Unit Outline*

ECON2210
Monetary Economics

Semester 1, 2011
Campus: Crawley

Unit Coordinator
Winthrop Professor Kenneth W Clements

Business School
www.business.uwa.edu.au

* This Unit Outline should be read in conjunction with the Business School Unit Outline Supplement available on the Current Students web site http://www.business.uwa.edu.au/students
UNIT DESCRIPTION

Unit content
This is a self-contained, introductory unit in monetary economics. Topics covered include money demand; the determination of interest rates; inflation; monetary policy; central banking; debts and deficits; international monetary economics; and the economics of financial crises.

The goal of the unit
After successfully completing this unit, you will be able to assess the determinants, and the impacts on the economy, of changes in monetary policy and interest rates. You will also be able to discuss intelligently the role of the world economy on monetary conditions within a country, and be exposed to debate on current account deficits and foreign debt, as well as financial crises.

TEACHING AND LEARNING RESPONSIBILITIES

Teaching and learning evaluation
You may be asked to complete two evaluations during this unit. The Student Perception of Teaching (SPOT) and the Students’ Unit Reflective Feedback (SURF). The SPOT is optional and is an evaluation of the lecturer and the unit. The SURF is completed online and is a university wide survey and deals only with the unit. You will receive an email from the SURF office inviting you to complete the SURF when it is activated. We encourage you to complete the forms as your feedback is extremely important and can be used to make changes to the unit or lecturing style when appropriate.

Attendance
Participation in class, whether it be listening to a lecture or getting involved in other activities, is an important part of the learning process. It is therefore important that you attend classes. More formally, the University regulations state that ‘to complete a course or unit students shall attend prescribed classes, lectures, seminars and tutorials’.
**CONTACT DETAILS**

We strongly advise students to regularly access their student email accounts. Important information regarding the unit is often communicated by email and will not be automatically forwarded to private email addresses.

<table>
<thead>
<tr>
<th>Unit coordinator/lecturer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name:</strong></td>
<td>Kenneth W. Clements</td>
</tr>
<tr>
<td><strong>Phone:</strong></td>
<td>6488 2898</td>
</tr>
<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:ken.clements@uwa.edu.au">ken.clements@uwa.edu.au</a></td>
</tr>
</tbody>
</table>

**Consultation hours:**

Mondays 15.00 pm – 17.00 pm and immediately after lectures. The discussion board is also a recommended tool for posting any questions.

**Lecture times:**

Please check: [http://www.timetable.uwa.edu.au](http://www.timetable.uwa.edu.au)

Lectures will be recorded on Lectopia.

**Lecture venues:**


**Tutorials:**


Commence in the week beginning Monday March 14\(^{th}\).

Friday April 22\(^{nd}\) is a University holiday (Good Friday). Students in the one tutorial held on Fridays should go to another tutorial earlier in the week.
TEXTBOOK(S) AND RESOURCES

Unit website

Web CT: Some lecture notes, handouts, etc. will be available from WebCT. You can access your WebCT from http://webct.uwa.edu.au.

Recommended/required text(s)

There is no textbook.

Articles

The book Readings in Monetary Economics contains copies of the key articles referred to in lectures and those needed for tutorials. It is recommended that you purchase this book which is available at the UWA Bookshop.

Lecture notes

The book Lecture Notes in Monetary Economics contains the PowerPoint slides, as well as some additional material. It is recommended that you also purchase this book.

Discussion board

There is a discussion board on WebCT which can be used by students to resolve any issues that may arise during the semester. This will be particularly useful in discussing issues relating to the debate, the quiz and the final exam.

Reading List

This reading list is extensive for some topics and I do not expect everything to be read. I will give detailed guidance to the readings in lectures. Copies of articles marked with an asterisk (*) are available in the book Readings in Monetary Economics.

Material of longer-term value


1. Introduction to monetary economics


2. The importance of the demand for and supply of money


3. Money demand


4. Monetary policy and central banking


5. **Inflation**


6. **Interest rates**


7. **Debts and deficits**


8. International monetary economics


Finance and Development 40: 24-27.

9. The economics of financial crises

UNIT SCHEDULE

Topics
The following are the broad topics of the unit and the approximate timetable:

<table>
<thead>
<tr>
<th>Lecture/week</th>
<th>Week beginning Monday</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28 February</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>7 March</td>
<td>The Importance of Money Supply and Money Demand</td>
</tr>
<tr>
<td>3</td>
<td>14 March</td>
<td>Money Demand</td>
</tr>
<tr>
<td>4</td>
<td>21 March</td>
<td>Monetary Policy; Central Banking</td>
</tr>
<tr>
<td>5</td>
<td>28 March</td>
<td>Inflation</td>
</tr>
<tr>
<td>6</td>
<td>4 April</td>
<td>Inflation</td>
</tr>
<tr>
<td>7</td>
<td>11 April</td>
<td>Interest Rates</td>
</tr>
<tr>
<td>8</td>
<td>18 April</td>
<td>Interest Rates / Debt and Deficits</td>
</tr>
<tr>
<td></td>
<td>25 April</td>
<td>Study-break, no lectures or tutorials this week</td>
</tr>
<tr>
<td>9</td>
<td>2 May</td>
<td>Debts and Deficits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wednesday 11th May – Quiz (worth 20% of total mark)</td>
</tr>
<tr>
<td>10</td>
<td>9 May</td>
<td>Debts and Deficits</td>
</tr>
<tr>
<td>11</td>
<td>16 May</td>
<td>International Monetary Economics</td>
</tr>
<tr>
<td>12</td>
<td>23 May</td>
<td>International Monetary Economics</td>
</tr>
<tr>
<td>13</td>
<td>30 May</td>
<td>The Economics of Financial Crises</td>
</tr>
</tbody>
</table>
**ASSESSMENT MECHANISM**

**Assessment mechanism summary**

<table>
<thead>
<tr>
<th>Item</th>
<th>Weight</th>
<th>Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorial Debate Participation Mark</td>
<td>10%</td>
<td>Debate held in tutorials in week beginning Monday May 30</td>
<td></td>
</tr>
<tr>
<td>Mid-semester quiz</td>
<td>20%</td>
<td>40 minutes at 12.00pm Wednesday 11th May</td>
<td>Location to be announced</td>
</tr>
<tr>
<td>All Inclusive Final Exam</td>
<td>70%</td>
<td>2 hours</td>
<td></td>
</tr>
</tbody>
</table>

There will be no make-up quizzes or a make-up debate for students who miss either of these assessments. A grade of zero will be given unless the student provides a legitimate excuse (such as a medical certificate). If the student has a legitimate excuse, their marks will be allocated as follows:

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the mid-semester quiz is missed</td>
<td>10% Debate, 90% Final Exam</td>
</tr>
<tr>
<td>If the debate is missed</td>
<td>20% quiz, 80% Final exam</td>
</tr>
<tr>
<td>If both the quiz and debate are missed</td>
<td>100% Final exam</td>
</tr>
</tbody>
</table>

**Note 1:** Results may be subject to scaling and standardisation under faculty policy and are not necessarily the sum of the component parts.

**Note 2:** The grade FC indicates failure to complete an identified essential assessment component and means failure of the unit.

**Note 3:** Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning outcomes as required for accreditation and audit purposes. The findings may be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the unit.

Appeals in relation to assessment are allowed within the Faculty. The appeals procedures are described in the Faculty of Economics and Commerce Handbook. Students should ensure they are familiar with these procedures.

Supplementary assessment is normally not available in this unit unless a student pursuing a bachelor’s degree is currently enrolled in the unit; has obtained a mark of 45 to 49 inclusive in the unit; and it is the only remaining unit that the student must pass in order to complete their degree.
TUTORIALS

Tutorials will consist of discussion of a series of assigned questions, a debate and clarification of material covered in lectures. Most articles needed for tutorials are contained in the book Readings in Monetary Economics. Material from tutorials will be included in the mid-semester quiz and the final exam.

This section sets out the timetable for tutorials, information on the participation mark, details of the debate and the questions to be discussed in tutorials.

1. The timetable

<table>
<thead>
<tr>
<th>Lecture/week</th>
<th>Week beginning Monday</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>March 14</td>
<td>Tutorial Arrangements. The Australian and World Economies</td>
</tr>
<tr>
<td>4</td>
<td>March 21</td>
<td>Fundamental Monetary Arrangements</td>
</tr>
<tr>
<td>5</td>
<td>March 28</td>
<td>The Importance of the Demand for and Supply of Money</td>
</tr>
<tr>
<td>6</td>
<td>April 4</td>
<td>Money Demand</td>
</tr>
<tr>
<td>7</td>
<td>April 11</td>
<td>Central Banking</td>
</tr>
<tr>
<td>8</td>
<td>April 18</td>
<td>Measuring Inflation</td>
</tr>
<tr>
<td></td>
<td>April 25</td>
<td>Mid-semester break. No lectures or tutorials this week</td>
</tr>
<tr>
<td>9</td>
<td>May 2</td>
<td>The Quantity Theory of Money</td>
</tr>
<tr>
<td>10</td>
<td>May 9</td>
<td>Interest Rates</td>
</tr>
<tr>
<td>11</td>
<td>May 16</td>
<td>Discussion of quiz</td>
</tr>
<tr>
<td>12</td>
<td>May 23</td>
<td>International Monetary Economics</td>
</tr>
<tr>
<td>13</td>
<td>May 30</td>
<td>Debate on Debts and Deficits</td>
</tr>
</tbody>
</table>

Note: There are no tutorials on Good Friday, April 22. Students with tutorials on this day should attend another tutorial during that week.
2. **Tutorial participation mark**

As tutorials are an important component of Monetary Economics, the material covered in tutorials will be included in both the mid-semester quiz and the final exam. Additionally, tutorial participation will be allocated 10% of the overall unit assessment. Your grade in this component will be determined by your tutor along the following lines:

- In general, marks will not be allocated just for attendance. Quality is more important than quantity. But it is still recommended that you attend all tutorials.

- You need to make a genuine effort to participate in discussions in tutorials. Do the reading before the tute and think seriously about the questions so you are in a position to join in the discussion. Ensure your contributions are known by the tutor.

- You are encouraged to ask questions during the tutorial. Thoughtful questions of clarification during the tutorial can have substantial educational value to other students. Do not be reticent about asking questions.

- In the week beginning Monday May 30, there will be a debate on issues related to “Debts and Deficits”. Before this tutorial, each student in each tutorial group will be assigned to a team that will argue one side of one of the issues listed below. There is no advantage in being assigned to one topic or another, or to one side of the debate or the other, as your tutor will make the appropriate adjustments in determining your participation mark.

- Your tutorial grade will be determined by your contribution to the debate and other tutorials during the entire semester.

- The tutorial grades will be posted on WebCT by 5.00 pm Monday June 13.

3. **Debate topics**

The following is a list of three topics to be debated.

(i) **Since governments are entrusted with public funds, they should always run a balanced budget so that their spending never exceeds their income.**


(ii) **Many European countries, predominantly Greece, Ireland and Portugal, now have substantial public debt. The debt is, however, not problematic because rational individuals would have incorporated into their current planning all future debt service liabilities. That is, they will now be making provision for the expected higher taxes in the future.**


(iii) **The US budget deficit is about 11% of GDP, while the CAD is about 3.5% of GDP. Is this large current account deficit a direct result of excessive government spending?**


Also listed above are some useful references that can be used as a starting point in preparing for your debate. Links to most of these references will be on WebCT. You are, of course, not limited to these and are free to undertake further research. The purpose of the debate is to enhance understanding of the economic issues presented. Consequently, you are not expected to explain the detailed empirical and mathematical aspects of any of the reference material.

**Administrative arrangements**

- In most tutorial groups there will be a team arguing “for” and one “against” each of three topics.
- Before this tutorial, each student will be assigned to a team.
- Each team will have six minutes to present their case. So that all teams actually receive their allocated time, the time limits will be strictly adhered to.

**The nature of the presentation and the handout**

- One possibility is for each team to select one person who will present your case. This is not the only way to proceed, but it does avoid using up part of your six minutes with “change over time”.
- Each team is to provide a handout for all students in the tutorial, to be distributed at the beginning of the presentation. This should be no longer than one A4 page – use both sides of the page and reduce the material to fit up to four pages on one piece of paper if needed. Include on the handout details of the topic being debated and the names of all team members. The handout could comprise your PowerPoint slides (see below). Bring 20 copies of your handout.
- Prior to your presentation, you are welcome to consult with your tutor to clarify matters.
Advice on presenting

- Write and speak clearly.

- If your tutorial venue can run PowerPoint, use it. Check this before your presentation and have a trial run through.

- Be aware that some people have difficulty reading PowerPoint slides. Certain combinations of colours can also present a problem for some people. Use an appealing layout and do not include too much material on each slide. Use large font. As graphs and figures are difficult to display professionally on slides, you need to be extra careful with these to ensure that your audience can understand them. Under no circumstances should slides contain tables of a large number of figures taken directly from a published document – they simply don’t “work” at conveying information in a clear and crisp manner.

- If your tutorial venue cannot run PowerPoint, use PP to make some slides and then transfer them to transparencies to use on the overhead projector. Check beforehand that there is an overhead projector in your tutorial venue and that it works.

- When presenting, do not read your notes. It is much more effective to talk to them.

- Practice your presentation several times before the real thing. Try tape recording your practice sessions to see how you sound. Try video recording to see how you look.

- Take the presentation seriously, but do not get overly anxious.

4. **Tutorial questions**

**Tutorial 1: The Australian and world economies. Week beginning 14th March**

Reference:


Consider the following information on growth, inflation, interest rates and the size of the economies in Australia and the US.

---

**Figure 1**

Real GDP Growth (% p.a.)

<table>
<thead>
<tr>
<th>Country</th>
<th>Mean</th>
<th>S.Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS</td>
<td>3.28</td>
<td>1.71</td>
</tr>
<tr>
<td>US</td>
<td>2.84</td>
<td>2.14</td>
</tr>
</tbody>
</table>


**Figure 2**

Inflation (% p.a.)

<table>
<thead>
<tr>
<th>Country</th>
<th>Mean</th>
<th>S.Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS</td>
<td>4.53</td>
<td>3.16</td>
</tr>
<tr>
<td>US</td>
<td>3.38</td>
<td>1.92</td>
</tr>
</tbody>
</table>

Figure 3
Target Policy Interest Rate (% p.a.)

Notes:
1. For Australia: before January 1990, the interest rate is the average overnight interest rate on the money market. Thereafter, this is the official target cash rate.
2. For the USA: the interest rate is the federal funds rate.

Table I
Size of the Australian and US Economies

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP in 2009 (billions)</th>
<th>Population (millions)</th>
<th>GDP per capita in 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$A</td>
<td>$US</td>
<td>$A</td>
</tr>
<tr>
<td>Australia</td>
<td>1,253</td>
<td>993</td>
<td>22</td>
</tr>
<tr>
<td>US</td>
<td>17,987</td>
<td>14,259</td>
<td>307</td>
</tr>
<tr>
<td>US/Aus</td>
<td>14.36</td>
<td>14.36</td>
<td>14.03</td>
</tr>
</tbody>
</table>

Notes: Currency conversions based on 0.79 USD/AUD, which is the average exchange rate in 2009. The GDP figures are nominal 2009 estimates.


Questions
1. What is usually meant by the term recession? Why do both the US and Australia go into, and come out of recessions at similar times? Do the same catalysts trigger recession and recovery in both countries? If so, what are these catalysts?
2. During the 1980s, inflation in Australia was much higher than in the US, but in the last two decades they have been much more similar. Why?
3. In his Shann Lecture, what reasons does Eslake (2009) give for Australia’s resilience to the recent Global Financial Crisis?

4. How much larger is the US economy than that of Australia? How much richer, on average, are Americans than Australians? What qualifications need to be made?

5. Let real GDP in year $t$ be given by $Y_t$ and its initial value be $Y_0$. Suppose real GDP, $Y$, grows at $\lambda\%$ each year. Then:

$$Y_t = Y_0 e^{\frac{\lambda}{100} t}$$

(1)

Show that it will take roughly $70/\lambda$ years for GDP to double. This useful result is known as “the rule of 70”.

**Hint:** If GDP doubles by year $T$, then $Y_T = 2Y_0$. Use this and the rule that

$$\log \left( Y_0 e^{\frac{\lambda}{100} t} \right) = \log Y_0 + \frac{\lambda}{100} t$$

to solve for $T$.

6. In 2009, Australian GDP was roughly 993 billion US dollars while American GDP was 14,259 billion USD. Suppose real GDP grows at 3.2% p.a. in Australia and 2.8% in USA indefinitely. Using the equation (1), how long would it take until Australia’s GDP surpasses that in the US? You should solve the problem algebraically and check your answer using Excel. Make a graph of the natural log of GDP against time for both countries. What are the slopes of these graphs?

**Tutorial 2: Fundamental monetary arrangements. Week beginning 21st March**

**Reference:**

**Questions**

1. Why do people hold money?

2. What desirable properties should some “item” have for it to be useful as “money”? (Hint: Start with the simple case of gold.)

3. It is said that money is subject to a “network effect”. That is, the more people use a certain form of money the more valuable it becomes, just like a computer network or a language. A network with $N$ nodes can be represented by a $N \times N$ matrix:

$$A = \begin{pmatrix} a_{11} & \cdots & a_{1N} \\ \vdots & \ddots & \vdots \\ a_{N1} & \cdots & a_{NN} \end{pmatrix},$$

where $a_{ij}$ is the volume of traffic that flows from node $i$ to node $j$. The matrix $A$ can also be used to represent the money flows from person $i$ to person $j (i, j = 1, \ldots, N)$. Illustrate the “network externality” of money by considering the effect of an additional person $(N+1)^{th}$ using money by augmenting the A matrix with an additional row and column:
Why is this an “externality”?

4. Who or what controls the supply of money? (Hint: Again start with the case of gold.)

5. Should the supply of money be regulated by the government or left to market forces?

6. Should Australia abandon using the Australian dollar and adopt the US dollar instead? What are the costs and benefits? (Hint: (i) Read the Mundell article. (ii) Refer back to Question 3 above.)

**Tutorial 3: The importance of the demand for and supply of money. Week beginning Monday 28th March**

**References:**


**Questions**

1. The goods market:
   i. What determines the slope of the IS curve?
   ii. What causes a shift in the IS curve?
   iii. What causes a movement along the IS curve?

2. The assets market:
   i. What determines the slope of the LM curve?
   ii. What causes a shift in the LM curve?
   iii. What causes a movement along the LM curve?

3. Using the IS-LM model, explain the impact on interest rates and output of expansionary monetary policy. Under what conditions is GDP highly sensitive to monetary policy? Why?

4. Explain the economic impact of expansionary fiscal policy. Under what conditions are interest rates highly sensitive to fiscal policy? Why?

5. Given that the Reserve Bank of Australia now targets interest rates instead of the money supply, what can be said about the shape of the LM curve in Australia? What consequences does this have for the effectiveness of fiscal policy?
Tutorial 4: Money demand. Week beginning Monday 4th April

Reference:

Questions

1. In recent times financial markets have been particularly volatile. This would increase the demand for money. Discuss. (Hint: Refer to Topic 3 in Lecture Notes in Monetary Economics.)

2. The Baumol-Tobin model provides a theory of holdings of cash balances. Use this model, combined with estimates of your own cost of ‘a trip to the bank’ and foregone interest to calculate your optimal average cash balances. Is this amount close to what you usually keep in your wallet? Why might these two figures differ?

3. Two companies, A and B, are affected differently by the removal of tariffs on imported products. Profits of Company A rise due to its ability to source its inputs from international suppliers at substantially reduced prices and thus become more competitive and gain market share. Company B, however, sees its profits fall markedly as it struggles to compete with the now cheaper imports. Suppose these changes can be represented by the following net cash flows over a given year (all in $m):

<table>
<thead>
<tr>
<th>Situation</th>
<th>Company A</th>
<th>Company B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow prior to the removal of tariffs</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Cash flow following the removal of tariffs</td>
<td>40</td>
<td>1</td>
</tr>
</tbody>
</table>

a) What is the likely impact of these events on average cash balances held by each company? (Hint: Start out simply and just consider if cash holdings increase or decrease. Then, consider if they move in proportion to the annual cash flow. This relates to economies of scale in cash holdings.)

b) How would your answer to a) above change if the interest rate subsequently decreases from 5% to 4%?

c) Suppose Company B is a mining company that operates out of Broome and banks with Trust Us Bank (TUB). Due to cost cutting, TUB closes a large number of its rural branches, including that in Broome. The effect of this has been to make withdrawing money twice as difficult for the bank’s rural customers, including Company B. What would be the effect of this on the average cash balances held by Company B prior to the removal of the import tariffs?

Hint: Use the Baumol-Tobin model to calculate the elasticity of money demand with respect to income, interest rates and the cost of going to a bank. Interpret the income elasticity as the elasticity with respect to the company’s cash flow. Use these elasticities to calculate the consequence for money demand of a one-percent change in each of the variables. It may be helpful to use the following rules of powers: For u>0 and v>0, consider the function

\[ y(u, v) = \sqrt[4]{\frac{u}{v}}. \]
This can be expressed as

\[ y(u, v) = \sqrt[1/n]{u/n} v = \left( \frac{u}{v} \right)^{\frac{1}{n}} = \frac{u^n}{v^n} = u^n v^{-n}, \]

and it follows that

\[ \frac{\partial \left[ \log y(u, v) \right]}{\partial \log u} = \frac{1}{n}, \quad \frac{\partial \left[ \log y(u, v) \right]}{\partial \log v} = -\frac{1}{n}. \]

Remember also that for \( x, z > 0, \)

\[ \frac{d \left( \log x \right)}{d \left( \log z \right)} = \frac{dx/x}{dz/z} \approx \% \Delta x/\% \Delta z, \]

which is the elasticity of \( x \) with respect to \( z \), or the percentage change in \( x \) following a one-percent change in \( z \).

**Tutorial 5: Central banking. Week beginning Monday 11th April**

**References:**


Extract from the Reserve Bank Act 1959:

“It is the duty of the Reserve Bank Board… to ensure that the monetary and banking policy of the Bank is directed to the greatest advantage of the people of Australia and that the powers of the Bank … are exercised in such a manner as, in the opinion of the Reserve Bank Board, will best contribute to:

(a) the stability of the currency of Australia;
(b) the maintenance of full employment in Australia; and
(c) the economic prosperity and welfare of the people of Australia.”

**Questions**

1. What is the composition of the RBA Board? Who appoints Board members? Given this, do you think that the Reserve Bank of Australia can be described as ‘instrument independent’? (See [http://www.rba.gov.au/AboutTheRBA/rba_board.html](http://www.rba.gov.au/AboutTheRBA/rba_board.html))

2. The following cartoon and letter to the editor are both from the Australian Financial Review of 5th November 2007. This was shortly before the Federal election in which the then-ruling Coalition lost office. Peter Costello was Treasurer and broadly speaking, had political responsibility for all matters related to the economy, including policy. Does the cartoon imply that the Reserve Bank of Australia was independent? Is correspondent David Blackhall really trying to argue that because higher interest rates have no measurable impact on the economy, the RBA may as well raise them?
3. In the following table provides information regarding the transparency practices of leading central banks around the world:

<table>
<thead>
<tr>
<th>Transparency Practice</th>
<th>Follower of practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues a media release following all Monetary Policy meetings, including those which result in rates remaining unchanged</td>
<td>Reserve Bank of Australia, Bank of Canada, Bank of Japan, Federal Reserve (US)</td>
</tr>
<tr>
<td>Publishes the minutes of all Monetary Policy meetings</td>
<td>Reserve Bank of Australia, Federal Reserve (US), Bank of England, Bank of Japan</td>
</tr>
<tr>
<td>Publishes the voting details of individual Board members.</td>
<td>Bank of Japan, Bank of England, Federal Reserve (US)</td>
</tr>
<tr>
<td>Holds a press conference directly after all Monetary Policy Meetings.</td>
<td>European Central Bank, Bank of Japan</td>
</tr>
</tbody>
</table>

Source: Derived from Issing (2005).
Why is transparency and communication important for central banks? What mechanisms are in place to ensure that the RBA is transparent and accountable? With reference to the above table, how does the RBA compare with other central banks around the world regarding transparency? What would you recommend?


4. How do we assess the performance of a central bank? Given this, how would assess the performance of the RBA over the last decade?

5. It has been argued that inflation targeting — as an explicit nominal anchor - will lead to larger output fluctuations. What does Mishkin (2000) say about this argument? Has the performance of the world’s major economies been consistent with this argument?

Tutorial 6: Measuring inflation. Week beginning Monday 18th April

Reference:

Questions

The first six of the following questions refer to Clements (2006) and Table 1 from that source is reproduced below.

1. The right-hand side of equation (5) defines the two-year inflation rate. Use the data of Table 1 to compute this rate for the period 1999 to 2001; ensure that it is 15.38 percent, as indicated by the entry for 2001 in column 4 of Table 1.

2. Use equation (7) to compute the average annual rate of inflation from 1999 to 2001; ensure this is 7.42 percent.

3. From column 3 of Table 1,

\[
\begin{align*}
\pi_{2000} & = 3.85 \\
\pi_{2001} & = 11.11 \\
\end{align*}
\]

percent. Thus, the arithmetic average of these two rates is

\[
\frac{1}{2}(3.85 + 11.11) = 7.48 \text{ percent p.a.}
\]

This is close, but not exactly equal, to the entry in column 5 of Table 1 for 2001 of 7.42 percent for the average annual inflation rate. Why the difference? [Hint: Look at the discussion around equation (10)].

4. Use the data in column 2 of Table 1 to compute the ten-year rate of inflation and the corresponding annual average rate. How close is the latter to 6.35 percent, the average of the 9 one-year rates, given at the bottom of column 3 of Table 1?

5. The price level in 2005 is 170. Suppose the price level increases by 6.35% per annum from this year forth. What was the price level in 2006? By what year will the price level have tripled?

6. [Harder] Sketch an algebraic proof that the average rate of inflation is less volatile than the one-year rate.

7. Use the Reserve Bank of Australia’s Annual Inflation Calculator at http://www.rba.gov.au/calculator/ to answer the following:

a) Calculate the annual rate of inflation in each year of the decade of the 1990s.

b) Calculate the average annual rate of inflation for the 1990s.
c) Use these data to verify the first member of equation (11), the exact relation. Also compute the approximation given as the second member of equation (11). How close is the approximation?

8. In 1970, the cost of an ounce of gold was about $A30. If this price increased at the CPI rate of inflation, what would the cost be today? How does this compare to the annual cost in today? What do you conclude from this comparison and what are the implications for the Australian gold mining industry?

9. Today it costs about $14 to go to a movie. If movie admission prices moved in line with the CPI, what would this have cost in 1901? What if there were no movie theatres in 1901? More generally, what can be said about the measurement of inflation when new goods appear, and when the quality of existing goods improves significantly?

TABLE 1
THE PRICE LEVEL AND INFLATION

<table>
<thead>
<tr>
<th>Year</th>
<th>Price Index</th>
<th>Rate of Inflation</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>1996</td>
<td>100</td>
<td></td>
<td>10.00</td>
<td>15.00</td>
<td>7.24</td>
</tr>
<tr>
<td>1997</td>
<td>110</td>
<td></td>
<td>4.55</td>
<td>18.18</td>
<td>8.71</td>
</tr>
<tr>
<td>1998</td>
<td>115</td>
<td></td>
<td>13.04</td>
<td>15.00</td>
<td>13.18</td>
</tr>
<tr>
<td>1999</td>
<td>130</td>
<td></td>
<td>3.85</td>
<td>17.39</td>
<td>8.35</td>
</tr>
<tr>
<td>2000</td>
<td>135</td>
<td></td>
<td>11.11</td>
<td>15.38</td>
<td>7.42</td>
</tr>
<tr>
<td>2001</td>
<td>150</td>
<td></td>
<td>-6.67</td>
<td>3.70</td>
<td>1.84</td>
</tr>
<tr>
<td>2002</td>
<td>140</td>
<td></td>
<td>14.29</td>
<td>6.67</td>
<td>3.28</td>
</tr>
<tr>
<td>2003</td>
<td>160</td>
<td></td>
<td>12.50</td>
<td>28.57</td>
<td>13.39</td>
</tr>
<tr>
<td>2004</td>
<td>180</td>
<td></td>
<td>-5.56</td>
<td>6.25</td>
<td>3.08</td>
</tr>
<tr>
<td>2005</td>
<td>170</td>
<td></td>
<td>6.35</td>
<td>13.89</td>
<td>6.66</td>
</tr>
</tbody>
</table>

Average


Tutorial 7: The quantity theory of money. Week beginning Monday May 2nd

Reference:

Questions

1. The quantity theory equation is $MV = PT$, where $M$ is the money stock, $V$ is velocity of circulation, $P$ is the price level and $T$ is the volume of transactions. Rewrite this equation as $P = \alpha M$, where $\alpha = V / T$. Under what conditions is the price level proportional to money?

2. Are all increases in the money supply inflationary?

3. What would be the effect on the quantity theory equation of the development of a new financial asset which acted as a good substitute for money (consider both the long run and short run effects)? What would be the effect if the money supply simultaneously increased by 50 percent?

4. Central banks, including the RBA, customarily refer to monetary policy in terms of interest rates despite the fact that they don’t control interest rates directly. How does this work?
5. Many central banks are now inflation targeters. Would it be preferable for them to target the rate of growth of the money supply instead?

**Tutorial 8: Interest rates. Week beginning Monday May 9th**

**References:**

**Questions**
1. What does the Fisher equation imply about the relationship between money supply changes and interest rate changes? What empirical evidence do Monnet and Weber find to support this view?
2. Explain the liquidity effect view. What evidence is there to support this view?
3. Are the two views conflicting? How do Monnet and Weber reconcile them?
4. Does the relationship between money supply and interest rates change if the central bank targets interest rates instead of money supply?
5. The Taylor rule is

\[ i = \pi + \frac{1}{2} (y - y^*) + \frac{1}{2} (\pi - 2) + 2, \]

where \( i \) is the Federal Funds Rate (nominal); \( \pi \) is inflation; \( y \) is growth in real GDP; and \( y^* \) is potential growth. These four variables are all expressed in terms of percent p. a.
   a) Interpret this rule.
   b) In what sense does the Taylor rule mean that the central bank “leans against the wind”? Is this a desirable feature of monetary policy?
   c) In the third term of the right-hand side of equation (1), \( \frac{1}{2} (\pi - 2) \), inflation is measured as a deviation from the value 2. Why?
   d) If the central bank uses this rule, what happens to the ex post real interest rate, \( i - \pi \), when inflation rises?
   e) Growth and inflation are equally weighed in equation (1), which implies that they are, in some sense, directly comparable. Is it reasonable to argue that (a) below-trend growth and (b) inflation above 2 percent are equivalent for the purposes of managing the economy?
6. Suppose inflation is at 2 percent, GDP growth is at its long-run value, and the central bank follows the Taylor rule. What is the nominal interest rate? Suppose inflation increases to 3 percent while growth remains unchanged. What is the new interest rate? Why does the interest rate increase by more than the inflation rate?
7. Suppose the Reserve Bank of Australia adopted the Taylor rule. As this rule could be automated, would it mean substantial costs savings as many staff of the Bank, and possibly its Directors, would no longer be required to closely monitor the performance of the economy to provide advice on setting interest rates?

**Tutorial 9: Discussion of quiz. Week beginning Monday May 16th**
Tutorial 10: International monetary economics. Week beginning Monday May 23rd

References:


Questions

1. In Figure 1 below is a frequency distribution of daily changes over the last three decades in the Australian exchange rate, defined as the US dollar cost of one Australian.

   a) The mean change in the exchange rate is zero. What does that imply for forecasting future currency value?

   b) In \(2.47+3.34 = 6\) percent of cases, the daily absolute change in the rate exceeds 2 US cents. Is this a “large number”? [Hint: (i) What is the implied annual percentage change? (ii) Read Frenkel and Mussa (1980).]

   ![Figure 1](image)

   Distribution of Australian-US Dollar Daily Changes
   (12/12/1983-01/03/2010)

   Source: RBA

Figures 2-5 below are from, or based on, Clements, Lan and Seah (forthcoming). It is not necessary to read this paper, but you are welcome to do so.
Figure 2

Percentage Deviations from Big Mac Parity

(Means, 1994 – 2008)

Figure 3

Percentage Deviations from Big Mac Parity

(Means, 1994 – 2008)

Over (+) / Under (-) valuation

Mean = -18.76
2 S.E. = 13.5
2. Under purchasing power parity, the spot exchange rate, $S$, is equal to the ratio of prices at home to those abroad, $P/P^*$. Accordingly, the difference between $S$ and $P/P^*$ can be used to determine the extent to which the currency is over or under valued.

Each year *The Economist* magazine does this by using the price of a Big Mac hamburger in one country relative to that in the US as a measure of the relative price $P/P^*$. The deviation from parity is known as the “Big Mac Index” (BMI). For a recent example, see *The Economist* (2009). What is the justification for using hamburger prices to identify currency mispricing?
Figure 5
Evidence on BMI Predictions
(24 countries, 1994 – 2008)

A. 1-year horizon

B. 2-year horizon

C. 10-year horizon

D. 14-year horizon

$y = -0.05 - 0.30x$
$(0.73) (0.04)$

$y = -1.68 - 0.60x$
$(0.90) (0.05)$
Note: To facilitate the presentation, observations with changes greater than 40% in absolute value have been omitted from this figure. The straight lines are the least squares regression lines and the corresponding equations are given in the boxes. The standard errors are given in the parentheses.
3. Figure 2 plots the BMI against time for Australia. This reveals that the average deviation from parity is about -30 percent, so the $A is undervalued, relative to the $US, by this amount. This -30 percent value is plotted in Figure 3 for Australia, together with similar averages for a number of other countries. What do you conclude from these two graphs? Is the BMI useless?

4. Let \( q_t \) be the value of the BMI in year \( t \), so that if, for example, \( q_t = 20 \), then the currency is overvalued by 20 percent.¹ If there are \( T \) years in which the BMI is available, then we have \( q_1, \ldots, q_T \), which can be summarised by their average \( \bar{q} = \frac{1}{T} \sum_{t=1}^{T} q_t \).

From Figure 2 above, for the Australian dollar \( \bar{q} = -30 \) percent. Interpreting \( \bar{q} \) as the “permanent” deviation from parity, the “true” extent of mispricing in any year is then the deviation of the BMI from \( \bar{q} \), that is, \( q_t - \bar{q} \). If, for example, the BMI declares that the $A is undervalued by 10 percent in some year, while it is permanently undervalued by 30 percent, then its true mispricing is \( q_t - \bar{q} = -10 - (-30) = 20 \) percent. In this case, the currency is in fact overvalued by 20 percent.

If the approach has content, the mispricing should be eliminated in the future by the currency subsequently depreciating. That is, overvalued currencies subsequently depreciate and undervalued ones appreciate, as indicated by Figure 4. This graph refers to the subsequent change in the exchange from now, year \( t \), to \( h \) years in the future, year \( t+h \); the period \( h \) can be called the “forecast horizon”. Why is there a minus sign on the right-hand side of the equation at the top of the figure? How, exactly, does Figure 4 work?

5. Figure 5 presents some evidence on the above approach for 24 currencies over the period 1994-2008, so that \( T=15 \). Panel A of this figure refers to a forecast horizon of \( h=1 \) year, so the total number of observations is \( 24 \times (T-h) = 24 \times 14 = 336 \). The other panels contain the results for horizons of 2, 10 and 14 years.

What do you conclude from this figure? Is there any money to be made from this approach to forecasting currency values? (Disclaimer: The University of Western Australia, and its staff, will not be liable for any losses incurred!)

**Tutorial 11: Debate on debts and deficits. Week beginning May 24**

Details of the arrangements for the debates and the topics are contained earlier in this document.

¹ Technical note for those who read Clements et al. (forthcoming): That paper uses a logarithmic formulation, so that \( q_t \) is defined as the log of the ratio of the relative price \( P_t/P^* \) to the spot exchange rate \( S_t \). When multiplied by 100, this is approximately equal to the percentage deviation, that is

\[
100 \times \log \left( \frac{P_t}{P^*} \right) = 100 \times \left( \frac{P_t/P^* - S_t}{S_t} \right).
\]

Thus, the wording of this question uses this approximation. This footnote can be safely ignored by those who choose not to read Clements et al. (forthcoming).
Student Guild
Phone: (+61 8) 6488 2295
Facsimile: (+61 8) 6488 1041
E-mail: enquiries@guild.uwa.edu.au
Website: http://www.guild.uwa.edu.au

Charter of Student Rights and Responsibilities

Appeals against academic assessment
The University provides the opportunity for students to lodge an appeal against assessment results and/or progress status (refer http://www.secretariat.uwa.edu.au/home/policies/appeals).