A Graphical Approach to Studying External Adjustment in Small and Large Economies

We will derive a current account schedule: $CA_t = CA(r_t, \ldots)$. This will be helpful to analyze adjustment in the current account to macroeconomic disturbances.
Recall the **Investment Schedule** from Chapter 5:

\[ I_1 = I( r_1; \ A_2, \ldots) \]
Shifter of the Investment Schedule

- $A_2 \uparrow$, then schedule shifts up and to the right
Introduce the **Savings Schedule** Results of Chapters 3 and 5 imply...

\[ S_1 = S( r_1; Q_1, Q_2, \ldots ) \]
Shifters of the Savings Schedule

- $Q_1 \uparrow$, $S(r)$ shifts right.

- $Q_2 \uparrow$, $S(r)$ shifts left.
The Current Account Schedule

\[ CA = S - I \]

\[ CA(r) = S(r) - I(r) \]
Draw the savings and investment schedule in the same graph:

Given $r$, horizontal difference gives: $S - I$, which is the current account.
Current Account Determination in a Small Open Economy

small $\iff r = r^*$, with $r^*$, the world interest rate given.

Graphical representation:
- $r^*$, world interest rate
- $CA(r^*)$, current account at $r^*$
- $CA_1(r_1; \ldots)$, current account function
- Point A
- Axes: $r_1$ axis and $CA_1$ axis
- Horizontal line at $r^*$
Now use the graphical apparatus to analyze current account adjustment to:

1. An increase in the world interest rate, $r^* \uparrow$.

2. A temporary output shock, $Q_1 \uparrow$.

3. A future productivity shock, $A_2 \uparrow$.

4. Expected future terms of trade depreciation.
1.) Current account adjustment to an increase in the world interest rate
2.) Current account adjustment to a temporary increase in output

(a) 

(b) 

\[ S(r_1, Q_0), S(r_1, Q_1) \]

\[ I(r_1) \]

\[ CA(r_1, Q_0), CA(r_1, Q_1) \]
3.) Current account adjustment to a future increase in productivity
4.) Expected future terms of trade depreciation.
Current Account Determination in a Small Open Economy with an Interest Rate Risk Premium
$r_1 =$ country interest rate

$r^* =$ world interest rate

Typically, $r_1 >> r^*$ for emerging market debtors. Why? Because of positive country risk premia.

$p \equiv r_1 - r^* =$ country risk premium

or

$$r_1 = \begin{cases} 
  r^* + p & \text{if country is a debtor} \\
  r^* & \text{if country is a creditor}
\end{cases}$$
Current account determination in the presence of a constant risk premium

\[ CA(r_1, Q_1) = r^* + p \]

\[ CA^0 \]
Current account determination in the presence of an increasing risk premium
Equilibrium in a Large Open Economy

large \to r \neq r^*.

Instead \( r \) is such that

\[ CA(r) + CA^{ROW}(r) = 0 \]

ROW = rest of the world
Current account determination in a large open economy
Bernanke’s Global Saving Glut Hypothesis

Bernanke observes that between 1996 and 2004 the U.S. current account has greatly deteriorated:

<table>
<thead>
<tr>
<th>Year</th>
<th>CA ($ bn)</th>
<th>CA/GDP (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>-125</td>
<td>-1.5</td>
</tr>
<tr>
<td>2000</td>
<td>-411</td>
<td>-4.0</td>
</tr>
<tr>
<td>2004</td>
<td>-634</td>
<td>-5.2</td>
</tr>
</tbody>
</table>

Note. These numbers differ slightly from those reported in Bernanke’s speech, because the numbers in the table are revised numbers from the March 19, 2015 release.
Current Account Deterioration in Nominal Terms

Data Source: Bureau of Economic Analysis.
While not quite as dramatic as in nominal terms, current account deterioration also large in real terms ...

Data Source: Bureau of Economic Analysis.
Bernanke then asks what accounts for this dramatic CA deterioration.

He suggests two alternative explanations:

- **Hypothesis 1:** ("Made in the U.S.A.") The CA deterioration primarily reflects developments inside the United States and is independent of developments in other parts of the world.

- **Hypothesis 2:** (Global Saving Glut) The CA deterioration was due to external factors, that is, due to developments in the rest of the world (and hence not under U.S. control).
“Made in the U.S.A.” Hypothesis

The U.S. decided to save less and invest more ⇒ U.S. current account schedule shifts up and to the left.

Why? Financial innovation induced low private savings rates and over-investment in residential housing.

Global Saving Glut Hypothesis:

Over the past decade there was a significant increase in the global supply of savings— a global saving glut ⇒ current account schedule of the rest of the world shifts down and left.

Why? (1) Emerging markets are accumulating foreign reserves to prepare for future crises and avoid the experience of the 1990s. (2) Export-led growth (brought about via exchange rate manipulation — undervalued currency). (3) Foreign (developed) countries are saving more in preparation for an aging population.
The “Made in the U.S.A.” Hypothesis versus Global Saving Glut Hypothesis
How can we tell the **Global Saving Glut Hypothesis** and the **“Made in the U.S.A.” Hypothesis** apart?

Both hypothesis imply that the U.S. current account deteriorates.

**BUT**

the global savings glut hypothesis predicts that interest rates fall whereas the **“Made in the U.S.A.”** hypothesis predicts that interest rates rise.

So we can use the observed behavior of interest rates to tell the two hypotheses apart.
How to construct the real interest rate?

\[ r_t = \text{real rate between period } t \text{ and } t + 1 \]

\[ i_t = \text{nominal interest rate between } t \text{ and } t + 1 \]

\[ \pi_{t+1} \equiv P_{t+1}/P_t = \text{gross rate of inflation between } t \text{ and } t + 1 \]

\[ E_t = \text{expectations operator conditional on information in period } t \]

Use the Fisher equation,

\[ 1 + r_t = \frac{(1 + i_t)}{E_t \pi_{t+1}}, \]

which says that the real rate equals the nominal rate minus expected inflation.

\[ i_t \text{ measured by 1-year Treasury rate.} \]
$\pi_t$ measured by annual CPI inflation rate.

How to measure expected inflation, $E_t\pi_{t+1}$? We assume that $\pi_{t+1} = E_t\pi_{t+1}$ for simplicity.

Alternatively, one could run a regression of $1/\pi_t$ on its own lags.
The World Real Interest Rate: 1994-2004

Note. The world real interest rate is approximated by the difference between the rate on 1-year U.S. Treasury securities and 1-year ex post CPI inflation.
The World Real Interest Rate: 1992-2012

Note. The world real interest rate is approximated by the difference between the rate on 10-year U.S. Treasury securities and 10-year expected inflation.
The figure shows that real interest rates fell, which is consistent with the Global Savings Glut Hypothesis and inconsistent with the “Made in the U.S.A.” hypothesis.
Finally, can the Saving Glut Hypothesis be used to rationalize the improvement in the U.S. current account after 2006? The argument would go as follows. After 2006 the rest of the world decided to save less and invest more, hence the CA schedule of the ROW would have shifted up and to the right. As a result the CA balance of the U.S. would have improved. What would have happened to interest rates? They should have gone up. However, this is not what happened, interest rates fell even further during the Great Recession, suggesting that a subsiding of the savings glut is not the reason for the improvement in the U.S. current account post 2006.