fundamentals cannot be supported (net K-outflows and dwindling reserves). It is associated with fixed exchange regimes, which means gov't can either maintain the fix or make currency more flexible and apply macro policy to deal with domestic imbalances.

- 1.3 A central bank charged with targeting inflation has more discretion (autonomy) in its use of monetary policy. Thus, by targeting inflation rather than the exchange rate, the central bank's policy action is more likely to give rise to conditions that can cause overshooting.

F. It is true that a CB charged with targeting inflation has more discretion (freedom) in its use of MP. However, by targeting inflation rather than E, the CB's policy action is more transparent and predictable, which should have less of an effect on expectations. Overshooting is a direct result of changes in expectations. A responsible CB charged with targeting inflation should lower shocks coming from changes in expectations. The point is if the CB is successful in meeting its inflation target, it reduces changes of expectations on inflation.

- 1.4 Interest rate parity occurs when the returns on deposits (investments) of all currencies offer the same expected rate of return. This occurs because interest rates across countries tend to converge.

F. Interest-rate parity does imply that returns on lc, fc assets are the same when converted into a common currency, but this does not occur because interest rates tend to converge across countries – it happens because E rates change (the futures rate of E adjusts to bring returns on lc and fc assets in line). Recall interest parity: $i_H = [i_F] + ([E_{lc/fc}]^e - E_{lc/fc})/E_{lc/fc}$. Interest rates do not converge, ΔE is mechanism by which returns are equalized.

1.5 A 10 percent depreciation of the local currency would be equivalent, in its overall macroeconomic effect, to a 10 percent tariff across all imported goods.

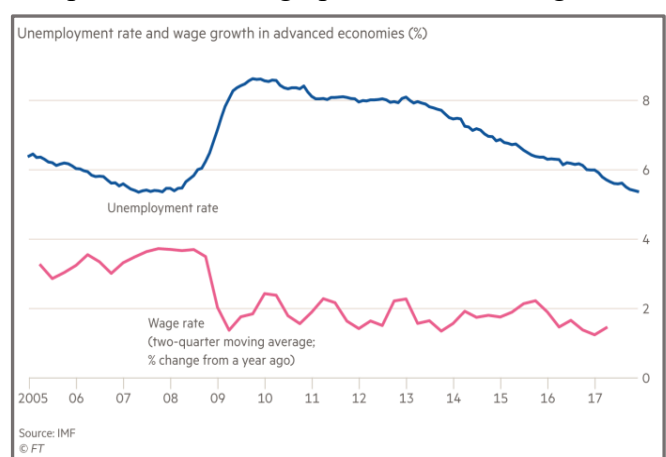
F. A 1c depreciation has an equivalent effect as an import tariff *and* an export subsidy. Thus, the full effect of the ΔE is a 10% $\uparrow P$ of import and exports. If trade is a big share of GDP, then its overall effect is $\uparrow E = \uparrow P_H / P_F$, where P_H is affected by $\uparrow P$ exports and imports.

Part 2. Answer each of the following questions or respond to the specific statements. Relate your answers to concepts discussed in class and avoid unnecessary information! (45 points)

2.1 The *Financial Times* recently reported that there was strong global economic growth (“Times are good now, but the fragility is real”, 18 Apr 2018, p. 9). Although growth rates were not as high as during 2003-07, growth in 2017 and the International Monetary Fund’s 2018-19 forecasts were higher than in any year since the crisis, except for 2010 and 2011, the years of post-crisis recovery. This, it was argued, “is a time of fragile recovery.” Keep this in mind and the information presented in the graph when answering the following:

2.1.1 List factors that affect inflation (4 pts).

Supply	Demand	Policy
* $\uparrow P$ of key inputs * neg effect on value/supply chain	* $\uparrow AD$ without ΔAS (C,I,G, X)	* Expansionary FP or MP * E intervention
Previous period inflation; Δ expectations Deviations of Y from Y_n , output gap		

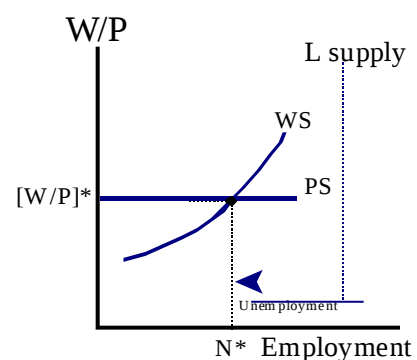


2.1.2 List factors that affect wages (4 pts).

Labor Supply	Labor demand	Policy
* number of workers; level of unemployment * mobility of labor * bargaining power of workers * union strength * skills, ed, experience	* bargaining power of firms relative to labor * control over output price in product/service mkt * K relative to labor * prodvty of labor * inflation/real wage	* employment policy (hire/fire) * unemployment benefits * min wage * tax policy * pension scheme
Price setting	Wage setting	

2.1.3 Explain how inflation and wages are expected to relate to employment (unemployment) – do your expectations match what is presented in the graph? In the explanation, discuss whether there is link between the inflation-wage-employment and monetary policy. Be specific (7 pts).

Theory: An $\uparrow$ employment $> N^* \rightarrow \uparrow W$. If P are slow to change, then W/P can $\uparrow > [W/P]^*$. Otherwise, $N > N^* \rightarrow \uparrow W \rightarrow \uparrow P$. Actual: Until about 2011, what the chart shows is consistent with the theory: higher wages correspond with low unemployment (before 2009); falling wages with higher unemployment (2009-10).



In around 2013, there is a ↓ trend in unemployment rate (↑ employment), yet wages are not yet increasing. This is not consistent with what is generally expected. This might be due to L-related structural factors and that having come out of a great recession workers have not yet been ready to push for higher W. The low inflation (deflation) we have had might be another factor. Higher P, P^e should lead to higher W demands. It is here where MP has a relevant role and implications for growth.

2.2 On 18 September 2014, Scotland held a referendum on independence from the United Kingdom (UK). Scotland's economic integration with the rest of the UK (England, Wales and Northern Ireland), lasting more than 300 years, involves full economic union and monetary union (comprising a single-currency area that uses the pound sterling). It narrowly voted to remain in the UK. On 23 June 2016, the UK held a referendum to leave the European Union (EU). The UK voted to leave the EU. Suppose that the vote to leave the EU occurred before Scotland's referendum to leave the UK and that Scotland voted to leave the UK as a result. Keep in mind the relationship between monetary union and economic union when answering the following:

2.2.1 Despite its independence, Scotland's central bank decided to continue using the pound sterling as its currency. What would be the advantages/disadvantages of keeping the pound? List the criteria one would need to consider to determine whether Scotland remaining in a single currency area with the UK would make sense. Briefly explain why the criteria on your list matters. [Note: Even if you are not familiar with Scotland's actual economy or its relationship with the rest of the UK, focus on the criteria and on what it could/should/might imply.] (10 points)

Advantages	Disadvantages
Micro in nature – related to econ integration and lower transactions costs	Macro in nature – loss of policy to intervene in currency mkts (using E as trade or macro policy); limits on MP and constraints on FP
Theoretical criteria for an optimal currency area: * Free trade * Mobile and integrated K, L mkts * Symmetrical shocks * Fiscal transfers During the union, there was +300-year history of being in the union with fully free trade in goods/services, high mobility of L, K and same language, culture and history linkages (for good and bad); shocks might have been asymmetric, but London could provide some fiscal transfers in the event some shock affected England differently than Scotland. With independence, much of this could continue, except for fiscal transfers. To some extent, the need for fiscal transfers lessens when there is free trade and when mobile and integrated L, K mkts exist. Depends on what you say/assume here. The point was to let the criteria guide your discussion.	

2.2.2 Think about the type of exchange rate regime this might resemble. Would the lessons of the recent Eurozone experience serve as a relevant model of what could happen if an independent Scotland kept the pound sterling? Explain. (5 points)

Depends on what was argued – the point was to relate the Eurozone crisis to how it could related to Scotland.

If Scotland left the UK and kept the pound, then the exchange regime would be a strong fix. It could resemble *dollarization* whereby Scotland adopts the pound for all its legal transactions, or it could be set up as a *currency board* without a local currency existing in parallel. Dollarization would be more like adopting a foreign currency as some Latin

American countries have done with the US dollar. In either case, Scotland would have little to no control over MP and would be somewhat limited in what it could do in terms of FP. It would also have less of a role over lender of last resort to stabilize banks in a crisis. The lesson of the Eurozone would have relevance for Scotland under this consideration (e.g., financial stabilization). The UK, like the Eurozone, would be unwilling to bail Scotland out if Scotland ran into a financial crisis – it would be Scotland's unilateral choice to keep sterling. MP would be determined in London and Edinburgh would have to take interest rates as given. Unlike the ECB, it is probably not the case that the UK's central banker would take the necessary steps to buy Scottish debt to stabilize the sterling zone. If the criteria listed in 2.2.1 would no longer hold in the longer run, then such a monetary/exchange rate arrangement would make less sense.

2.3 The US and the Eurozone's initial policy response to the 2007 financial crisis (and the subsequent euro crisis) were quite different. For the US, it was linked to mortgage (housing) debt that went bad following the bursting of a bubble. The Eurozone saw it as an issue of excessive government spending (e.g., Greece) and as an overly liberalized and deregulated capital market (e.g., Ireland). As such, the policy responses were different by the central bank and governments. Keep in mind the different role the US central bank has within the US and the European central bank's within the Eurozone when answering the following:

2.3.1 Despite the initial difference in policy responses, unconventional monetary policy became a principal component of the response. Think about the macroeconomic conditions that existed to explain why the policy response was unconventional and why it was necessary. (10 points)

Traditional MP operates thru i-rates (open mkt operation) which affects borrowing costs, E and the price of financial assets. With deflation, MP breaks down: $\downarrow P \rightarrow \uparrow [MS/P]$ which is met by more $\downarrow AD$. Deflation $\rightarrow \downarrow AD \rightarrow \downarrow P$ and Q, Y . MP is useless. Unconventional MP involves negative i-rates and printing money to buy assets on a large scale, QE, to support financial mkt and institutions. It is necessary to increase liquidity, expand credit, lower i and facilitate borrowing/lending to break the cycle and provide financial stability during the crisis period.

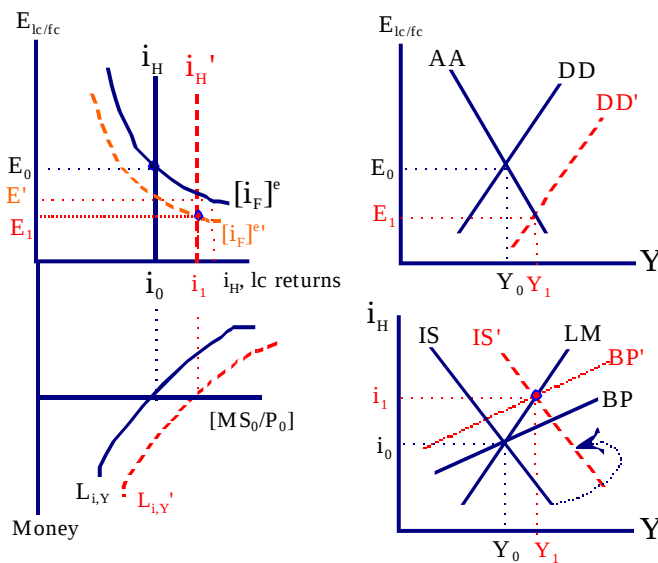
2.3.2 Why was the Eurozone's response so much slower in its implementation (why did it start much later than elsewhere)? Be specific. (5 points)

Not seeing the problem as a financial crisis, the response was to let national gov't deal with the recession (Ireland) and to impose austerity (FP tightening, primarily Greece but Ireland as well). Traditional MP was not possible. Although, the ECB was the only institution capable of acting, but did not have the authority to use QE. There is a no bailout clause in the EU treaties, which prevents or limits the purchase of government or firms' assets. Any action required new institutions, which take time, newly defined roles, which might take changes in treaty, or careful interpretation of MP by the ECB to ensure that the actions that it took (asset purchases) were to ensure one i-rate for whole of the Eurozone rather than bail-outs of bad debt.

Part 3. Answer the questions related to the macroeconomic scenario described. Be specific and explain your answers to the best of your ability. Label and explain your graphs clearly. Define concepts you think will support your answer and make any assumptions you have explicit. (30 points total)

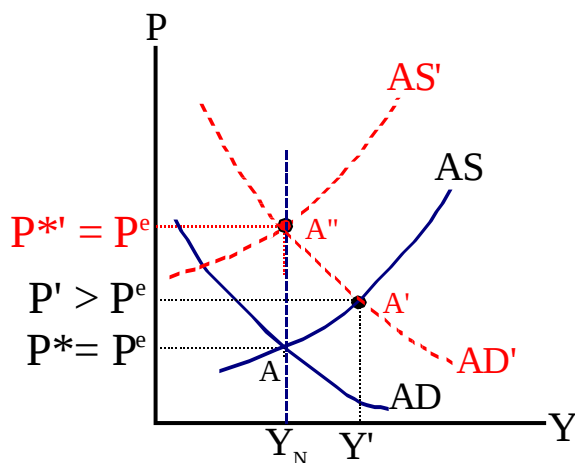
3.1 Consider a situation where in a country called Home there is a stock-market boom (that is, there is greater interest among investors in Home's stock market). Use the Mundell-Fleming modeling framework (IS-LM-BP and the AA-DD graphs) and graphs of the

related money-market-foreign-exchange (asset) markets to consider the implications of the stock-market boom for Home's domestic macroeconomy and its international transactions. Explain your results. (10 points)



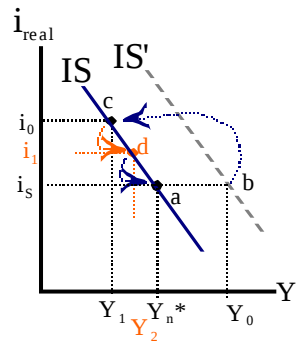
Flexible E regime with relatively mobile K. Stockmkt boom $\rightarrow \uparrow$ K-inflows. Increased interest in lc assets relative to fc assets, $[i_F]^e$ shifts down and K-inflows represent $\uparrow D$ for lc assets and strengthens lc value, $\downarrow E$. There is a wealth effect from the $\uparrow$ stockmkt value which makes firms and households (which have assets) feel richer. There is an $\uparrow C, I$ and shifts in DD and IS curves. In short term, there is an increase in output. The $\uparrow E$ worsens the BOT ($\downarrow X-M$) which shifts IS back to some degree and shifts BP left. Prices are slow to change and are held constant here.

- 3.2 Think about the macroeconomic effect(s) that the stock-market boom might have for Home in the longer run (longer than what is happening in 3.1). How might the macroeconomy adjust to what happens in response to the boom? (Hint: do not assume that the boom results in a bubble that bursts, creating macroeconomic chaos.) Present the macroeconomic adjustment using an aggregate demand and supply model. Explain your results and make your assumptions clear. (10 points)

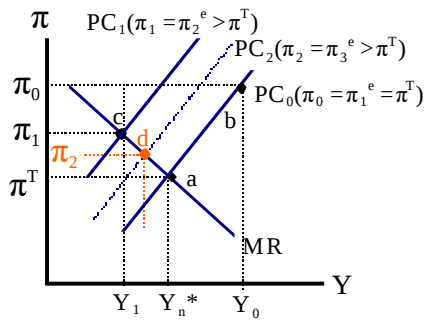


The stockmkt boom in 3.1 cause a short-run increase in output, Y_1 . The increase in output could be considered an $\uparrow AD$ without any sort of change in AS (no $\uparrow$ prodvty or change in cost of prodn assumed). The scenario shows an increase in output and employment: $\uparrow Y \rightarrow \uparrow N > N^* \rightarrow \uparrow W \rightarrow \uparrow P, P^e$. More employment causes higher wages and prices. Initial eqblm at pt A , followed by eqblm A' from $\uparrow AD$ and Y . P slow to change, $P' > P^e$. Expectations change and AS shifts right as $\uparrow P^e$ occurs, restoring eqblm at A'' .

- 3.3 Think about the potential role for macroeconomic policy from the results you obtained under 3.2. Present and explain the macroeconomic situation of 3.2 using the three-equation model (IS-PC-MR). Incorporate the macroeconomic policy in the model if appropriate. In the explanation, make clear any other additional assumptions (10 points).



The $\uparrow AD$ shifts IS curve $\rightarrow \uparrow y_{\text{real}}$ (movement of eqblm from pt a to b in top panel) and $\uparrow P$ (movement of eqblm from pt a to b in bottom panel). The $\uparrow y_{\text{real}}$ without corresponding $\uparrow AS \rightarrow \uparrow P, P^e$. PC shifts up. CB raises i-rate to reduce Y and P, P^e . This happens until Y is restored at Y_n where there is no further pressure on inflation and P^e is at CB's desired rate along the MR.



Part 1. Explain whether the statements are true, false, or whether it depends. Defend your answer. If depends is your answer, be sure to explain upon what it depends. (25 points)

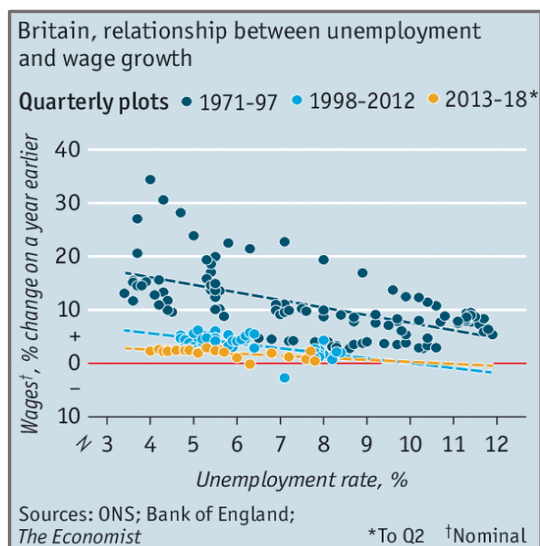
- 1.1 A nation becomes richer as its balance-of-trade surplus grows; therefore, it makes sense for the country's macroeconomic policies to be aimed at achieving a trade surplus.
- 1.2 The collapse of the Bretton Woods fixed exchange rate regime in 1973 to a floating exchange rate system means that the theory of purchasing power parity is now of greater interest to macroeconomics researchers.
- 1.3 A decrease in Home's real money demand (assuming no change in income) would imply a change in investors' expectations on earnings on foreign-currency assets when converted in local currency because returns from local-currency assets would be lower.
- 1.4 If economic shocks are most likely to affect output markets (i.e., changes in goods market equilibrium), then a country's macroeconomic performance would be affected to a greater extent, on average, under a fixed rather than a flexible exchange rate regime.
- 1.5 Inflation targeting is a transparent monetary policy strategy whereby central banks seek to maintain prices at a specified target using only instruments that must be approved by the government.

Part 2. Answer each of the following questions or respond to the specific statements. Relate your answers to concepts discussed in class and avoid unnecessary information! (45 points)

- 2.1 William Phillips was the first to plot the relationship between unemployment and wage growth in 1958. The relationship, known now as the Phillips curve, plotted data for the UK from 1861 to 1957, suggesting a stability despite the enormous macroeconomic changes that occurred over that period. Think about unemployment (or employment) and wages and factors that may have affected the stability in the relationship when answering the following:

- 2.1.1 Consider the chart plotting the relationship between unemployment and wage growth in the UK since the 1970s. How do these data match up with what is expected from the Phillips curve? Be specific and relate your answer to the “non-accelerating inflation rate of unemployment” concept. (10 pts)

- 2.1.2 What might the data suggest about the rate of productivity and worker's bargaining power during 2013-18? Explain your answer. (5 pts)



26-7.]

- 2.2 Domestic macroeconomic imbalances are linked to international markets in goods and services and capital. Think about the role of financial capital and debt in the domestic macroeconomic imbalances from persistent trade deficits when answering the following:

- 2.2.1 How would macroeconomic imbalances by households, firms and government differ in terms of their implications for the country's balance of payments, the foreign exchange regime and central bank independence? Explain in terms of the type of financial capital that is likely to be used to finance the imbalances. (10 pts)
- 2.2.2 Does it matter whether the borrowing and the resulting debts are owed in a foreign currency? Explain. (5 points)
- 2.3 Central banks might intervene in the foreign-exchange market to address domestic policy concerns, e.g., inflation or deflation, employment and wages, GDP growth rates, investment, consumption and trade. Keep in mind these policy concerns or objectives (and the state of a country's macroeconomy) when answering the following:
 - 2.3.1 Central bank intervention to lower the value of the local currency is easier than raising the value of the local currency. Explain whether you agree/disagree with this statement. (5 pts)
 - 2.3.2 *List* factors that could lead to the strengthening of the value of the local currency in the short run. In the longer run, economic fundamentals would have to justify the strengthening of the local currency. How would the economic fundamentals have to change for the currency to strengthen in the longer term? Explain carefully. (10 pts)

Part 3. Answer the questions related to the trade scenario described. Be specific and explain your answers to the best of your ability. Label and explain your graph(s) clearly. Define concepts you think will support your answer and make any assumptions. (30 points)

Some governments of emerging market economies protested that quantitative easing (QE) by the central banks of Japan, the US, UK, and euro-zone had macroeconomic consequences for them on trade of goods and services and capital market transactions through the exchange rate. In Indonesia, for example, the current account (balance of trade), after 14 years of being in surplus, went into a deficit of 2.7% of GDP in 2012. Between May and July of 2013, that gap widened to 4.4% of GDP (*Economist*, "Indonesia's economy: slipping", 24 Aug 2013).

- 3.1 Use the Mundell-Fleming modeling framework developed in class to help you illustrate what is described in the scenario above related to QE's effect on Indonesia's general macroeconomy in terms of the level of output, national income, prices, interest rates, and the foreign exchange market and exchange rates. [Note: you are asked to show the effects of QE from the perspective of Indonesia's macroeconomy.] (10 pts)
- 3.2 Suppose that one political response to the situation above included a government promise to tackle the country's creaking infrastructure. In addition, there was a fall in world commodity prices, which was important to Indonesia's economy, and that it led to the government tolerating a rise in "economic nationalism" in key sectors. That is, its policies put restrictions on the share of local business that foreigners could own, or required that foreign companies had to refine or process Indonesia's minerals, such as copper, when they extracted them, rather than simply exporting unrefined ores and concentrates. These policies coincided with the US central bank's announcement of an end of its QE program.

Explain how the new information and the end of QE might affect Indonesia's balance of payments and domestic macroeconomy. *List* other relevant factors one might consider. (10 pts)

- 3.3 Think about what QE involves and why it is considered an unconventional form of monetary policy. Would implementation of QE pose a bigger challenge for the European Central Bank relative to the central banks of the US, UK or Japan? Explain. (10 pts)

2018 Exam retake - Summary solutions

1.1

F. Increasing BOT does increase nat'l income, $Y = C+I+G+(X-M)$. However, it should not be a policy target to increase $(X-M)$. Focusing on $(X-M)$ ignores or constrains other policy objectives related to C , I and G .

1.2

T. The B-W exchange rate regime system was a fixed E regime. The theory of PPP implies that the exchange rate is related to the ratio of relative CPIs between countries. Under a fixed regime, K -controls tend to be more important to help reduce the effect of K flows on E . Under a flexible E regime both changes in the price of goods and K -flows important factors for E can changes in E . As a result, K -flows can help E to deviate from its PPP value in the short and longer run.

1.3

[F] A decrease in real money demand (assuming not change in income) would cause i -rates to decrease and the value of the local currency to fall r.t. fc . However, it would not necessarily change the expectations on asset earnings. To keep earnings in lc terms the same after a decrease in the i -rate, the E would have to increase.

1.4

[T] If economic shocks are more likely to affect output markets, then mkt changes more directly affect volume and prices of goods which in turn more directly affect the exchange rate. Think about the role of K flows under fixed E regimes. When K flows are more mobile, the K can move across borders in response to a shock.

1.5

[F] Inflation targeting is a transparent MP strategy – gov't defines target, but the CB has discretion to use MP instruments as it sees fit and it is held to account if/when the target is not met. The independence of the CB is related to having this discretion.

2.1

2.1.1 Relate PC to the other concepts

2.1.2 Explain why wages might have decreased in 1990s and 2000s even at low rates of unemployment.

2.2

2.2.1 Discuss debt and how it relates to HH, firms, financial firms and government

2.2.2 Debt is a bigger issue when it is owed to foreigners and in foreign currency.

2.3

2.3.1 CB intervention to lower the value of lc is easier. CB has a monopoly over creating money.

2.3.2 Selling foreign exchange assets and buying own currency; higher interest rates, change in expectations, reduce inflation; long-term supply-side policies. In the L-T, a stronger currency depends on economic fundamentals. To have a stronger E , countries need a combination of low inflation, productivity growth, cut cost of production, privatization or cutting regulations to help export industry become more competitiveness, economic and political stability.

3

3.1 K -inflows, reduction in BOT

3.2 K -outflow, decrease in K -inflows; expectations; worsening of TOT

3.3 Define QE, QE is about buying debt by CB; in Eurozone, the debt bought is political and gov't objective to ECB actions undermines MP independence