

# Macroeconomics Tutorial Questions

*Dr Richard Povey*

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## General Guidance

Tutorials will run in Hilary Term weeks 2-8, following the departmental lecture series in weeks 1-7. There will also be a vacation assignment, with the final tutorial to be held in first week of Trinity Term. The deadline for written work will be *18:00 on the Friday of the week before the tutorial* (the deadline for the vacation work will therefore be on Friday of 0th week of Trinity Term).

Please either email work or hand in to Richard Povey's pigeon hole in Hertford College or Pembroke College. If work is emailed, the diagrams and mathematics may either be done by computer, scanned, or handed in separately.

Please see the departmental Weblearn page for details about departmental lectures:

[https://weblearn.ox.ac.uk/portal/hierarchy/socsci/econ/curr\\_student/undergrad/courses/](https://weblearn.ox.ac.uk/portal/hierarchy/socsci/econ/curr_student/undergrad/courses/)

The primary course textbook will be Carlin and Soskice's "Macroeconomics: Institutions, Instability, and the Financial System". It is probably worth obtaining your own copy of this. We will mainly use the departmental reading lists (which are included as part of this work pack and available on Weblearn above). When preparing for tutorials, you should look at a variety of sources, in particular journal articles as well as the core course textbook.

For most weeks, I will set three small questions and one essay question. You should be aiming to write no more than 300 words for each small question and no more than 1100 words for the longer essay question.

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# Topic 1 - HT Week 2 Tutorial

## Monetary Policy: Questions

### Short answer questions

1. Use the  $WS - PS$  model of the labour market to examine the effect on (i) involuntary unemployment; (ii) voluntary unemployment; (iii) total unemployment from each of the following

- a positive productivity shock
- an increase in producer market power
- the abolition of employment protection legislation

2. In the Phillips curve equation

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e) + u_t$$

what determines the size of  $\alpha$ , the slope of the Phillips curve?

2. Suppose there is a permanent increase in the price of oil relative to the price of domestically produced goods and that the domestic economy is an oil importer.

i. Use the  $WS - PS$  framework to evaluate the impact of this shock on the labour market and the position of the vertical Phillips curve (VPC).

ii. Use the  $IS - PC - MR$  model as set out in lecture 2 to assess the impact of the shock on output, inflation and interest rates. In your analysis assume that the monetary authority learns of the shock (and varies interest rates) only in the period in which the shock occurs.

iii. How would your answer to part ii. change if the monetary authority learned of the shock (and could vary interest rates) one period in advance?

Consider the Phillips curve equation from the  $IS - PC - MR$  model

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e) + u_t$$

3. Suppose that in period  $t$  the monetary authority learns of a persistent cost-push shock, i.e. it knows as of period  $t$  that  $u_t = u_{t+1} = 1$ , but then expects the shock to be 0 from  $t + 2$  onwards.

i. Assuming the economy was in equilibrium at the inflation target before period  $t$ , show the position of the economy in the  $IS - PC - MR$  diagram in period  $t$ .

ii. Assuming that private agents have adaptive expectations whereas the monetary authority is forward-looking, describe the path followed by the economy from period  $t + 1$  until the inflation target is restored.

iii. Now suppose that private agents have rational expectations and the same information as the monetary authority. In what ways would your answers to i. and ii. change?

### **Essay question**

In macro theory what determines the size of the inflation bias? Do models of the inflation bias provide a useful basis for understanding reforms such as the delegation of monetary policy from the UK Treasury to the Bank of England in 1997?

# Monetary Policy: Readings

All references to the textbook *Macroeconomics: Institutions, Instability, and the Financial System* by Wendy Carlin and David Soskice (Oxford University Press, 2015) are denoted CS.

This reading list covers the first four lectures by Chris Bowdler. The overall heading is monetary policy but the material includes lecture 1 (extending models of the labour market and aggregate supply to include imperfect competition and then deriving the Phillips curve), lecture 2 (the *IS-PC-MR* model and policy responses to shocks), lecture 3 (extending *IS-PC-MR* to consider inter-temporal loss and rational expectations) and lecture 4 (inflation bias).

## **Lecture 1: Labour markets, aggregate supply and the Phillips curve**

1. CS chapter 2. This covers the WS-PS framework and its relationship to aggregate supply, the derivation of the Phillips curve and comparative statics for WS-PS.

## **Lectures 2 and 3: *IS-PC-MR* model and extensions**

1. CS chapter 3 and chapter 13.1 to 13.4 cover the model, some background and various applications.

2. CS, chapter 4.1 to 4.5 covers extensions to rational expectations.

The *IS-PC-MR* model introduces the idea of an inflation targeting central bank. The next two articles are from the period in which many central banks started adopting inflation targets and provide useful background on the advantages and disadvantages of such an approach, building on the material at the start of CS chapter 13 and referenced above. The third article below uses the idea of a Taylor rule, briefly discussed in lecture 2, to consider important changes in UK monetary policy since the 1970s. The article provides background for those interested in the recent history of UK monetary policy. None of these three articles are needed for the questions on this topic and should be thought of as optional vacation reading you could come back to if interested in this area.

- ‘Inflation Targeting: A New Framework for Monetary Policy?’ by B. Bernanke and F. Mishkin, *Journal of Economic Perspectives*, 1997, pages 97-116.

- ‘Inflation Targeting in Practice, the UK Experience’ by John Vickers in the Bank of England Quarterly Bulletin, 1998. Note: The Bank of England website is an excellent resource

when gathering information on the monetary policy topic, take time to browse the Inflation Reports, speeches made by MPC members and other relevant links.

- ‘UK Monetary Policy 1972-1997: A Guide Using Taylor Rules’ by Ed Nelson, CEPR Discussion Paper No. 2931 (available online). Published in P. Mizen (ed.), ‘Central Banking, Monetary Theory and Practice: Essays in Honour of Charles Goodhart’, Volume One, Cheltenham, UK: Edward Elgar, 2003, pp. 195-216.

#### **Lecture 4: Inflation bias**

1. CS chapter 4.6. This discusses inflation bias in the context of both adaptive and rational expectations.

2. Romer, D., *Advanced Macroeconomics*, (2006 edition), chapter 10, sections 3 and 4. This is another textbook discussion of inflation bias under rational expectations. It may be useful to supplement the CS reading with this given that CS are quite brief on this topic.

The following two articles are classic pieces on applications and testing of the basic model of inflation bias.

3. Romer, D., (1993), Openness and Inflation: Theory and Evidence, *Quarterly Journal of Economics*, pages 869-903.

4. Alesina, A. and L. Summers (1993), Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence, *Journal of Money, Credit and Banking*, issue 2, pages 151-62.

# Topic 2, HT Week 3 Tutorial

## Sticky Prices (and a bit more Monetary Policy): Questions

### Short answer questions

1. Suppose the economy is hit by an unexpected, but prolonged recession of known duration. How would inflation behave according to an adaptive expectations Phillips Curve and a New Keynesian Phillips Curve? What would happen if the recession was anticipated?

2. Consider the *IS-PC-MR* model. The economy is initially in equilibrium at a 2% inflation target. At the end of period  $t - 1$  the policy authority announces that the inflation target will be 1% from period  $t + 1$  onwards. From period  $t$  onwards, describe the adjustment towards the new equilibrium in each of the following three cases:

- i. a Phillips curve based on adaptive expectations;
- ii. a Phillips curve based on rational expectations and flexible prices;
- iii. a New Keynesian Phillips curve.

3. Consider the *IS-PC-MR* model in the CS textbook in which the Phillips curve is based on adaptive expectations. Allow for the possibility of a cost-push shock so that the the *PC* equation is

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e) + u_t$$

where  $u$  is a cost-push shock. Suppose there is a cost-push shock  $u_t > 0$  that becomes known to the monetary authority at the start of period  $t$  before prices are set and before monetary policy is set. The following can be established:

- the monetary authority cannot reduce inflation in the period in which the cost-push shock occurs due to the 1 period lag between varying interest rates and output changing (and inflation adjusting in the Phillips curve);
- in subsequent periods inflation can be gradually reduced and this requires an output recession as the economy adjusts along the *MR* line;
- therefore cost-push shocks raise the variance of both output and inflation;
- the larger the  $\beta$  parameter in the loss function the flatter the *MR* line, and, for a given cost-push shock, the larger will be the variance of output and the smaller the variance of inflation.

Suppose that the the Phillips curve is instead a New Keynesian Phillips Curve, but the structure of the *IS-PC-MR* model otherwise stays the same.

i. Assuming that it is possible for the monetary authority to credibly commit to future monetary policy actions, describe a policy announcement that would reduce inflation in the period in which the cost-push shock occurs.

ii. What impact will the announcement described in i. have on the variance of output (relative to a scenario in which there had not been a cost-push shock)? What advice would you give to the monetary authority in order to ensure the smallest possible variance in output as a result of the announcement?

iii. Now suppose that it is not possible for the monetary authority to commit to future monetary policy actions. How does this affect your answer to i?

iv. In the absence of commitment in monetary policy, how would the variances of output and inflation in the NKPC case compare with those from the adaptive expectations case (assuming the same initial cost-push shock in each case)?

**Note: For parts ii. and iv. you do not need to derive any expressions for variances, but simply explain whether you think they will be higher or lower and provide some justification.**

### **Essay question**

Explain how the time inconsistency of optimal monetary policy can lead to a stabilisation bias. How would the introduction of a price path target for monetary policy help to address the stabilisation bias?

# Sticky Price Models (and a bit more Monetary Policy): Readings

All references to the textbook *Macroeconomics: Institutions, Instability, and the Financial System* by Wendy Carlin and David Soskice (Oxford University Press, 2015) are denoted CS.

## Lecture 5: Macroeconomics with Sticky Prices

1. Romer, D., *Advanced Macroeconomics*, (2006 edition), chapter 6. This covers the material on menu costs and sticky prices. The following advice may be useful when tackling this chapter:

- Part A recaps the Lucas model, a model in which the assumptions of rational expectations and flexible prices interact to generate some of the very strong predictions discussed at the start of lecture 5.

- Part B is the core material on menu costs as an explanation for sticky prices. In this part of the chapter section 7 is optional because it deviates to a separate strand of literature beyond the scope of the course.

- Part C is additional reading that you may wish to pursue if you follow up this topic in detail in the vacation. In part C section 12 on empirical applications is the most relevant part.

2. The derivation of the NKPC in lecture 5 is from pages 606-12 of a previous version of the CS book for which the reference is

*Macroeconomics: Imperfections, Institutions & Policies* by Wendy Carlin and David Soskice (Oxford University Press, 2006)

These pages cover the derivation of the NKPC and compare it to the adaptive expectations Phillips curve and the sticky-information Phillips curve (the latter is not covered in the lectures but is useful related material).

The derivation is not presented in the 2015 version of the book, however a similar derivation is provided in chapter 16.2 of the free online appendix available at

[http://global.oup.com/uk/orc/busecon/economics/carlin\\_soskice/student/appendices/](http://global.oup.com/uk/orc/busecon/economics/carlin_soskice/student/appendices/)

**The following reference is provided in case you wish to pursue the sticky price topic in the vacation. It is the source for much of the material discussed in chapter 6 of the Romer textbook**

3. Ball, Mankiw and Romer *The New Keynesian Economics and the Output-Inflation Trade-off*. This article was published in the 1988 volume of the *Brookings Papers on Economic Activity*, pages 1-65, and is reprinted in Volume 1 of *New Keynesian Economics*, edited by Mankiw and Romer, 1991. In that same Mankiw and Romer volume, you may also wish to read the extended introduction written by Mankiw and Romer and the following articles ‘Small Menu Costs and Large Business Cycles: A Macroeconomic Model of Monopoly’ by Mankiw (originally published in the *Quarterly Journal of Economics* 1985, pages 529-39) and ‘Monopolistic Competition and the Effects of Aggregate Demand’ by Blanchard and Kiyotaki (originally published in the *American Economic Review*, pages 647-66). Concentrate on the diagrams presented in these papers rather than the mathematical details.

### **Lectures 6: NKPC, inflation dynamics and optimal monetary policy**

1. CS chapter 16.3.

2. Clarida, R., J. Gali, and M. Gertler, The Science of Monetary Policy: A New Keynesian Perspective, *Journal of Economic Literature* 37 (December 1999), pages 1661-1707. Note that this is a relatively technical article. It offers a more formal exposition of the stabilisation bias than that included in the lectures. This exposition is in results 7 and 8 in the paper, so that is the material to focus on if you use this reference (though to understand the model set-up you will also need to read the first part of section 2).

3. Roberts, J. (1995). New Keynesian Economics and the Phillips Curve *Journal of Money, Credit and Banking*, 27, no. 4, 975-84. This article is referenced in the lecture slides and is useful if you wish to follow up the discussion of hybrid Phillips curves.

# Topic 3, HT Week 4 Tutorial

## Macroeconomics at the Zero Lower Bound: Questions

### Essay questions

1. 'At the zero lower bound for interest rates the combination of flexible prices and rational expectations is no longer sufficient to ensure that full employment output will be achieved.' Discuss that claim. Evaluate the likely effectiveness of policy measures that central banks could use to stimulate demand when interest rates are at the zero lower bound.

2. 'If current inflation targeting regimes for monetary policy were to be replaced by regimes emphasising some nominal anchor such as a path for the price level or nominal GDP the result would be to *increase* the level of output volatility rather than to reduce it.' Discuss.

Please answer the 2 questions above using no more than 900 words per question.

# Macroeconomics at the Zero Lower Bound: Readings

All references to the textbook *Macroeconomics: Institutions, Instability, and the Financial System* by Wendy Carlin and David Soskice (Oxford University Press, 2015) are denoted CS. This reading list covers the final two lectures by Chris Bowdler.

## **Lectures 7 and 8: Background to the Great Recession**

The lectures start with a brief account of the Great Recession and events leading up to it. The simple treatment in the lectures is probably sufficient background for the essay topics, but if you wish to read more in this area the following references will be useful.

1. CS chapter 7.4

2. Faruquee, H. A. Scott and N. Tamirisa (2009) In search of a smoking gun: macroeconomic policies and the crisis, *Oxford Review of Economic Policy* (2009) 25(4), pages 553-580.

Narratives on the Great Recession often refer to imbalances that were allowed to develop during the so called Great Moderation of economic activity that preceded it in the years 1984-2007. The following speech by Ben Bernanke provides background on the Great Moderation.

3. Bernanke, B. (2004). The Great Moderation. Speech available at:

<http://www.federalreserve.gov/Boarddocs/Speeches/2004/20040220/default.htm>

## **Lectures 7 and 8: The ZLB, Macro Stability and Monetary Policy Responses**

1. CS chapter 3.3 and chapter 7.4.3.

2. Krugman, P. (1998). It's Baaack: Japan's Slump and the Return of the Liquidity Trap. *Brooking Papers on Economic Activity*, pages 137-205. Note that this article splits into two main parts. The first is the more relevant and covers the ZLB problem. The second part discusses details of the Japanese crash of the 1990s and whilst this is interesting it is not needed for the essay titles.

3. Eggertsson, G. (2013) liquidity trap *The New Palgrave Dictionary of Economics*. Second Edition. Eds. Steven N. Durlauf and Lawrence E. Blume. Online at

[http://www.econ.brown.edu/fac/gauti\\_eggertsson/papers/EggertssonPalgrave.pdf](http://www.econ.brown.edu/fac/gauti_eggertsson/papers/EggertssonPalgrave.pdf)

4. Svensson, L. (2003). Escaping from a Liquidity Trap and Deflation: The Foolproof Way and Others, *Journal of Economic Perspectives*, 17(4), pages 145-166.

The following two readings address the question of whether central banks should publish targets for future interest rates, extending the discussion of this issue in the lectures.

5. Rudebusch, G. and J. Williams (2006). ‘Revealing the Secrets of the Temple: The Value of Publishing Interest Rate Projections’ Federal Reserve Bank of San Francisco working paper 2006-31. Mainly focus on sections 1 and 2. An overview of the model developed in section 3 and 4 is all that you need.

6. Mishkin, F. (2004). Can Central Bank Transparency go Too Far? NBER working paper 10829.

### **Lectures 7 and 8: Price Path Targets**

1. Gaspar, Smets and Vespín (2007) Is time Ripe for Price Path Level Stability? European Central Bank working paper 818 (available online).

2. Ambler, S. (2009) Price Level Targeting and Stabilisation Policy: A Survey *Journal of Economic Surveys*.

### **Lectures 7 and 8: Unconventional Monetary Policy at the Zero Lower Bound**

1. CS chapter 5.3 covers the distinction between the monetary policy interest rate and commercial lending rates (a wedge referred to as the risk premium in the lectures) and 5.5 covers *IS-PC-MR* adjustment to a shock when incorporating this wedge.

2. CS chapter 13.5 discusses transmission channels for quantitative easing policy.

3. Joyce, M, M. Tong and R. Woods (2011). The United Kingdom’s quantitative easing policy: design, operation and impact. *Bank of England Quarterly Bulletin*, issue 3. Available online and underpins a lot of the CS discussion.

## **4 Topic 4, HT Week 5 Tutorial - The Open Economy I**

### **4.1 Reading**

Please see departmental reading list for lectures on the Open Economy.

### **4.2 Small questions**

1. Explain the economics behind Uncovered Interest Parity (UIP). Suppose UK interest rates increased, but sterling depreciated in response. Could you explain this using UIP?
2. Under a fixed exchange rate regime, what would be the impact on output and inflation of an increase in government spending? How would your analysis differ if the Ricardian Equivalence proposition held?
3. When does UIP imply that domestic interest rates must equal overseas interest rates?

### **4.3 Essay question**

How could we use the current account and the exchange rate to tell whether an open economy had been hit by a supply shock or a demand shock?

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# Open Economy: Readings

All references to the textbook *Macroeconomics: Institutions, Instability, and the Financial System* by Wendy Carlin and David Soskice (Oxford University Press, 2015) are denoted CS15. Please note that this is the 2nd edition of the textbook. The 1st edition *Macroeconomics: Imperfections, Institutions & Policies* is still useful in most parts and is also mentioned below as CS06, where applicable. You should only read one of the two, of course. Krugman, Obstfeld and Melitz (2015) is also a very good textbook, but still uses an older formulation of monetary policy and focus on the short run dynamics only.

## **Lecture 9: The FX market and the AD side in an open economy**

The first part of the lecture introduces some basic material you may have covered already in Prelims Macro, namely, the three parity conditions of exchange rates (CIP, UIP and PPP). More interesting than the conditions themselves are their deviations. In particular, well-known deviations from PPP will provide the foundations of the AS side in Lec 10. The second part of the lecture adapts the AD side of the closed economy you have already seen to the presence of trade in foreign goods, money and financial assets. Although the economy can still be described by the usual three equations (IS, MR and Phillips curve), the model is closed by the UIP condition in the FX market. This part of the material is only covered in CS15.

1. CS15, chapters 9 (sections 9.1-9.2.3) and 10 (sections 10.1-10.2.1).
2. CS06, chapter 9 (except section 6).
3. Krugman, P., M. Obstfeld and M. Melitz (2015) *International Economics. Theory and Policy*, 10th edition, Boston: Pearson, chapters 13-14 and 16.

## **Lecture 10: Monetary policy in a small open economy**

In this lecture we use the adjusted three equation model to study the optimal reactions of a Central Bank to two types of shocks - an inflation shock and a domestic AD shock. We also contrast the optimal conduct of monetary policy with the case in a closed economy. The lecture concludes with one of the most dramatic implications of rational expectations and forward-looking FX markets in a context of price rigidity - the optimality of overshooting exchange rates.

1. CS15, chapter 9 (sections 9.2.4-9.5).

## Lecture 11: Medium-run equilibrium and CA sustainability

We start by closing the MR equilibrium of the open economy by working out the implications for the labour market of flexible exchange rates. Unlike the closed economy, where the only equilibrium output consistent with stable inflation was entirely determined by the economy's production possibilities, in open economy there is a range of possible medium-run equilibria. Each of these is anchored to a real exchange rate and may imply an external imbalance (surplus or deficit), as defined by a third relation - the BT curve. This raises the question of whether CA deficits or surplus can be sustained. CS06 used to refer (somewhat confusingly) to a situation of medium-run equilibrium with balanced CA as 'long-run equilibrium.' We use some historical evidence and some theory to illustrate the persistence of global imbalances.

1. CS15, chapters 10 (sections 10.2.2-10.3) and 11.
2. CS06, chapters 10-11.
3. Krugman, P., M. Obstfeld and M. Melitz (2015) *International Economics. Theory and Policy*, 10th edition, Boston: Pearson, chapters 18 and 20-21.

### Additional Readings

1. Cobham, David (2013) 'Monetary policy under the Labour government: the first 13 years of the MPC,' *Oxford Review of Economic Policy*, Volume 29(1).
2. Cooper, Richard N. (2008) 'Global Imbalances: Globalization, Demography, and Sustainability,' *Journal of Economic Perspectives* 22(3): 93112. Good for global imbalances.
3. Feldstein, Martin 2008. 'Resolving the Global Imbalance: The Dollar and the U.S. Saving Rate,' *Journal of Economic Perspectives* 22(3): 11325. Good for global imbalances.
4. Rogoff, Kenneth (2002) 'Dornbusch's Overshooting Model After Twenty-Five Years,' Mundell-Fleming Lecture available online at <http://www.imf.org/external/np/speeches/2001/112901.htm>

## Lecture 12: Common Currency Areas: The Eurozone

Having spent three lectures tracing out the implications of opening up the economy and, in particular, of the FX market, we turn in the last lecture to the case of monetary unions, where *nominal* exchange rates are abolished, at least within the common currency area. We illustrate with the Eurozone experience to consider the consequences of the loss of monetary autonomy, as well as, its potential replacement with fiscal policy.

1. CS15, chapter 12.
2. CS06, chapter 12 (especially section 12.4).

### **Additional Readings**

1. Blanchard (2007) ‘Adjustment within the euro. The difficult case of Portugal,’ *Portuguese Economic Journal*, Vol 6(1). A good analytic review of the straitjacket imposed by Euro-membership on uncompetitive European economies.
2. Lane. P (2006) ‘The Real Effects of EMU,’ *Journal of Economic Perspectives*, Vol 20. An informative and simple review of the macro case for the EMU.
3. Tressel, T., S. Wang, J. Kang and J. Shambaugh (2014) ‘Adjustment in Euro Area Deficit Countries: Progress, Challenges, and Policies’ IMF Staff Discussion Note SDN/14/7. Updated version of Blanchard (2007) for the evidence since the Euro crisis. Available online at <https://www.imf.org/external/pubs/ft/sdn/2014/sdn1407.pdf>

## **Topic 5, HT Week 6 Tutorial - Economic Growth**

### **5.4 Reading**

See departmental reading list for lectures on Economic Growth.

### **5.5 Small questions**

1. An economy is at steady state in the Solow-Swan model. Discuss the short and long run implications of i) a rise in population growth, and ii) a fall in depreciation.
2. Explain the Golden Rule in a Solow-Swan model with exogenous savings. Does the concept of a Golden Rule still apply if savings are endogenous? Is it more realistic to assume exogenous or endogenous savings?
3. Compare and contrast Paul Romer's and Charles Jones' R&D growth models.

### **5.6 Essay question**

Can growth theory help us understand the dispersion of GDP per capita across countries?

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# Economic Growth: Readings

All references to the textbook *Macroeconomics: Institutions, Instability, and the Financial System* by Wendy Carlin and David Soskice (Oxford University Press, 2015) are denoted CS.

## Lecture 1: The Solow-Swan model

Note that this lecture covers mainly textbook material and when studying it for the first time you only need to consult one of the textbook references below. The alternative textbook reference may prove useful if you wish to study this topic in more detail during the vacation.

1. CS, chapter 8.1 to 8.6 (excluding 8.5).
2. Jones, C., *Introduction to Economic Growth*, (1998 or 2001 editions), chapters 1-3.

## Lecture 2: Technology and endogenous growth models

Note that this lecture covers mainly textbook material and when studying it for the first time you only need to consult one of the textbook references below. The alternative textbook reference may prove useful if you wish to study this topic in more detail during the vacation.

1. CS, chapter 8.7 to 8.9.
2. Jones, C., *Introduction to Economic Growth*, (1998 or 2001 editions), chapters 4-8.
3. Fernald, J and C. Jones (2014). *The Future of US Economic Growth*. American Economic Review: Papers & Proceedings, 104(5): 44–49.
4. Crafts, N. (1996) *Post-neoclassical Endogenous Growth Theory: What are its Policy Implications?* Oxford Review of Economic Policy, Summer issue, article 2.

## Lecture 3: Convergence and international growth models

1. CS, chapter 8.5 (covers convergence).
2. Greenhalgh, C. and M. Rogers (2010) *Innovation, IP and Economic Growth*, chapter 9. This provides more detail on technology transfer in open economy growth models.
3. *The Growth of Nations*, by Mankiw, published in *Brookings papers on Economic Activity*, pages 275-326, 1995. Focuses on the shortcomings of the Solow model in explaining differences in the spread of income levels and the observed patterns of convergence and discusses how more recent growth research can be seen as an attempt to address these shortcomings.
4. *The New Growth Evidence*, by Jon Temple, published in *Journal of Economic Literature*,

1999, pages 112-156. The first three sections of this article cover questions relating to convergence. The middle sections focus on detailed aspects of the econometric methods used in this area and can be skipped. The final two sections summarise some of the main findings from cross-country growth regressions and will be of interest.

### **Additional readings**

The following are some useful additional references that may be of interest if you wish to pursue this topic in more detail. The first is an alternative textbook treatment and the second is a survey article from the journal literature. The others are examples of the (vast) literature on what factors seem to drive economic growth in practice (i.e. examples of the forces cited in the theoretical analysis). Other sources of further reading are the references in the pieces cited above.

1. Barro, R. and Sala-i-Martin X., *Economic Growth* (1995 or later edition), McGraw-Hill.
2. Rogers, M. (2003), *A Survey of Economic Growth* Economic Record, volume 79, pages 112-136.
3. Easterly, W. (2001), *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*, esp. chapter 3. MIT Press.
4. Stiglitz, J.-E. (2000), *Capital Market Liberalization, Economic Growth, and Instability* World Development 28(6): 1075-86.
5. Cowen, T. (2011), *The Great Stagnation: How America Ate All The Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better*, e-book.

# Topic 6, HT Week 7 Tutorial

## Inter-temporal Macro: Questions

### Short answer questions

1. Suppose the price of a unit of consumption in period  $t$  is given by  $p_t^c = (1 + \theta)p$  where  $0 < \theta < 1$  is the tax rate on consumption and  $p$  the pre-tax price of a unit of consumption. There are perfect credit markets in which a consumer can borrow or save at a fixed interest rate of  $r$ . The fiscal authority is considering a proposal to suspend the consumption tax for one period only. Let this period be  $t^*$ .

i. Write down expressions for the marginal rate of transformation for consumption between periods  $t^*$  and  $t^* + 1$  when (a) the tax is suspended, (b) the tax is not suspended.

Consider a consumer who maximizes utility from consumption over the lifecycle. Let utility from consumption in period  $t$ ,  $c_t$ , be  $u(c_t)$  and assume  $u'(c_t) > 0, u''(c_t) < 0$ . The utility from future consumption is discounted at rate  $\delta$ , so the consumer maximizes the following expression for lifecycle utility

$$E_1 \sum_{t=1}^T \frac{u(c_t)}{(1 + \delta)^{t-1}}$$

where  $T$  is the number of periods in the lifecycle.

ii. Write down the consumption Euler equation linking periods  $t^*$  and  $t^* + 1$  for the case in which the consumption tax is suspended for a period.

iii. With reference to the consumption Euler equation, list and briefly discuss the factors that will determine the size of the consumption response in  $t^*$  to the temporary suspension of the consumption tax.

2. Empirical evidence shows that consumer spending in the UK rises by a lot more after a 1% fall in interest rates than does consumer spending in Japan. Using the 2 period consumption diagram used in the lectures to analyse substitution and income effects, show how this difference may be explained if the typical UK household is a net borrower whilst the typical Japanese household is a net saver.

3. Suppose that utility ( $u$ ) from consumption ( $c$ ) in any period  $t$  is given by  $u_t = \ln(c_t)$ .

(i) Using the consumption Euler equation, explain why Hall's random walk result for consumption fails.

(ii) How can the properties of logarithmic utility be used to explain the excess smoothness of consumption?

(iii) Briefly, what other factors may be important in explaining the evidence for excess sensitivity and excess smoothness in consumption?

### **Essay question**

‘Real Business Cycle theory can explain the non-negative correlation between real wages and output over the course of the business cycle, but generates many predictions that are at odds with the empirical evidence on business cycles.’ Discuss.

# Inter-temporal Macro: Readings

All references to the textbook *Macroeconomics: Institutions, Instability, and the Financial System* by Wendy Carlin and David Soskice (Oxford University Press, 2015) are denoted CS.

## Lecture 1: Consumption

Note that this lecture covers mainly textbook material and when studying it for the first time you only need to consult one of the textbook references below. For this particular topic the second and third references are arguably better than the treatment in CS and closer to the treatment provided in the lecture.

1. CS chapter 1.2.5.
2. Romer, D., *Advanced Macroeconomics*, (2006 edition), chapter 7.
3. Muellbauer, J. *The Assessment: Consumer Expenditure*, in T. Jenkinson, *Readings in Macroeconomics* (reprinted from *Oxford Review of Economic Policy*, vol. 10, number 2, 1994, pages 1-41, available online).

## Lectures 2 and 3: Real Business Cycle Models

There are very few textbook treatments of the RBC model at a level appropriate to this course. A couple of examples are given below. However, for this topic the lecture slides are the most comprehensive exposition of the model, so one approach would be to study the slides in detail and then read some of the journal articles mentioned in 3-5 below.

1. CS chapter 16.1 and 16.2 and 16.1 from the free online technical appendix to the book available at

[http://global.oup.com/uk/orc/busecon/economics/carlin\\_soskice/student/appendices/](http://global.oup.com/uk/orc/busecon/economics/carlin_soskice/student/appendices/)

2. Romer, D., *Advanced Macroeconomics*, (2006 edition), chapter 4, sections 1-5. Romer describes an RBC model in continuous time whereas the lectures consider discrete time. The economics involved is identical across the two cases, only the notation is different. Focus on the first-order condition for labour supply in equation (21) and that for consumption in equation (23), and the associated discussion.

3. Mullineux, A. and D. Dickinson, Equilibrium Business Cycles: Theory and Evidence, *Journal of Economic Surveys*, 1992, issue 4, pages 321-58.

4. Plosser, C. (1989), Understanding Real Business Cycles, *Journal of Economic Perspectives*, issue 3 (summer), pages 51-77.

5. *Oxford Review of Economic Policy* issue from Autumn 1997 (articles by Cooley, Muellbauer, and Millard, Scott and Sensier).

#### **Lecture 4: Ricardian Equivalence**

1. CS chapter 14.4.

2. Romer, D., *Advanced Macroeconomics*, (2006 edition), chapter 11, sections 1-3.

3. Bernheim, D., (1989). A Neo-Classical Perspective on Budget Deficits, *Journal of Economic Perspectives*, 3(2), 97-116.

## **7 Topic 7 - HT Week 8 Tutorial - Debt and Fiscal Policy**

### **7.1 Reading**

Please see reading list for departmental lectures on Debt and Fiscal Policy.

### **7.2 Small questions**

1. “If a country has positive government debt, it must run a primary budget surplus.” Is this always true?
2. What is deficit bias, and why is it a problem?
3. What are automatic stabilizers, and why might they be preferable to discretionary action?

## Debt and Fiscal Policy: Questions

### **Debt Policy: Essay**

1. Consider an economy at the zero lower bound that is faced with a government budget deficit that is too high, and a level of government debt that needs to be reduced. From a purely macroeconomic perspective, would you advise a policy of raising taxes or cutting spending? Would gradual or rapid adjustment be better?

# Debt and Fiscal Policy: Readings

All references to the textbook *Macroeconomics: Institutions, Instability, and the Financial System* by Wendy Carlin and David Soskice (Oxford University Press, 2015) are denoted CS. The textbook reference to CS is provided first. The readings are then divided up into the three main areas covered by the lectures and this split is also reflected in the list of essay titles that accompanies this reading list. The first area centres on management of the national debt, the question of whether or not debt can become excessive and the optimal way to reduce debt should it be thought that is necessary. The second area covers theories of deficit bias and remedies such as fiscal rules and fiscal councils. The third area covers the classic question of whether or not discretionary fiscal policy should be used to stabilise the economy. Bear in mind that some readings inevitably cross these simple boundaries and the three way split below is intended as a rough guide as to how to prioritise readings in the time available to you when you first work on this topic. A final point to note is that some material from earlier in the course is relevant to a discussion of fiscal policy, for instance Ricardian Equivalence from the inter-temporal macro lectures and the analysis of fiscal policy using the Swan diagram in the open economy lectures.

## **Textbook reference**

1. CS, chapter 14 covers all three of the areas described below.

## **Blogs**

1. An excellent source of analysis and commentary relating to all aspects of debt management and fiscal policy is the blog written by Simon Wren-Lewis. Browse posts at

<http://mainlymacro.blogspot.co.uk/>

## **Debt Policy: Readings**

1. Wren-Lewis, S. (2010). Macroeconomic policy in light of the credit crunch: the return of counter-cyclical fiscal policy? *Oxford Review of Economic Policy*, volume 26, number 1, pages 71-86.

The next reading discusses a debt threshold above which debt exerts negative effects on economic growth. The reading after provides a critique of this work.

2. Reinhart, C., and K. Rogoff (2010). Growth in a Time of Debt. *American Economic*

*Review*, 100(2), pages 573-78.

3. Herndon, Thomas, Michael Ash and Robert Pollin (2013). 'Does high public debt consistently stifle economic growth? A critique of Reinhart and Rogoff' working paper, Political Economy Research Institute, University of Massachusetts, Amherst. Available online.

The next reading is a more detailed study of the effects of debt using the dataset assembled by Reinhart and Rogoff.

4. The following IMF publication provides very recent evidence on the macroeconomic costs from fiscal consolidations

International Monetary Fund World Economic Outlook October 2010, chapter 3, 'Will it Hurt? Macroeconomic Effects of Fiscal Consolidation'. Link available here

<http://www.imf.org/external/pubs/ft/weo/2010/02/pdf/c3.pdf>

5. Wren-Lewis, S. (2011). The case Against Austerity Today, Institute for Public Policy Research, available at

<http://www.ippr.org/publications/55/8033/the-case-against-austerity-today>.

6. Wolf, M. (2012). Getting out of debt by adding debt. FT blog post at:

<http://blogs.ft.com/martin-wolf-exchange/2012/07/25/getting-out-of-debt-by-adding-debt/>

7. Bowdler, C. and R. Esteves (2013). Sovereign Debt: The Assessment *Oxford Review of Economic Policy*, Autumn 2013 volume, first article.

### **Deficit Bias and Remedies: Readings**

1. Calmfors, L and S. Wren-Lewis (2011). What Should Fiscal Councils Do? *Economic Policy* Vol. 26, pages 649-695. Note that section 4 provides a good overview of possible causes of deficit bias before getting to the question of what fiscal councils should do.

2. The following webpage collates more information on fiscal councils:

[http://www.economics.ox.ac.uk/members/simon.wren-lewis/fc/fiscal\\_councils.htm](http://www.economics.ox.ac.uk/members/simon.wren-lewis/fc/fiscal_councils.htm)

3. Wren-Lewis, S. (2003). Changing the Rules, *New Economy* Vol 10, pages 73-78.

4. Buiter, W. (2003). Ten Commandments for a Fiscal Rule in the E(M)U, *Oxford Review Economic Policy*, issue 1, pages 84-99.

### **Counter-cyclical Fiscal Policy: Readings**

1. Wren-Lewis, S. (2010). Macroeconomic policy in light of the credit crunch: the return of

counter-cyclical fiscal policy? *Oxford Review of Economic Policy*, volume 26, number 1, pages 71-86. This reference appears above but it is relevant to both sections of the list.

2. Buiter, W. (2010). The limits to fiscal stimulus, *Oxford Review of Economic Policy*, volume 26, number 1, pages 48-70.

3. Bowdler, C. (2011). What role for fiscal policy in the world economy?, *Economic Review*. This is an overview of the Keynesian, Neo-classical and Ricardian perspectives on fiscal policy for a non-specialist readership. Article available here:

[http://users.ox.ac.uk/~nuff0177/fiscal\\_policy\\_article.pdf](http://users.ox.ac.uk/~nuff0177/fiscal_policy_article.pdf)

## **Topic 8 - Open Economy II (Tutorial in Trinity Term Week 1)**

**Reading :** See departmental reading list for Open Economy.

### Short Questions

1. Are government budget deficits always accompanied by current account deficits?
2. “If the central bank acts to maintain a constant inflation target a recession has to be followed by a boom.” In a closed economy why does the validity of that statement depend on whether the Phillips curve is backward-looking or forward-looking? If the economy were open and maintained a fixed nominal exchange rate would a recession have to be followed by a boom?
3. If monetary policy is used to permanently reduce the price level in a flexible exchange rate economy, is a temporary appreciation in the real exchange rate inevitable? What if fiscal policy was used instead?

### Essay Question

4. An open economy has experienced a prolonged period of excess demand, but this is then reversed. Compare the transition processes for output, inflation and the real exchange rate for:

- (i) an economy under flexible exchange rates;
- (ii) an economy that is part of a currency union.

In the former case, assume that uncovered interest parity holds and that exchange rate expectations are rational. In the latter case, would it make sense for the government to speed up the adjustment process by means of fiscal austerity?