



Chief Reader Report on Student Responses: 2024 AP[®] Macroeconomics Set 2 Free-Response Questions

• Number of Students Scored	160,741		
• Number of Readers	252		
• Score Distribution	Exam Score	N	%At
	5	33,218	20.7
	4	33,198	20.7
	3	38,269	23.8
	2	33,433	20.8
	1	22,623	14.1
• Global Mean	3.13		

The following comments on the 2024 free-response questions for AP[®] Macroeconomics were written by the Chief Reader, Samuel Andoh, Professor of Economics, Southern Connecticut State University. They give an overview of each free-response question and of how students performed on the question, including typical student errors. General comments regarding the skills and content that students frequently have the most problems with are included. Some suggestions for improving student preparation in these areas are also provided. Teachers are encouraged to attend a College Board workshop to learn strategies for improving student performance in specific areas.

Question 1

Task: Graph, Calculate, Explain, Assert

Topic: Aggregate Demand-Aggregate Supply, Marginal Propensity to Consume, Long-Run Self-Adjustment, Monetary Policy with Ample Reserves, Reserve Market

Max Score: 10

Mean Score: 4.27

What were the responses to this question expected to demonstrate?

The question examined students' understanding of the aggregate demand–aggregate supply model, self-adjustment to full employment in the long run, and the effects of monetary policy in a banking system with ample reserves on the reserve market, the quantity of national savings, and unemployment.

The question begins by telling students to assume that the hypothetical economy of Moneyland is in equilibrium with an actual unemployment rate equal to the natural rate of unemployment.

In part (a) students are asked to draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, show (i) the current equilibrium real output and price level, labeled Y_1 and PL_1 , respectively, and (ii) the full-employment output, labeled Y_F .

In part (b) students are told that consumer spending in Moneyland decreased from \$110,000 to \$100,000 as a result of a decrease in disposable income from \$135,000 to \$110,000. Students are asked (i) to calculate the marginal propensity to consume in Moneyland and to show their work and (ii) to show the short-run effect of the decrease in consumer spending in Moneyland on the graph in part (a), labeling the new equilibrium real output and price level Y_2 and PL_2 , respectively.

In part (c) students are asked to explain how Moneyland's economy would adjust in the long run in the absence of any policy actions.

In part (d) students are told to assume that the central bank of Moneyland is concerned about the short-run effects of the decrease in consumer spending on the broader economy and is considering taking action rather than waiting for the long-run adjustment process. Students are further told to assume that the banking system in Moneyland has ample reserves. Students are then asked to identify a specific monetary policy action the central bank of Moneyland would take to increase consumer spending.

In part (e) students are asked to draw a correctly labeled graph of the reserve market in Moneyland, and show the effect of the monetary policy action identified in part (d) on the policy rate.

Finally, in part (f), based on the change in the policy rate shown in part (e), students are asked what will happen to (i) the quantity of national savings and (ii) unemployment and to explain.

How well did the responses address the course content related to this question? How well did the responses integrate the skill(s) required on this question?

Part (a) had two points. 85% of students earned the first point by drawing a correctly labeled aggregate demand-aggregate supply graph showing PL_1 and Y_1 at the intersection of the aggregate demand and short-run aggregate supply curves. 65% of students earned the second point by correctly placing the long-run aggregate supply curve at equilibrium real output $Y_1 = Y_F$.

Part (b) had two points. In part (b)(i), 37% of students earned the point by correctly calculating the marginal propensity to consume as 0.4 and showing their work, and in part (b)(ii), 79% of students earned the point by correctly showing the short-run effect of the decrease in consumer spending as a leftward shift of the AD curve, resulting in a decrease in the price level to PL_2 and a decrease in real output to Y_2 .

In part (c) 31% of students correctly explained that input prices (e.g., nominal wages) and/or inflationary expectations will decrease, causing SRAS to increase until it reaches full employment.

In part (d) 30% of students earned the point by correctly stating that the central bank of Moneyland would decrease its administered interest rates or decrease interest on reserves.

Part (e) had two points. 17% of students earned the first point by drawing a correctly labeled graph of the reserve market with the supply of reserves curve intersecting the demand for reserves curve in the range of ample reserves. 17% of students earned the second point by showing a decrease in the lower bound of the demand for reserves curve, resulting in a decrease in the policy rate.

Part (f) had two points. 68% of students earned the first point by correctly stating that the quantity of national savings would decrease, and the unemployment rate would decrease. 20% of students earned the second point by correctly explaining that the price level will increase because the decrease in nominal interest rates will increase interest-sensitive spending, which will increase aggregate demand and real output.

What common student misconceptions or gaps in knowledge were seen in the responses to this question?

<i>Common Misconceptions/Knowledge Gaps</i>	<i>Responses that Demonstrate Understanding</i>
<p>Part (b)(i)</p> <ul style="list-style-type: none"> • Confusing the marginal propensity to consume with the average propensity to consume (i.e., dividing consumption by income rather than dividing the change in consumption by the change in income) • Confusing the marginal propensity to consume with the marginal propensity to save (i.e., calculating 0.4 but then subtracting it from 1 to get 0.6) 	<ul style="list-style-type: none"> • Calculating the marginal propensity to consume as 0.4 and showing the work

<p>Part (c)</p> <ul style="list-style-type: none"> • Difficulty with explaining the long-run self-adjustment mechanism. Responses often showed an awareness that the short-run aggregate supply curve would shift to the right to restore long-run equilibrium but did not explain the cause of the shift as a decrease in input prices (e.g., nominal wages) and/or inflationary expectations. Some responses misattributed the long-run adjustment process to a shift in aggregate demand rather than short-run aggregate supply or explained using automatic stabilizers as the mechanism. 	<ul style="list-style-type: none"> • An explanation of long-run self-adjustment that includes a decrease in input prices (e.g., nominal wages) and/or inflationary expectations as the cause of an increase in short-run aggregate supply
<p>Part (d)</p> <ul style="list-style-type: none"> • Proposing monetary policy tools appropriate for a banking system with limited reserves (e.g., buying bonds or decreasing the required reserve ratio) rather than one with ample reserves • Proposing fiscal policy tools (e.g., increasing government spending or decreasing taxes) rather than monetary policy tools • Not differentiating between the action that the central bank takes when implementing monetary policy (i.e., changing administered interest rates or interest on reserves) and the target/effect of that monetary policy action (i.e., changing the policy rate) 	<ul style="list-style-type: none"> • Stating that the central bank should decrease administered interest rates or decrease interest on reserves, which are monetary policy actions that are appropriate for addressing a recessionary gap in a banking system with ample reserves
<p>Part (e)</p> <ul style="list-style-type: none"> • Drawing a money market graph or AD-AS graph rather than a reserve market graph • Drawing graphs that had the general shape of the demand for reserves and supply of reserves curves but then labeling those curves as the demand for money and the supply of money • Including a demand for reserves curve but no supply of reserves curve 	<ul style="list-style-type: none"> • Drawing a correctly labeled graph of the reserve market with the supply of reserves curve intersecting the demand for reserves curve in the range of ample reserves • Showing a decrease in the administered interest rates or a decrease in the lower bound of the demand curve for reserves, resulting in a decrease in the policy rate

<ul style="list-style-type: none"> Shifting the entire demand for reserves curve rather than just the horizontal bounds of the demand for reserves curve 	
<p>Part (f)(ii)</p> <ul style="list-style-type: none"> Not explaining the causal link between interest rate changes and changes in interest-sensitive components of aggregate demand; many responses recognized that lower interest rates would increase aggregate demand but did not explain how interest-sensitive spending would cause the increase in aggregate demand 	<ul style="list-style-type: none"> Explaining that the decrease in nominal interest rates will increase interest-sensitive spending (consumption, investment, or net exports), which will increase aggregate demand and real output

Based on your experience at the AP[®] Reading with student responses, what advice would you offer teachers to help them improve student performance on the exam?

- Teach how central banks carry out monetary policy in a banking system with ample reserves.

What resources would you recommend to teachers to better prepare their students for the content and skill(s) required on this question?

Use the resources that have been released by the College Board for teaching monetary policy with ample reserves, which include:

- Two videos for teachers explaining the updates, available in AP Classroom (Course Guide => Overview => Teacher Resources)
- Three revised practice exams, available on the AP Course Audit site and in AP Classroom
- Revised progress check questions, topic questions, question bank questions, and AP Daily videos available in AP Classroom

The Federal Reserve Bank of St. Louis has also developed a number of helpful resources for teaching the new tools of monetary policy that are available on its website: <https://www.stlouisfed.org/education/teaching-new-tools-of-monetary-policy>.

Question 2

Task: Calculate, Assert, Explain

Topic: Real v. Nominal GDP, Inflation, Costs of Inflation

Max Score: 5

Mean Score: 2.49

What were the responses to this question expected to demonstrate?

The question examined students' ability to calculate economic indicators such as nominal GDP, the GDP deflator, and inflation, and to explain the effects of unexpected inflation.

The question begins by providing hypothetical data for the price of food and clothing, the only two goods produced and consumed in the country of Maltrose, in year 1 and year 2. Students are told that the base year is year 1.

In part (a) students are asked to calculate the nominal GDP in Maltrose in year 2 and to show their work.

In part (b) students are asked to calculate the GDP deflator in year 2 and to show their work.

In part (c) students are asked for the numerical value of the inflation rate from year 1 to year 2.

Finally, in part (d) students are told to assume that the expected inflation rate between years 1 and 2 was 3% and asked whether the following were better off, worse off, or unaffected as a result of the economic conditions between years 1 and 2: (i) people living on a fixed income and (ii) borrowers with fixed interest-rate loans and to explain.

How well did the responses address the course content related to this question? How well did the responses integrate the skill(s) required on this question?

In part (a) 75% of students earned the point by correctly calculating the nominal GDP in Maltrose in year 2 as \$210 and for showing their work.

In part (b) 34% of students earned the point by correctly calculating the GDP deflator in Maltrose in year 2 as 105 and for showing their work.

In part (c) 38% of students correctly stated that the inflation rate from year 1 to year 2 was 5%.

Part (d) was worth two points. In part (d)(i), 71% of students earned the point by correctly stating that people living on a fixed income were worse off. In part (d)(ii), 36% of students earned the point by correctly stating that borrowers with fixed interest-rate loans were better off and explained that the real value of their debt decreased by more than they expected, or the real interest rate was lower than expected.

What common student misconceptions or gaps in knowledge were seen in the responses to this question?

<i>Common Misconceptions/Knowledge Gaps</i>	<i>Responses that Demonstrate Understanding</i>
Part (b) <ul style="list-style-type: none">• Flipping the numerator and denominator, resulting in a price index < 100• Expressing the GDP deflator as a percentage (%) or a price (\$).	<ul style="list-style-type: none">• Calculating the GDP deflator as 105 and showing correct work
Part (c) <ul style="list-style-type: none">• Not understanding that the GDP deflator is a price index and can therefore be used to calculate the inflation rate	<ul style="list-style-type: none">• Determining the inflation rate of 5% by calculating the percentage change in the GDP deflator
Part (d)(ii) <ul style="list-style-type: none">• Difficulty explaining why unexpected inflation would leave borrowers with fixed interest-rate loans better off	<ul style="list-style-type: none">• Explaining that borrowers with fixed interest-rate loans were better off because the real value of their debt decreased by more than they expected or because the real interest rate was lower than expected

Based on your experience at the AP[®] Reading with student responses, what advice would you offer teachers to help them improve student performance on the exam?

- Have students work out problems to reinforce concepts and help them make inferences from their calculations or graphs.
- Have students practice explaining their assertions in class.

What resources would you recommend to teachers to better prepare their students for the content and skill(s) required on this question?

Sign in to AP Classroom to access AP Daily videos and find questions on the topics and skills addressed in this question. AP teachers can assign the short AP Daily videos as homework, warm-ups, lectures, reviews, and more. AP teachers can also use the AP Question Bank in AP Classroom to enable students to practice and get feedback on formative topic questions and past AP Exam questions. Additional resources are available in the Classroom Resources section of the AP Macroeconomics course page on AP Central.

Question 3

Task: Assert, Explain, Graph

Topic: Fiscal Policy, Balance of Payments Accounts, Foreign Exchange Market

Max Score: 5

Mean Score: 1.46

What were the responses to this question expected to demonstrate?

The question examined students' understanding of how fiscal policy actions can address cyclical unemployment and the effect of those fiscal policy actions on net exports. It also tests students' understanding of how a change in net exports affects the supply of the domestic currency in the foreign exchange market, the international value of the domestic currency, and the capital and financial account.

Students are told to assume that Jamaica has cyclical unemployment and a capital and financial account equal to zero.

In part (a) students are asked to identify a specific fiscal policy action Jamaica's government would take to bring its economy to full employment.

In part (b) based solely on the short-run change in real output resulting from the fiscal policy action in part (a), students are asked what will happen to Jamaica's net exports and to explain.

In part (c) students are told to assume that Jamaica and Turkey are trading partners with flexible exchange rates. Students are asked to draw a correctly labeled graph of the foreign exchange market for the Jamaican dollar relative to the lira and to show the effect of the change in net exports identified in part (b) on the supply of the Jamaican dollar and the international value of the Jamaican dollar.

Finally, in part (d), students are asked how the change in net exports identified in part (b) will affect Jamaica's capital and financial account (CFA) and to explain.

How well did the responses address the course content related to this question? How well did the responses integrate the skill(s) required on this question?

In part (a) 71% of students correctly stated that Jamaica's government would increase spending, decrease taxes, or increase transfer payments.

In part (b) 8% of students correctly stated that Jamaica's net exports would decrease and explained that Jamaican demand for international goods would increase as a result of the increase in Jamaica's real income, which would increase Jamaican imports.

Part (c) had two points. 42% of students earned the first point by drawing a correctly labeled graph of the foreign exchange market for the Jamaican dollar. 27% of students earned the second point by showing an increase in the supply of the Jamaican dollar, resulting in a depreciation of the Jamaican dollar.

In part (d) 19% of students correctly stated that Jamaica's capital and financial account (CFA) would move into surplus and explained that the current account (CA) moved into deficit and the balance of payments must balance ($CA + CFA = 0$).

What common student misconceptions or gaps in knowledge were seen in the responses to this question?

<i>Common Misconceptions/Knowledge Gaps</i>	<i>Responses that Demonstrate Understanding</i>
<p>Part (b)</p> <ul style="list-style-type: none"> • Incorrectly concluding that net exports increase due to the increase in real output • Correctly stating that net exports will decrease but then explaining why they will decrease as a result of the increase in the price level rather than as a result of the change in real output 	<ul style="list-style-type: none"> • Stating that net exports will decrease and explaining that Jamaican demand for international goods will increase as a result of the increase in Jamaica’s real income, which will increase Jamaican imports
<p>Part (c)</p> <ul style="list-style-type: none"> • Incorrectly labeling the vertical axis of the foreign exchange market graph for the Jamaican dollar • Shifting the supply of the Jamaican dollar in the wrong direction • Not indicating a change in the value of the Jamaican dollar 	<ul style="list-style-type: none"> • Drawing a correctly labeled graph of the foreign exchange market for the Jamaican dollar and showing an increase in the supply of the Jamaican dollar, resulting in a depreciation of the Jamaican dollar
<p>Part (d)</p> <ul style="list-style-type: none"> • Not understanding the balance of payments and the connection between the current account (CA) and the capital and financial account (CFA) – i.e., that $CA+CFA=0$ or that the accounts have an inverse relationship because the balance of payments must balance 	<ul style="list-style-type: none"> • Stating that Jamaica’s capital and financial account (CFA) would move into surplus and explaining that the current account (CA) moved into deficit and the balance of payments must balance ($CA+CFA=0$).

Based on your experience at the AP[®] Reading with student responses, what advice would you offer teachers to help them improve student performance on the exam?

- Spend some time explaining the factors that influence both exports and imports when discussing the aggregate demand curve.
- Spend more time explaining the balance of payments accounts to students.

What resources would you recommend to teachers to better prepare their students for the content and skill(s) required on this question?

Sign in to AP Classroom to access AP Daily videos and find questions on the topics and skills addressed in this question. AP teachers can assign the short AP Daily videos as homework, warm-ups, lectures, reviews, and more. A longer faculty lecture on Unit 6 is available in AP Classroom, which discusses the determination of exchange rates, changes in equilibrium exchange rates, and the balance of payments. AP teachers can also use the AP Question Bank in AP Classroom to enable students to practice and get feedback on formative topic questions and past AP Exam questions. Additional resources are available in the Classroom Resources section of the AP Macroeconomics course page on AP Central.