ANSWER KEY – FINAL EXAM (VERSION 2)

Economics 402; Income and Employment Theory (Section 1)
Spring 2009; Mr. Vaughan

BARRO (ANALYZING SHOCKS WITH VARIOUS MODELS)

Assume the economy is operating at potential output. Suppose the central bank increases the money supply, other things equal. In the misperception model:

1. The general price level will fall in the short run. **FALSE, households will find themselves holding excess money balances and increase nominal spending, thereby causing a rise in prices.**
2. The general price level will rise proportionally to the money-supply increase in the long run. **TRUE**
3. The real wage will rise in the short run. **FALSE, workers will observe a rise in nominal wages (as part of the general increase in prices) and conclude real wages have risen. They will respond by increasing labor supply (i.e., the labor-supply curve will shift to the right), producing a fall in real wages and rise in employment/hours worked.**
4. The real wage will rise in the long run. **FALSE, money is neutral in the long run. In the long run, workers will see the increase in nominal wages did correspond to an increase in real wages and reduce labor supply to the original level.**
5. Total employment/hours worked will rise in the short run. **TRUE, see question 3.**
6. Average product of labor will rise in the short run. **FALSE, the increase in labor input – for a given level of capital and technology – implies a fall in marginal product of labor (MPL). A decline in MPL implies a fall in average product of labor (APL) as well.**
7. Real output will rise in the short run. **TRUE, households (firms) will produce more output with the higher level of labor input.**
8. Real output will rise in the long run. **FALSE, money is neutral in the long run. When labor supply returns to the original level (question 4), real output will as well.**
9. Aggregate economic welfare will rise in the short run. **FALSE, households prefer more goods to less. But they were "fooled" into supplying the additional labor necessary to produce the additional goods. Had they realized the increase in nominal wages did not imply an increase in real wages, households would not have increased labor supply. Because they could have supplied additional labor but chose not to (when the real wage was correctly perceived), they revealed a preference for the original level of real output.**
10. Aggregate economic welfare will rise in the long run. **FALSE, in the long run real output will return to the original level (question 8).**

Assume the economy is operating below potential output. Suppose the central bank increases the money supply, other things equal. In the sticky-wage Keynesian model:

11. The general price level will rise in the short run. **TRUE, see question 1.**
12. The real wage will rise in the short run. **FALSE, an increase in prices – with sticky wages – implies a fall in real wages.**
13. Average product of labor will rise in the short run. **FALSE, the decline in real wages (question 12) raises the quantity of labor demanded by households (firms). The increase in labor input – for a given capital stock and technology level – implies a decline in MPL and APL.**
14. Real output will rise in the short run. **TRUE, see question 7.**
15. Aggregate economic welfare will rise in the short run. **TRUE, the economy is operating below full employment (a market failure). Additional output can be produced with slack resources (thereby making the consumers of those products better off) without making anyone worse off.**

Assume the economy is operating below potential output. Suppose the central bank increases the money supply, other things equal. In the sticky-price Keynesian model:

16. Total employment/hours worked will rise in the short run. **TRUE, the increase in money implies a rise in total spending (M x V↑). Prices are fixed so real output will rise. To produce the additional output, households (firms) increase demand for labor, thereby raising real wages and labor input.**
17. The real wage will rise in the short run. **TRUE, see question 16.**
18. Average product of labor will rise in the short run. **FALSE, the increase in labor input – given capital and technology – will reduce MPL and APL.**
19. Real output will rise in the short run. **TRUE, see question 16.**
20. Aggregate economic welfare will rise in the short run. **TRUE, see question 15.**

Assume the economy is operating at potential output. Suppose households decide to save a larger fraction of income, other things equal. In the equilibrium model:

21. The general price level will fall in the short run. **FALSE, flexible prices will guide labor input from consumer to capital goods (as additional saving is converted to gross investment). The price of capital goods rises, and the price of consumer goods falls – but the general level of prices does not change.**
22. Aggregate demand will fall in the short run. **FALSE, again real consumption spending declines, but real gross investment spending increases (to absorb additional saving). So real aggregate demand does not change.**
23. Real output will fall in the short run. **FALSE, flexible prices keep real output (total production of consumer and capital goods) at potential.**
24. Aggregate economic welfare will fall in the short run. **FALSE, real output remains at potential. Households expressed a preference for greater saving (more gross investment) and flexible prices produced the needed reallocation of resources (and production).**
25. An increase in the money supply (as a policy response to the increase in saving) will increase aggregate welfare in the short run. **FALSE, the increase in money will raise nominal prices, but real output (and hence real consumption today and tomorrow) will not change.**

Assume the economy is operating at potential output. Suppose households decide to save a larger fraction of income, other things equal. In the sticky-price Keynesian model:

26. Total employment/hours worked will fall in the short run. **TRUE, the increase in saving implies a decline in real consumption spending (C↓) and real aggregate demand (AD↓). Prices are fixed in the short run, so real output falls – implying household (firms) need less labor input.**
27. Aggregate demand will fall in the short run. **TRUE, see question 26.**
28. Real output will fall in the short run. **TRUE, see question 26.**
29. Aggregate economic welfare will fall in the short run. **TRUE, the decline in real output implies households will be able to consumer fewer goods.**
30. An increase in the money supply (as a policy response to the increase in saving) would increase aggregate welfare in the short run. **TRUE, the decline in output represents a movement from the production-possibilities curve to a point inside the curve (below potential output) – a macroeconomic market failure. Aggregate demand stimulus, is thereby, Pareto improving.**

Assume the economy is operating at potential output. Suppose government permanently increases real purchases of goods. Further suppose these purchases have no impact on factor productivity. The equilibrium model predicts in the current period (i.e., short run):

31. Real gross investment spending will fall. **FALSE, a permanent increase in real government purchases implies a permanent increase in real taxes (and permanent decline in real disposable income). Households respond by reducing real consumption spending in each period to match the decline in real disposable income. The decline in real consumption equals the increase in real government purchases, so real gross investment spending will not change.**
32. Real consumption spending will fall. **TRUE, see questions 31.**
33. Real output will rise. **FALSE, tastes, technology and factor endowments (labor/capital) do not change, so real output will not change.**
34. The general price level will fall. **FALSE, real output is constant (see question 33), so real money demand and prices will not change.**
35. Total employment/hours worked will rise. **FALSE, see question 33.**

Assume the economy is operating at potential output. Suppose government temporarily increases real purchases of goods. Further suppose these purchases have no impact on factor productivity. The equilibrium model predicts in the current period (i.e., short run):

36. Real gross investment spending will fall. **TRUE, a temporary increase in real government purchases implies a small increase in real taxes (small decline in real disposable income). Households smooth the decline in real consumption forced by the decline in real disposable income. So real consumption spending falls in the current period – but only by a small amount. As a result, real gross investment spending must decline.**
37. Real consumption spending will fall. **TRUE, see question 36.**
38. Real output will rise. **FALSE, see question 33.**
39. The general price level will fall. **FALSE, see question 34.**
40. Total employment/hours worked will rise. **FALSE, see question 33.**

Assume the economy is operating at potential output. Suppose government cuts the marginal tax rate on labor income. The equilibrium model predicts in the current period (i.e., short run):

41. Total employment/hours worked will rise. **TRUE, a decline in the marginal tax rate on labor income will strengthen work incentives – thereby shifting the labor-supply curve to the right. As a consequence, the real wage will fall, and labor input will rise.**
42. The real rental price of capital will fall. **FALSE, labor and capital are complements in production, so the increase in labor input will boost demand for capital services, thereby raising the real rental price of capital and capacity utilization rate.**
43. The capacity utilization rate will rise. **TRUE, see question 42.**
44. Real output will fall. **FALSE, the increase in labor and capital input will boost real output.**
45. The general price level will rise. **FALSE, the rise in real output boosts money demand. To secure additional money balances, households cut nominal spending – which will reduce prices.**

Assume the economy is operating at potential output, and the government budget is balanced. Now, suppose government cuts real lump-sum taxes for a given path of real government spending. Assume everyone can borrow/lend at the same real interest rate (i.e., perfect credit markets), and households plan consumption for "n" periods (i.e., they care about future generations). The equilibrium (i.e., Ricardian) model of deficits predicts the tax cut will:

46. Raise the general price level. **FALSE, this is Ricardian equivalence. The tax cut does not affect incentives to work, save, or invest – nor does it alter real resources available to finance household consumption over "n" periods. [The tax cut merely rearranges the timing of taxes.] Because the present value of real household disposable income does not change, real consumption spending in each period remains the same. Households use proceeds from the tax cut to buy bonds issued by the government to finance the deficit. Apart from an increase in real private saving (to offset the decline in real public saving), no real magnitude is affected.**
47. Increase current real consumption spending. **FALSE, see question 46.**
48. Reduce current real gross investment spending. **FALSE, see question 46.**
49. Raise real output. **FALSE, see question 46.**
50. Raise aggregate welfare. **FALSE, see question 46.**

Assume the economy is operating at below potential output, and the government budget is balanced. Now, suppose government cuts real lump-sum taxes for a given time path of real government spending. Assume credit markets are imperfect. The Keynesian (i.e., conventional) model of deficits predicts the tax cut will:

51. Increase current real consumption spending. **TRUE, the tax cut will increase the net wealth of households, thereby boosting real consumption spending.**
52. Increase total employment/hours worked. **TRUE, the increase real consumption spending will increase real aggregate demand. Real output rises (because the economy is operating below potential output), so households (firms) will hire more labor to produce the additional output.**
53. Raise real output. **TRUE, see question 52.**
54. Raise aggregate welfare. **TRUE, the economy is operating below potential output. So the additional real output can be produced with involuntarily unemployed labor. (For additional discussion, see question 30.)**

Assume the economy is operating at potential output, and the government budget is balanced. Now, suppose government cuts real lump-sum taxes for a given time path of real government spending. Assume credit markets are imperfect. The Keynesian model (i.e., conventional) model of deficits predicts the tax cut will:

55. Increase real consumption spending. **TRUE, the tax cut increases the household wealth, thereby inducing a rise in consumption spending.**
56. Reduce current real gross investment spending. **TRUE, if the economy is operating at potential, real output will not change. The increase in real consumption spending (question 55) will "crowd out" real gross investment spending.**
57. Reduce real output in future periods. **TRUE, the decline in real gross investment spending implies the capital stock and real output level will be lower in the future.**

Assume the economy is operating at potential output. Now, suppose the central bank reduces the money supply by 50%. The equilibrium model predicts:

58. The general price level will fall by 50% in the short run. **TRUE, money is neutral in the short and long run. The decline in money leaves households holding less than desired levels of nominal money balances. They respond by reducing nominal spending. Real output is fixed by tastes, technology and factor endowments, so prices decline until nominal money supply and demand are equal in the money market.**
59. The general price level will fall by 50% in the long run. **TRUE, see question 58.**
60. Nominal wages will fall by less than 50% in the short run. **FALSE, if prices fell by 50% in the short run but nominal wages fell by less than 50%, real wages would be higher (thereby reducing employment/hours and output). Monetary neutrality implies real wages will not change – which means nominal wages must fall by 50% as well.**

GENERAL BARRO QUESTIONS (CHAPTERS 12-16 AND SGM)

61. Apart from advanced countries with real per capita growth rates of roughly 2% for the past 100+ years, the evidence suggests poorer countries tend to grow faster than rich countries. **TRUE**
62. Counties that spend more on research and development, other things equal, tend to post higher growth rates of real GDP per capita. **TRUE**
63. Countries with more protectionist trade policies, other things equal, tend to post higher growth rates of real GDP per capita. **FALSE**
64. Countries with higher fertility rates, other things equal, tend to post higher growth rates of real GDP per capita. **FALSE**
65. Countries with lower average inflation rates, other things equal, tend to post higher growth rates of real GDP per capita. **TRUE**
66. Countries with smaller government consumption purchases, other things equal, to post higher growth rates of real GDP per capita. **TRUE**
67. Post World War II U.S. data indicate the general price level is, on average, procylical. **FALSE**
68. Post World War II U.S. data indicate the real wage rate is, on average, procylical. **TRUE**
69. Post World War II U.S. data indicate the average product of labor is, on average, countercylical. **FALSE**
70. The behavior of the general price level in the current recession is consistent with the equilibrium model of business cycles. **FALSE, the price level has fallen over the last year, implying the dominant force in the current recession is an aggregate-demand shock.**
71. In both New Keynesian and equilibrium models, money is neutral in the long run. **TRUE**
72. One attractive feature of the sticky-wage Keynesian model is that it correctly predicts the cyclical pattern in real wages for post-World War II U.S. data. **FALSE, the real wage is procyclical. The sticky-wage Keynesian model predicts a countercyclical real wage.**
73. In the equilibrium model, the decline in real output during a recession represents a market failure. **FALSE, the decline represents a decline in potential output.**
74. The equilibrium model predicts an increase in real government purchases will have a positive multiplier effect only if it boosts factor productivity. **TRUE**
75. Ricardian equivalence implies a deficit resulting from a temporary increase in real government purchases will have no impact on tomorrow's capital stock and real output. **FALSE, a temporary increase in real purchases produces a decline in real gross investment spending in the current period, thereby reducing tomorrow's capital stock and real output. Ricardian equivalence does not apply because the time path of real government spending is not constant.**

76. Acceptance of Keynesian business-cycle models implies support for discretionary monetary and fiscal policy to stabilize the economy. **FALSE, one could view recessions as macroeconomic market failures yet still question the ability of discretionary policy to enhance aggregate welfare – because of politics, lags, tool ineffectiveness/imprecision, and time inconsistency.**
77. In the U.S., monetary policy can be conducted entirely free of political considerations. **FALSE, the Fed has a measure of independence, but Congress can always take that independence away – so the Fed must be mindful of politics.**
78. Equilibrium economists tend to favor policy rules. **TRUE**
79. Unlike fiscal policy, monetary policy is not subject to lag problems. **FALSE**
80. Other things equal, central banks bound by credible monetary rules will produce lower inflation rates than central banks with discretion to set policy in each period. **TRUE, credible rules are time consistent.**

FRIEDMAN AND SCHWARTZ QUESTIONS (F&S, CHAPTERS 11-13)

81. Other things equal, a rise in excess reserves in the banking system will cause the money supply to contract. **TRUE, an increase in excess reserves reduces the deposit-to-reserve ratio (D/R), and a decline in D/R reduces the money multiplier. So for any given level of high-powered money, the money stock will be lower.**
82. Other things equal, an increase in real money demand implies an increase in velocity. **FALSE, in money-market equilibrium, $M^s=M^d$. Substituting into the equation of exchange and rearranging yields: $M^d/P = Y/V$ (i.e., real money demand varies inversely with velocity, real output constant).**
83. [Chapter 11] The year-over-year growth rate of the money stock from 1948 to 1960 was less volatile than during any other period of comparable length in the F&S sample. **TRUE, see table 25 on page 594 in F&S.**
84. [Chapter 11] The Fed began to conduct independent monetary policy (i.e., no longer fashioned policy to support the prices of Treasury securities) in the early 1950s. **TRUE, see discussion of the Treasury-Fed Accord, F&S pages 623-627.**
85. [Chapter 12] Between 1948 and 1960, velocity declined an average of 1% per year. **FALSE, between 1869 and 1960, velocity declined an average of 1% per year. But from 1948 to 1960, velocity rose. See F&S page 639.**
86. [Chapter 12] Between 1867 and 1960, velocity was on average procylical—that is, rising relative to trend in expansions and falling relative to trend in contractions. **TRUE, see F&S page 642.**
87. [Chapter 12] According to F&S, the behavior of velocity between 1948 and 1960 can be traced largely to the growth of savings-and-loan shares. **FALSE, the growth of savings-and-loan shares explains at most about one-third of the post-war rise in velocity. See F&S page 672.**
88. [Chapter 13] According to F&S, the periods between 1867 and 1960 marked by high degrees of economic stability were also marked by high degrees of stability in money growth. **TRUE, "we have characterized four segments of the 93 years as displaying a relatively high degree of economic stability: 1882-92, 1903-12, 1923-29, and 1948-60. Each has also displayed a high degree of stability of the year-to-year change in the money stock (F&S, page 677)."**
89. [Chapter 13] According to F&S, year-to-year changes in velocity were relatively modest (less than 10%) for the overwhelming majority of their sample years. **TRUE, in 78 of 91 years (85.7%) from 1869 to 1960, the year-to-year change in velocity was less than 10%. See F&S page 682.**

90. [Chapter 13] According to F&S, over their sample the rate of monetary growth tended to accelerate prior to business-cycle troughs and decelerate prior to business-cycle peaks. **TRUE, "the rise [in the rate of money growth] tended to slow well down well before the peak in business and speed up well before the trough (F&S, page 682)."**

91. [Chapter 13] According to F&S, year-to-year changes in the money stock were less variable from 1914 to 1960 under the Federal Reserve than from 1879 to 1914 under the gold standard. **FALSE, see F&S page 684.**

92. [Chapter 13] According to F&S, federal deposit insurance succeeded, where the Federal Reserve Act failed, in making sure public loss of confidence in some banks did not mushroom into full-blown banking panics. **TRUE, see F&S page 684.**

93. [Chapter 13] Between 1867 and 1960, high-powered money was the major factor accounting arithmetically for changes in the money stock. **TRUE, see F&S page 684.**

94. [Chapter 13] According to F&S, the principal factor responsible the decline in the money stock between 1930 and 1933 was high-powered money. **FALSE, between 1930 and 1933, the deposit-to-currency ratio (D/C) fell to less than half its initial value, wiping out the secular rise of the previous three decades. This decline in D/C was principally response for the one-third decline in the money stock. See F&S page 685.**

95. [Chapter 13] The money stock rose significantly during World War I and II – first because of gold inflows and later because of Federal Reserve policies to support bond sales by the Treasury. **TRUE, see F&S page 687.**

96. [Chapter 13] The Federal Reserve provoked a serious recession in 1920-21 by doubling reserve requirements. **FALSE, the Fed provoked a serious recession in 1920-21 by raising the discount rate from 4.75 to 6% in January 1920 and then to 7% in June 1920. See F&S page 688.**

97. [Chapter 13] According to F&S, if the pre-1914 banking system rather than the Federal Reserve System had been in place in 1929, the money stock would not have contracted as much as it did in the following four years. **TRUE, see page 693.**

98. [Chapter 13] According to F&S, all observed correlation between money and real economic activity between 1867 and 1960 was the result of causation running from money to real output. **FALSE, "while the influence running from money to economic activity has been predominant, there have clearly also been influences running the other way, particularly during the short-run movements associated with the business cycle (F&S, page 695)."**

99. [Chapter 13] According to F&S, the main economic harm done by pro-silver agitation in the 1890s was that it resulted in an unduly slow rate of money growth, thereby producing deflation. **TRUE, see F&S page 698.**

100. [Chapter 13] According to F&S, the monetary collapse of the early 1930s was an inevitable consequence of unsustainable growth and inflation in the 1920s. **FALSE, "the monetary collapse from 1929 to 1933 was not an inevitable consequence of what had gone before. It was a result of the policies following during those years (F&S, page 699)."**