The Global Economy
David Backus

Practice Final #1

December 2013

You have 120 minutes to complete this exam. Please answer each question in the space provided and show all of your work. You may consult one page of notes and a calculator, but devices capable of wireless transmission are prohibited.

I understand that the honor code applies: I will not lie, cheat, or steal to gain an academic advantage, or tolerate those who do.

(Name and Signature)

	2010	2011	2012	2013
Official exchange rate (pesos per USD)	3.90	4.11	4.54	5.46
Inflation (%)	22.9	24.4	25.3	20.6
Foreign currency reserves (USD billions)	52.2	46.4	43.2	32.2
Real GDP growth (%)	9.2	8.9	1.9	5.2
Govt revenue (% of GDP)	24.3	23.6	25.4	27.3
Govt spending (% of GDP)	24.1	25.3	28.0	30.5
Public sector surplus (% of GDP)	0.2	–1.7	–2.6	–3.2
Primary balance (% of GDP)	1.7	0.3	–0.2	–0.8
Govt debt (yearend, % of GDP)			44.8	
Interest rate paid on debt (%)	4.0	5.5	6.7	6.5
Money market interest rate (%)	9.1	10.0	9.8	12.7

Table 1. Economic indicators for Argentina. Source: EIU.

1. *Don't Cry for Me Argentina (40 points).* Argentina is a seemingly endless source of entertainment to economists, yet its economy has done well in the recent past. GDP growth fell to 0.9% in 2009, during the global financial crisis, but averaged over 9% the next two years. Most analysts attribute this success to favorable commodity prices and strong global demand for Argentina's commodity exports.

   At the same time, the government of President Cristina Fernandez de Kirchner continues to adopt policies that befuddle outside observers, including: taking over private pension funds, restricting imports and purchases of foreign currency, attacking the press, nationalizing the Spanish-owned oil company YPF, imposing price controls on electricity, natural gas, and public transportation, and subsidizing energy consumption.

The Economist Intelligence Unit reports:

- A US court case may eventually leave Argentina with the unpalatable choice of repaying the "holdouts" (creditors that did not participate in the 2005 or 2010 restructurings) in full — something that it has sworn never to do — or falling into technical default to avoid repaying current creditors in a US jurisdiction.
- According to official data, consumer price inflation remains among the highest in emerging markets, at 10.5% in April 2013. However, the official data are widely discredited, and we are now using estimates produced by PriceStats, which estimates that inflation in 2012 was 25%.
- Double-digit inflation has generated real peso appreciation. Foreign-exchange controls have failed to prevent an erosion of the reserves cushion, heightening the risk of an eventual devaluation.
- The Argentine peso floats in principle, but the central bank intervenes to limit the peso's depreciation. In addition, foreign currency transactions are subject to a variety of controls. For the past couple of years, the government has been gradually tightening the 'clamp,' an unofficial policy of discouraging purchases of dollars. As a result, the peso's official decline has been modest, but the unofficial "blue market" price of the peso is considerably lower.
- The (bad) banking sector risk rating reflects weak economic activity, expansionary monetary policies that contribute to credit risk, high risk of exchange-rate and interest-rate volatility, and increased currency convertibility risk.
- The ruling party fared badly in the October midterm election, leaving the president without enough support in Congress to change the constitution and run for re-election. Focus will now shift rapidly to the 2015 presidential race. The president remains alienated from almost all of the country's most influential groups, including the unions, the media, the Catholic Church and the traditional leaders of the Peronist party. In this context, risks to political stability will be high. An additional risk to stability is the president's health.

The question is what happens next: Could another crisis be on the way, or has Argentina put its problematic past to rest? Use the information provided, and your own experience and good judgement, to assess the risks to the Argentina economy over the next 2-3 years.

(a) By "real appreciation" we mean an increase in the price of local goods relative to foreign goods — what is sometimes called a decline in the real exchange rate. Use the numbers in the table to demonstrate (or disprove) real appreciation of the peso. (10 points)

(b) Why do you think the central bank's foreign exchange reserves have declined? (5 points)

(c) How do you see government debt evolving? Compute, in particular, the ratio of government debt to GDP at year-end 2013. What factors contribute the most to the change in the ratio? (10 points)

(d) Overall, how would you rate the risk of a macroeconomic crisis in Argentina? What are the biggest sources of concern? (15 points)

2. *The supply and demand of Abenomics (30 points).* Shinzo Abe was elected Prime Minister of Japan in December 2012 after two decades of slow growth and falling prices. He pledged dramatic policy changes to revive the Japanese economy, dubbed the "three arrows" of "Abenomics." We consult the Economist Intelligence Unit for specifics:

   - Fiscal stimulus. A sizeable economic stimulus package was passed by parliament in February 2013, and a smaller one in October. This is expected to produce a budget deficit of 8% in 2013.
   - Monetary stimulus. A plan to double Japan's money supply within two years was implemented in April 2013 to help to achieve the Bank of Japan's target of 2% inflation.
   - Structural reform. This is less clearly articulated, but some observers hope for a range of micro-based reforms, including loosening product-market regulations that reduce productivity, tightening corporate requirements for funding pensions, creating a more flexible labor market, and reducing subsidies to an inefficient agricultural sector.

   Your mission is to explore the impact of the three arrows using the aggregate supply and demand framework.

   (a) Explain, for each "arrow," whether it affects supply or demand. Which way does each one shift the appropriate curve(s)? (15 points)

   (b) Compare the short- and long-term impact on output of the three policies. Which are likely to have the greatest impact in the short term? In the long term? (15 points)

3. *Short answers (40 points).*

   (a) How sensitive to the business cycle would you expect demand for Rolex watches to be? Why? (10 points)

   (b) If US inflation jumped to 5%, how would you expect interest rates to respond? Why? (10 points)

   (c) Given what you know about global economic conditions, how would you expect the US dollar to perform over the next year versus the euro? Why? (10 points)

   (d) Consider the statement: "Tax deductions are good, because they save taxpayers money." Do you agree or disagree? Why? (10 points)

The Global Economy
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Practice Final #2

May 2013

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(Name and Signature)

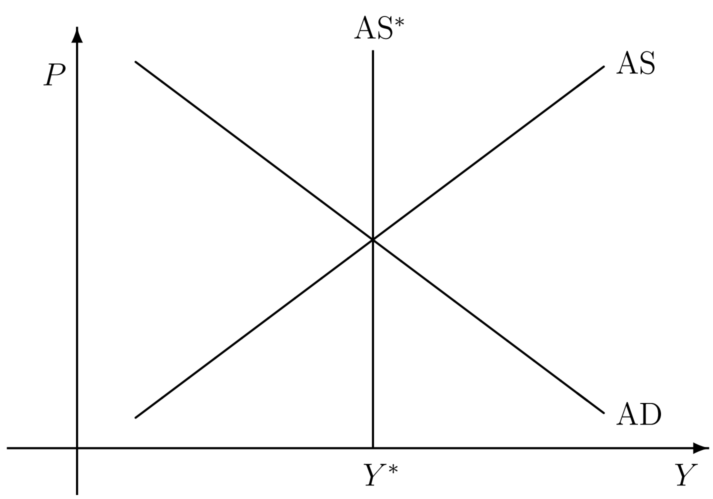

Figure 1. Aggregate supply and demand diagram

1. *Two views of monetary policy (40 points).* The goal is to connect some of the things we've learned about monetary policy, starting with the diagram in Figure 1.
   (a) If we increase the money supply, what happens to the curves in the diagram? Which ones shift? Why? (5 points)
   (b) What is the short-run impact on prices and output? The long-run impact? Illustrate both in the diagram. (10 points)

(c) How does the impact compare to the traditional goals of monetary policy? Is the policy of increasing the money supply a good one in the context of the figure? (10 points)

(d) Now consider the same thing from the perspective of the quantity theory equation. If velocity is constant, what is the impact of an increase in the money supply? (10 points)

(e) How do your answers to (b) and (d) compare? Is your analysis in (b) consistent with the quantity theory? (5 points)

	2008	2009	2010	2011	2012	2013
Nominal GDP (€billions)	172.0	168.5	172.8	171.0	165.4	156.7
Real GDP growth (%)	0.0	–2.9	1.9	–1.6	–3.2	–3.0
Inflation (%)	2.6	–0.8	1.4	3.7	2.8	0.4
Govt revenue (% of GDP)	41.1	39.6	41.4	45.0	41.0	40.7
Govt spending (% of GDP)	44.8	49.8	51.3	49.4	47.4	46.7
Public sector balance (% of GDP)	–3.7	–10.2	–9.9	–4.4	–6.4	–6.0
Primary balance (% of GDP)	–1.0	–7.6	–7.1	–0.6	–2.4	–0.5
Govt debt (yearend, % of GDP)	71.7	83.4	91.0	98.9	118.2	
Interest rate paid on debt (%)		3.6	3.5	4.0	3.6	4.2
Market rate on debt (%)	4.5	4.2	5.4	10.2	10.5	6.3

Table 2. Economic indicators for Portugal. Source: EIU reports.

2. *Disaster and opportunity in Portugal (40 points).* As an investor in distressed debt, you know well that economic disasters can be great opportunities. You wonder whether Portugal is one now, specifically the debt of the Portuguese government.

   You take a look at the Economist Intelligence Unit's reports and find:

   - Portugal is currently operating with deficit financing provided by the "troika" (the EU, ECB, and IMF). One of the conditions is that the deficit be reduced. The €80b in "bailout loans" have more attractive interest rates than debt issued in the public market.
   - The average maturity of government debt is currently 7.5 years.
   - Although 80% of the deficit reduction plans involved increases in tax revenue, the Constitutional Court ruled against roughly half the proposed cuts in spending.
   - Portuguese banks face rising loan losses as the economy endures a prolonged contraction.
   - There is risk the government will absorb large "contingent liabilities" from insolvent banks and state-owned companies.

- The exchange rate is fixed within the Euro Zone. The central bank has no foreign currency reserves.
- The EIU expects the governing center-right coalition of the Social Democratic Party and the Popular Party to hold together through 2015, when elections are due. However, continued austerity could weaken public support for the government amid a prolonged recession.

Using all of the information above, and your own experience and good judgement, assess the risks to an investor in Portuguese government debt.

(a) Use what you know about debt dynamics to compute the ratio of government debt to GDP at year-end 2013. What factors contribute to this number? (10 points)

(b) How important is the interest rate paid on debt? How would your analysis change if the rate rose by 2%? Fell by 2%? Which is more likely, in your view? (10 points)

(c) Overall, how would you assess the risks to investors? What are the biggest risks? Would you buy Portuguese debt now? (20 points)

3. *Short answers (40 points).*

(a) Draw the cross-correlation function for a countercyclical lagging indicator. (10 points)

(b) In the Euro Zone, GDP growth is now −0.5% and inflation is 1.7%. The ECB recently reduced its target interest rate to 0.5%. Use the Taylor rule to assess the suitability of this policy. (10 points)

(c) Describe how China's purchases of foreign currency affect the balance sheet of the central bank, the People's Bank of China. How would it be affected by "sterlization." (10 points)

(d) The Economist reports that Big Macs cost about the same in Canada and the US in 2008, but are now 25% more expensive in Canada. What does this suggest about the "dollar-dollar" exchange rate over the next 6 months? (10 points)

The Global Economy
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Practice Final #3

May 2010

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Note: These questions come from old exams, so the topics and numbers may be out of date. But be assured: good analysis lasts forever.

1. *US monetary policy (25 points).* When the US Federal Open Market Committee (FOMC) met in April 2007, inflation was close to 3% and GDP growth was about 2%. After the meeting, their statement said, in part:

> Recent indicators have been mixed. ... Nevertheless, the economy seems likely to continue to expand at a moderate pace over coming quarters. Recent readings on core inflation have been somewhat elevated. Although inflation pressures seem likely to moderate over time, the high level of resource utilization has the potential to sustain those pressures. In these circumstances, the Committee's predominant policy concern remains the risk that inflation will fail to moderate as expected. Future policy adjustments will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.

Comment: this is a time when it's helpful to see the AS/AD model lurking behind the words. The following questions should help you work your way through this process.

(a) How would you interpret the Fed's statement in terms of its goals of low inflation and full employment? Do you agree that the evidence, as presented, suggests that inflation is the "predominant policy concern"? (10 points)

(b) Use the aggregate supply and demand framework to illustrate how the FOMC might think about monetary policy. Consider each of the following questions in turn: (i) How would an increase in the money supply affect output and prices in the short run? (ii) In the long run? (10 points)

(c) Given the Fed's assessment of current economic conditions, how would you expect it to respond? Would you expect interest rates to rise or fall? (10 points)

	2002	2003	2004	2005	2006	2007	2008	2009
Real GDP growth	4.3	3.0	3.8	2.8	2.8	4.0	2.1	–1.6
Inflation	3.0	2.8	2.3	2.7	3.5	2.3	4.4	1.2
Interest rate: short	4.6	4.8	5.3	5.5	5.8	6.4	6.7	2.8
Interest rate: long	5.8	5.4	5.6	5.3	5.6	6.0	5.8	3.3
Investment rate	24.1	25.2	25.5	26.5	26.8	27.8	28.7	
Saving rate	20.1	20.4	20.0	21.3	21.2	21.9	24.3	
Current account	–3.8	–5.5	–6.1	–5.8	–5.5	–6.4	–4.2	–3.5
Govt budget: total	1.3	1.8	1.1	1.5	1.5	1.6	1.8	–3.3
Govt budget: primary	2.9	3.2	2.4	2.7	2.6	2.6	2.7	–2.6
Govt debt	20.1	18.5	17.5	17.0	16.4	15.4	13.9	
Exchange rate	1.84	1.54	1.36	1.31	1.33	1.20	1.19	
Real exchange rate	100	113	121	125	125	133	132	
FX reserves (USD)	21	32	36	42	53	25	31	
FX reserves (months)	2.9	3.7	3.3	3.4	4.0	1.6	1.7	

Economic indicators for Australia. Notes: (i) Investment, saving, current account, government budget, government debt, and net foreign assets are expressed as percentages of GDP (ratios multiplied by 100). (ii) The exchange rate is the Aussie dollar (AUD) price of one US dollar; high numbers indicate that foreign currency is expensive. The real exchange rate is a weighted average across trading partners. The convention is the inverse of the exchange rate: high numbers indicate that local goods are expensive relative to foreign goods. (iii) Foreign exchange reserves are expressed, first, in billions of USD, second, as a ratio to monthly imports. Thus the number 2.9 means that reserves are 2.9 times one month's imports. (iv) 2009 numbers are estimates.

2. *Deficits down under (40 points).* As a European investor in short-term Australian securities, you have made a fair amount of money over the last decade betting that Australia's high interest rates would not be offset by declines in the value of its currency. You wonder, however, whether it's time to take your money and run.

Having some experience with such situations, you check the Economist Intelligence Unit's Country Data, summarized above, and Country Risk Service, which reports:

- The exchange rate is flexible, and could move either way against the euro.
- Australia's large net foreign liability position reflects a combination of direct investment in Australian businesses, notably mining, and the carry trade, in which investors purchase AUD-denominated assets in order to benefit from relatively high local interest rates.
- The banking system is stable.
- Australian political institutions are widely regarded to be of high quality and stable.

With this information in hand, you go through your checklist:

(a) Fiscal policy 1. Why are the total and primary government balances different? (10 points)

(b) Fiscal policy 2. What would you estimate for the debt-to-GDP ratio at the end of 2009? (20 points)

(c) Considering fiscal policy and other risk factors, how do you see the risks to the Australian economy over the next two years or so? (10 points)

3. *Miscellany (50 points).*

(a) *Chinese crisis?* An analyst suggested that China may suffer a currency crisis along the lines of Mexico in 1994-95, in which the peso fell sharply when the Banco de Mexico ran out of foreign currency reserves. Do you find this scenario likely or unlikely? Why? (10 points)

(b) *Government deficits.* Can a country run a fiscal (government) deficit forever? Why or why not? (10 points)

(c) *Canadian inflation.* In Canada over the last year, inflation has been 2.3% and money growth has been 11.8%. Do you find the difference between the two numbers surprising? Why or why not? (10 points)

(d) *Leading indicators.* Explain what a leading indicator is and give an example for the US. (10 points)

(e) *Monetary policy mechanics.* Use the central bank's balance sheet to describe how it maintains the short-term interest rate at a specific level. (10 points)

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The Global Economy
David Backus

Practice Final #4

May 2009

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(Name and Signature)

1. *Chinese foreign exchange intervention (30 points).* Joseph Yam, Chief Executive of the Hong Kong Monetary Authority, wrote about the foreign exchange activities of the People's Bank of China (PBOC) in January 2007:

   > The accumulation of foreign exchange reserves involves the PBOC buying foreign assets through creating renminbi. As a result, the monetary base is increased, creating a need to "sterilise." This is done by issuing paper [short-term notes] to the banks. The PBOC obviously has to pay interest on the money borrowed. Currently the yield of, for example, three-month paper issued by the PBOC is about 2.5%. This is lower than the yield on foreign assets held as reserves — the yield on US treasuries is about 4 to 5% — so theoretically reserve accumulation can be profitable. The problem, however, is the continuing appreciation of the renminbi, which gradually reduces the value of those foreign assets in renminbi terms.

   (a) Use the central bank's balance sheet to show how purchases of foreign currency increase the monetary base (think: supply of currency). (10 points)

   (b) Show how sterilization can be used to reverse the impact on the supply of currency. (10 points)

   (c) You may note that interest rates have now flipped, with Chinese interest rates above US interest rates. What does this imply for the returns on the PBOC's balance sheet? How might it avoid this outcome? (10 points)

2. *Globalization and inflation (20 points).* Fed Chairman Bernanke said recently (March 2007):

> As national markets become increasingly integrated and open, sellers of goods, services, and labor may face more competition and have less market power than in the past. These linkages suggest that, at least in the short run, globalization and trade may affect the course of domestic inflation.

(a) Use aggregate supply and demand to describe how expansionary monetary policy affects output and inflation in the short run. (10 points)

(b) Back to Bernanke: What do you see as the impact of globalization (think: imports from China) on domestic inflation? How would you represent this in the aggregate supply and demand diagram? How does globalization change the impact of expansionary monetary policy in this model? Do you find the model persuasive in this respect? (10 points)

3. *Miscellany (50 points).*

(a) *Exchange rates. The Economist* reports that a Big Mac costs $2.90 in the US, $3.28 in the eurozone, and $2.33 in Japan. (These prices are averages for the various regional markets, expressed in US dollars using current spot exchange rates.) What does this suggest about the likely change in value of the euro and yen v. the dollar over the coming 6 months? 6 years? (10 points)

(b) *Inflation.* Milton Friedman once said: inflation is always and everywhere a monetary phenomenon. Do you agree or disagree? Why or why not? (10 points)

(c) *Employment report.* At 8:30 am on April 6, 2006, the US Bureau of Labor Statistics released its closely-watched employment report, *The Employment Situation*. Firms reported an increase of 180,000 jobs in March, well above the consensus of 135,000. Treasury yields immediately rose 5-10 basis points for maturities from 2 to 30 years. Why? (10 points)

(d) *ECB policy.* The European Central Bank has kept short-term interest rates in the Euro Zone well above those in the US. Why? (10 points)

(e) *Cross-correlation function.* Describe the cross-correlation function and show how it can be used to identify promising leading indicators. (10 points)

The Global Economy
David Backus

Practice Final #5

December 2012

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(Name and Signature)

1. *Risk and opportunity in Ghana.* You have been asked to prepare a report on crisis risk in the West African country of Ghana. You recall from your Global Economy class that Ghana is a former British colony that has been growing rapidly in recent years after a period of unusually stable politics. The Economist Intelligence Unit refers to it as a "robust democracy." The World Economic Forum ranked Ghana 114th (of 133) in their Global Competitiveness Report. They continue: "The country continues to display strong public institutions and governance indicators, particularly in regional comparison."

   The EIU's Country Risk Report adds:

   - The December 2012 elections are expected to be close. The president, John Atta Mills, came to power promising accountability and transparency, but has struggled to maintain party unity while evidence emerges of financial impropriety of some government ministers.
   - The victor faces a challenging policy environment, particularly the fiscal situation.
   - Expectations among the population are high as production starts at the offshore Jubilee oil field.
   - The government's decision to allow use of 70% of future oil revenue as collateral for borrowing is a cause for concern if the revenue is not managed properly.
   - The Bank of Ghana (the central bank) faces the twin goals of containing inflation and fostering growth.
   - The currency — the cedi — floats with occasional heavy intervention.

   Your mission is to assess the risks to Ghana using the information above, the data in Table 3, and your own good judgement and analytical skills.

	2007	2008	2009	2010	2011	2012
GDP growth (%)	6.5	8.4	4.0	7.7	13.6	7.4
Inflation (%)	12.7	18.1	16.0	8.6	8.6	8.5
Interest rate (%)	14.5	20.8	28.8	22.7	20.5	20.6
Govt revenue (% of GDP)	17.5	16.0	16.5	19.1	23.4	22.2
Govt spending (% of GDP)	23.1	24.5	22.3	25.5	27.6	27.7
Govt budget balance (% of GDP)	–5.6	–8.5	–5.8	–6.5	–4.2	–5.5
Govt debt (% of GDP)	30.4	30.6	33.3	33.9		
Real exchange rate (index)	85.2	81.7	76.3	81.8	78.1	74.5
FX reserves (USD billions)	2.6	1.8	2.9	4.3	4.4	4.8

Table 3. Macroeconomic data for Ghana. Data from EIU CountryData. The government budget balance is a surplus if positive, deficit if negative. The real exchange rate is the price of goods in Ghana relative to the rest of the world; the larger the number, the more expensive goods are in Ghana. The numbers for 2011 and 2012 are estimates.

(a) You decide to start with a fiscal assessment. What trend do you see in government revenues and expenses? (5 points)

(b) You notice that neither the primary deficit nor interest expenses are reported separately. How would you estimate them from the numbers in the table? What are their values for 2011? *Warning: this was harder than intended. If you get stuck, just make up primary deficit numbers somehow.* (10 points)

(c) Using what you know about government debt dynamics, compute the ratio of government debt to GDP for 2011. What factors contribute the most to the change from 2010? (10 points)

(d) Overall, how would you assess the risks to Ghana's economy over the next couple of years? (10 points)

2. *Aggregate implications of employer-provided health insurance.* By an accident of history, health insurance in the US is generally provided by employers. Suppose a sharp rise in healthcare costs leads firms to hire fewer workers.

   (a) How would you represent this in an aggregate supply and demand diagram? Which curve shifts? In which direction? (10 points)

   (b) What is the new short-run equilibrium? Long-run equilibrium? What happens to inflation and output? (10 points)

   (c) How should the central bank respond? Be specific about its goals and how it would accomplish them. (10 points)

3. *True/false/uncertain.* Please explain why each statement is true, false, or uncertain. The explanation is essential.

(a) The New York Times reports that Apple paid a worldwide corporate tax rate of about 10%, while Walmart paid about 24%. This difference in tax rates is good for the global economy, because Apple is part of the high-growth technology sector. (10 points)

(b) The unemployment rate is a leading countercyclical indicator of economic growth. (10 points)

(c) If a central bank is purchasing foreign currency, sterilization would consist of selling bonds. (10 points)

(d) Purchases of household furniture are more cyclical than purchases of toothpaste. (10 points)

(e) If year-on-year GDP growth rises 1 percent, you would expect the fed funds rate to go up by roughly 1.5 percent. (10 points)

(f) Since 1983, Hong Kong has run a hard peg, with the Hong Kong Dollar trading between 7.75 and 7.85 per US dollar. As a result, Hong Kong inherits US monetary policy. (10 points)