

Brigham Young University Department of Economics
Economics 459 - International Monetary Theory
Dr. Phillips (section 1) Fall Semester 2007

Final Exam key
December 18, 2007

This exam is closed book and closed notes, though you may use a calculator. Read all questions carefully before answering. Write your answers legibly in the space provided. Keep your answers concise and correct. Points will be deducted for answers which are irrelevant to the question.

Dr. M. T. Microcephalid, your former boss at the Ministry of International Money and Finance in Beluga has recently passed away under strange circumstances involving puffer-fish and superglue. You are being considered for a promotion by his successor, Dr. Noh Nuttin. He has submitted a series of questions. Answer each one in the space provided, and remember that death by parachuteless skydiving is a common punishment in Beluga. I am sure you recall that the currency in Beluga is the bugle.

1. (5 points each) Please explain each of the following concepts in the space provided.

Covered Interest Rate Parity:

The notion that the return on a domestic investment must be equal to the return on a foreign investment of equivalent risk, when we take into account the gain or loss on the value of the foreign currency from buying it in the spot market today and contracting to sell at today's forward rate in the future. Mathematically, the covered interest rate parity condition can be written:
 $1 + i = (1 + i^*) \frac{f}{s}$ or $i - i^* = \phi$, where i is the domestic interest rate, i^* is the foreign interest rate, s is the spot exchange rate, f is the forward rate, and ϕ is the forward premium.

The Real Exchange Rate:

The cost of a basket of foreign goods in terms of numbers of baskets of domestic goods (q). It is related to the nominal exchange rate (e), the domestic currency price of a domestic basket (P) and the foreign currency price of a foreign basket (P^*) by the following formula:

$$q = \frac{eP^*}{P}$$

A Crawling Peg:

A fixed exchange rate where the value of domestic currency is fixed in units of a chosen foreign currency, but where this value changes in a predetermined fashion over time, usually increasing or decreasing by some small fixed percentage each day.

The Forward Premium:

The percent by which the forward rate exceeds the spot rate, $(f - s)/s$. It is normally converted to an annual percentage rate in order to accurately compare forward premia of different contract lengths. This formula is $\phi_A = (\frac{f}{s})^N - 1$, where N is the length of the forward contract measured in years.

2. (5 points each) Please name and describe the international financial systems during the following historic periods in the space provided.

1871 – 1913: **The Classical Gold Standard**

All participating countries declared the value of their currencies in terms of gold, via “par values”. Since all currencies had fixed values in terms of gold, they were also fixed in terms of other currencies. This was, therefore, a fixed exchange rate system.

1913 – 1945: **The Interwar Float**

Due to governments printing money to gain revenue via seignorage (the inflation tax) in order to finance World War I, the values of most major currencies floated against each other at market-determined prices.

1945 – 1973: **The Bretton Woods System**

Established by the Bretton Woods Agreement in 1944, this was a system where the US dollar was fixed to gold. The “par values” of all other currencies were declared in terms of US dollars. This was also a fixed exchange rate system.

1973 – Present: **The Post-Bretton Woods Float**

Due to speculative attacks and disagreements between central banks over the optimal growth rates of money (primarily the US and German central banks), the values of most currencies were allowed to float in 1973. The hope was to reestablish fixed rates, but this never happened.

3. (5 points each) Please give the effects on each transaction (in bugles) on each of the following: The overall balance of payments for Beluga: the current account, the capital account, and the relevant sub-accounts of the current and capital accounts.

A Belugan tourist in Japan buys a puffer-fish dinner worth 100,000 bugles and pays with Japanese banknotes (cash):

The current account deteriorates by 100,000 bugles; the trade account deteriorates by this amount due to the increase in imports.

The capital account improves by 100,000; there is a decrease in domestic holding of foreign financial assets (yen banknotes)

Exxon USA buys 50 million bugles worth of Beluga Oil Inc. stock and pays with a transfer of dollar-denominated deposits at a Citibank in New York City.

The current account is unaffected.

The capital account has no net movement.

However, foreign holdings of a domestic asset (stock) rises, causing the capital account to improve by 50 million bugles. This is exactly offset by a rise in domestic holdings of a foreign asset (bank deposits).

The Army of Beluga receives 20 million bugles worth of WWII-era artillery shells from the US Army as part of the annual US military aid bill passed by the US congress. It promptly “exports” these across the border toward enemy troops in its hated neighboring country, Zalchistan, via its stock of aging WWII-era howitzers.

The capital account is unaffected.

The current account experiences no net movement.

However, imports rise by 20 million bugles due to the shells coming into Beluga, which causes the trade account and also the current account to deteriorate. This is exactly offset by a unilateral transfer from the US which counts positive on the current account.

(The “exports” from launching explosive shells does not count in balance of payments accounting.)

Beluga Oil Inc. swaps 300 million bugles worth of heavy crude oil in exchange for 300 million bugles worth of light sweet crude oil from a country in the Middle East.

The capital account is unaffected.

The current account experiences no net movement.

However, imports rise by 300 million bugles (light sweet crude) and exports rise by the same amount (heavy crude). On net the trade balance is unchanged.

4. (20 points) Here in Beluga we have decided to abandon the peg of the bugle to the US dollar. Up until now the growth rates of money and output in Beluga and the US have been about the same. Now, we would like to keep our money supply growing at the same rate as in the US. However, we are pretty sure that the economic reforms we passed through the legislature this year will result in higher GDP growth rates in Beluga for the foreseeable future. I am told the Belugan goods are very poor substitutes for US goods. Can you please tell me what we should expect to happen to the bugles per dollar exchange rate? Use some sort of model to explain your reasoning.

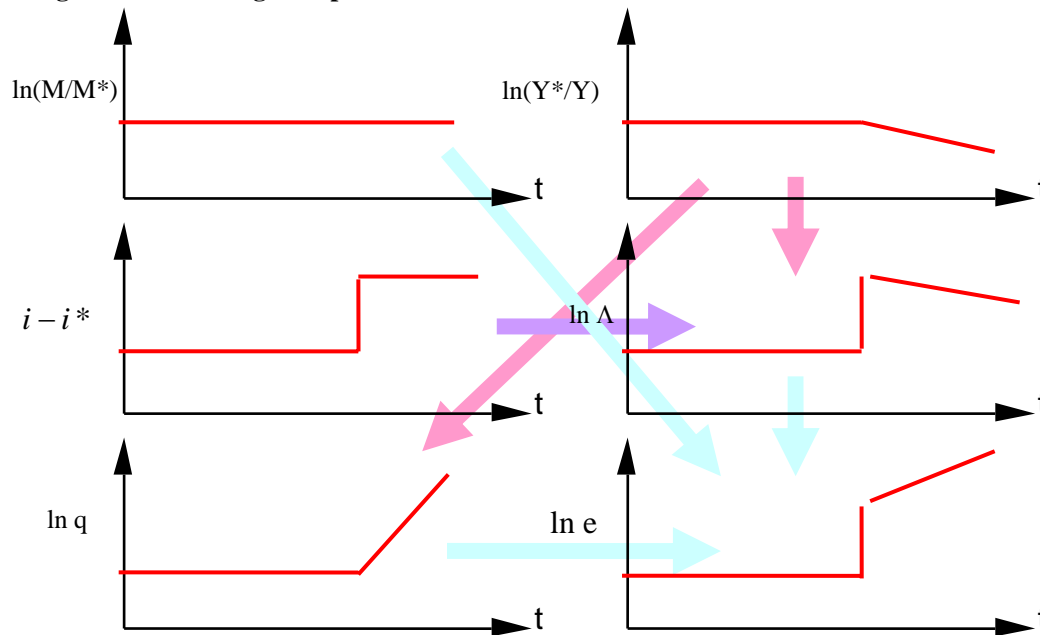
You should use the long-run “equilibrium approach” model of exchange rates for this problem. View Beluga as the home country and the US and the foreign one (with the *s)

$$e = q \left\{ \frac{Y}{Y^*} \right\} \frac{M}{M^*} \Lambda \left\{ \frac{Y^*}{Y}, g_M - g_M^* - (1-c)(g_Y - g_Y^*) \right\}$$

Initially, $g_M = g_M^*$ and $g_Y = g_Y^*$, giving a constant value for e .

Now, however, we have $g_Y > g_Y^*$, but we still have $g_M = g_M^*$. The assumption that Beluga good are poor substitutes for US goods means c is a big number (we will assume > 1). This means that the $i-i^*$ term (2nd argument in the Λ function) actually rises. It also means that the long-run upward trend in q more than offsets the long-run downward trend in Λ .

This gives the following time paths.



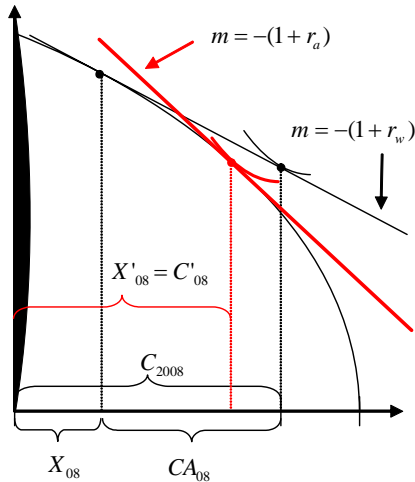
We expect immediate pressure for the exchange rate to rise, and expect it to continue to rise in the long-run.

The intuition is that as we get more and more home goods available relative to US goods, US goods become more and more valuable, since home goods are not substitutes. The value of foreign currency rises since it is needed to buy these scarcer and more desirable goods.

5. (10 points each) There is no denying that Beluga is a small economy relative to the rest of the world. We expect to run a current account deficit with the rest of the world in 2008 and a surplus in 2009.

The loyal opposition party in the legislature is proposing a set of protectionist laws that would effectively cut off trade with the rest of the world. Can you use some sort of diagrammatic model to predict what the change in the current account in 2008 and domestic interest rate if this legislation goes into effect?

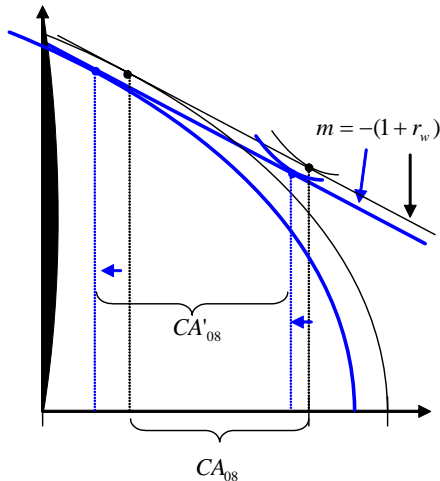
2008 is the 1st period in our model.



The initial case is illustrated in black. Here the firms and households face the fixed world interest rate, r_w .

When autarky is imposed we must have the current account be zero, this is accomplished by having the interest rise. X_{08} rises and C_{08} falls until they are equal. This interest rate is the new autarky interest rate, r_a . This is illustrated in red.

Suppose the legislation is defeated so that we remain open to international trade, but that overall productivity in Beluga in 2008 is temporarily lower than expected? What happens then?



As above, the initial case is illustrated in black.

Since only 2008 productivity is effected the PPF shifts to the left in a parallel fashion. Firms and household still face the world interest rate.

As illustrated in the blue case, the current account deteriorates (becomes even more negative).