Part 1: An infinite horizon model

In this problem we consider an infinite horizon model with a representative agent and perfect foresight. Each period, the agent must obey the following budget constraint:

$$C_s + B_{s+1} = Y_s + (1+r)B_s$$

1. Based on the fact that the budget constraint holds for every period from t to $t+T$, show that this implies

$$(1+r)B_t = \sum_{s=t}^{t+T} \left(\frac{1}{1+r}\right)^{s-t} (C_s - Y_s) + \frac{B_{t+T+1}}{(1+r)^T}$$

2. Explain the intuition behind

$$\lim_{T\to\infty} \frac{B_{t+T+1}}{(1+r)^T} = 0$$

3. Impose this restriction and assume that $C_s = cY_s$ and $Y_s = (1+g)^{s-t}Y_t$.

   (a) Find the intertemporal budget constraint for this case (when $g < r$).

   (b) Imagine that keeping consumption at a fixed share c of output indeed is the optimal consumption-choice of a representative agent. Is c above or below one?

   (c) Assume $g = 0$. What does the time-profile of B_t look like for a given value of c?

   (d) Assume $g > 0$ (but also $g < r$). What does the time-profile look like now?

4. Now assume (as in question 6 of the first seminar) that output is a function of the capital stock, $Y_t = A_t F(K_t)$. Also assume no depreciation. The utility function is specified as $U_t = \sum_{s=t}^{\infty} \beta^{s-t} u(C_s)$. Use the period s budget constraint to insert for C_s in the utility function. The period-by-period budget constraint is now

$$C_s + B_{s+1} + K_{s+1} = A_s F(K_s) + K_s + (1+r)B_s$$

(a) Find the first-order condition with respect to K_{t+1} and B_{t+1}

(b) Suppose productivity is constant $A_s = A_t$ for all $s \geq t$ and that, by coincidence, $\beta(1+r) = 1$. Describe the time-profiles of consumption, investment and the current account (you can assume that initial net foreign assets, B_t, are zero).

(c) Sketch the effects on consumption, investment and the current account from

i. An unexpected temporary increase in productivity in period $t+1$ (that only lasts one period)

ii. A temporary increase in productivity in $t+1$ (that only lasts one period) that becomes known at the beginning of period t

iii. An unexpected permanent increase in productivity

1 Part 2: Discussion

The current account surplus of China has been the focus of a lot of discussion in recent years. It is hard to explain with our basic theories, but it is an important case to look at and try to understand. The following article was found in the opinions sections at the World Banks web-page.

Discuss the following article and the arguments contained in it. Your focus should be divided between what we can explain with our simple models and how to explain that which contradicts our model.

I expect everyone to have at least one question or comment to the article.

1.1 How China's current account surplus will evolve

How China's external current account surplus will evolve in the coming years is one of the key questions on the economic outlook for China and the global economy both.

China's increasingly competitive manufacturing sector should continue to power ahead to expand exports and gain global market share. At the same time, China's domestic economy should continue to grow rapidly, drawing imports. But how this will on balance play out with regard to the current account surplus is less certain. It will largely depend on how much progress is made with rebalancing the economy.

China's export volume has continued to rise rapidly. An increasing array of its manufacturing sector, including many types of machinery and equipment, is becoming more competitive internationally.

Competitiveness is boosted by technological catch-up, movement up the value chain and economies of scale, as well as through traditional strengths such as infrastructure and business climate. Reflecting these factors, labor productivity growth in manufacturing has remained solid, thus helping contain unit labor costs despite respectable wage growth.

Some have argued that China is losing its competitive edge because its export prices are rising. But that is an incorrect inference. Higher raw commodity prices mean export prices are rising all over the world - not just in China. Prices of US imports from China are now rising at the same pace as those of US imports of manufactured goods from developed countries. But prices of US imports of manufactured goods from other emerging markets and developing countries are rising faster. On this price metric, the most we can say is that China's competitiveness is improving at a slower pace than before.

China's exports have continued to strongly outpace world trade, and their global market share rose from 7.4 percent in 2007 to about 9.6 percent in 2010. And the trend has continued in the first four months of this year.

In addition to the strength of gross exports, the value added content of China's exports has continued to rise. This is because of deeper supply chains in the processing sector and a rising share of normal (non-processing) exports, which have higher value added content. In value added terms, exports thus grew even somewhat faster than headline exports. In several parts of the world, this strong export performance is causing economic and sometimes political friction.

There is another side to China's external trade story. Its domestic economy has grown even faster than exports since 2007, and its imports surged alongside domestic demand. As a result, imports strongly outpaced exports, with import volumes 34 percent higher in 2010 than in 2007, in real terms, compared to a 24 percent increase in the export volume.

This basically caused the decline in China's current account surplus from 10.1 percent of GDP in 2007 to 5.1 percent in 2010, leading to external rebalancing because China grew much faster than the rest of the world. In the first four months of this year, the growth of import volume eased but still maintained a steady pace.

China's external terms of trade have moved around a lot in recent years,

because of swings in raw commodity prices. But on average, the terms of trade dropped only 4 percent between 2007 and 2010, which had a modest impact on the current account.

With export and import volumes both expected to grow at lower double digit rates and the terms of trade declining somewhat further, the current account surplus for 2011 as a whole is likely to fall further, to 3.5 to 4 percent of GDP.

The reduction in the current account surplus has of course been influenced by the global financial crisis. It depressed global demand and led China's government to implement a large and effective stimulus which boosted domestic demand.

Looking ahead, exports should continue to increase strongly and gain global market share. Imports, too, should continue to grow rapidly on the back of continued solid growth of China's domestic economy. But it is not clear how these two factors would on balance work out with regard to the current account surplus.

If China's domestic demand growth remains much stronger than elsewhere and significant rebalancing takes place toward a larger role for services and consumption, the external surplus may remain contained. Such progress with rebalancing, however, requires substantial policy adjustment and reform in a range of areas, including pricing of inputs into industry, public finances, policies for private and service sector companies, and the exchange rate. In the absence of such policy adjustment, exports are likely to start outstripping imports again, as they did before 2008, especially if the global economy - and thus demand for China's exports - does well.

The policy focus is crucial but hard to predict. Recent years have not seen a steady sequence of rebalancing-oriented reform. The 12th Five Year Plan (2011-2015) has rebalancing as a key objective. But the other major objective is industrial upgrading and moving up the value chain.

The plan suggests the government should lead this effort, even though in most market economies the government's role would largely be to provide an enabling framework with most of the upgrading left to the corporate sector. In fact, the industrial upgrading is already happening.

If on top of that the policy focus in the coming years is going to be more on industrial upgrading than on rebalancing, on balance we will see greater emphasis on industry and investment rather than services and consumption. This would drive up the current account surplus again over time.

On the other hand, given the robust outlook for domestic demand, a

policy focus on rebalancing the current account surplus should remain contained. Thus, the relative emphasis on these two policy objectives in the coming years will be a key determinant of the current account trend.

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The article above is downloaded from the following link:
http://www.worldbank.org/en/news/opinion/2011/06/15/how-current-account-surplus-will-evolve