

Introduction to Macroeconomics

Answers to Midterm Test and Remarks

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May 2010

1. Answers to these points are obvious from the literature. **Remarks** on marking: Only the three first answered items carry points, not the three best ones if you answer all four. Answers unrelated to the question carry no points. For example, the fiscal multiplier is unrelated to the money multiplier in (a), and general comments on fiscal policy are unrelated to the paradox of thrift in (d). Good descriptions of the money multiplier without the formula yield 8–9 points. In (b), the distinction of the GDP deflator and the CPI is not just that the former measures different goods from the latter, it is also the different construction principle, Paasche versus Laspeyres. Some students conceive the word ‘Laspeyres index’ as synonymous with CPI, which is not penalized though incorrect. In (c), it is the central bank that controls the money supply, neither the banking system nor the government. Make sure that a monetary expansion thus decreases the interest rate and drives up the bond prices, not because the central bank issues bonds. Bonds are usually issued by the government or possibly by large corporations, depending on legal constraints, but not by the central bank nor by other banks. In (d), I often read the remark that households wish to save more ‘in a recession’ but this is not the point. Rather, the increased saving by households causes a recession, similarly to an expansion caused by a lower saving propensity.
2. The national-accounts example: an artificial economy, with firms partially owned by households, and the government running a deficit to finance its

consumption of bread. There is no investment, so the absolute value of this deficit must match the sum of household and firm saving. Households and firms lend to the government. This mechanism changes slightly in (d), when the economy opens.

- (a) Households consume bread for 720€. It is unimportant what they do with the bread, as soon as they purchase it. Thus, their disposable income must be 800€. **Remarks:** I acknowledge that this is a minor trap, as the question seduces us to sum up the wages. However, household income is not the same as wage income. Often, households own the firms and then they have an additional income from that source. Here, households earn 500€ as wages and 300€ as profits. The incorrect solution ‘500’ carries some points, other incorrect ideas carry 1–2 points.
- (b) Profits are a balancing item that remains if the value added is reduced by wage payments, roughly. The profits of 130€, 120€, and 250€, summing up to 500€, are easily calculated. **Remarks:** Failure to adjust for the intermediate inputs is a gross mistake, in this case only 2 points are allotted, as the wheat producer’s profits are still correct.
- (c) Bread is the only final product in this economy. 1000€ of it are produced, and it is unimportant if the government lets it molder in storage rooms or feeds it to wild animals. It does not create a public good, so the bread is not distributed to poor households. The value of 1000€ remains the same if wages and profits are added (500+500), or if values added are summed up. True, also $C+G = Y = 720+280$ is a valid and informative decomposition. **Remarks:** Misinterpretation of government spending G as taxes is a serious error, such as the failure to account for intermediate inputs. Such solutions carry few points. A pure verbal description of calculating GDP carries some points but always much less than 12.
- (d) Clearly, the sentence above (d) only applies to this part, other interpretations are not logical. GNI evolves from adjusting GDP of 1000€ for the outflow of primary income of 120€ of profits and 150€

of foreign farmhands, yields 730€. **Remarks:** If profits have been calculated incorrectly before, the solution here carries full 6 points. By contrast, cryptic ideas of adding and subtracting certain positions carry much less.

3. The IS-LM example

- (a) By pure substitution and solving for Y , we obtain the IS curve

$$Y = 9000 - 5000i.$$

Remarks: Calculation errors are penalized by one point off, but they cause damage to all that follows, as they may entail ugly or contradictory numbers.

- (b) Similarly, the LM curve evolves as

$$i = 0.0002Y - 1.3.$$

Remarks: Representing Y as a function of i is also correct.

- (c) Substitution leads to $Y = 7750$, $i = 25\%$, $C = 5050$, and $I = 2100$.

Remarks: Incorrect interest rates, such as $i = 0.025$, cost just one point, but they are a nuisance for what follows.

- (d) Private saving is $Y - T - C = 2200$, and government saving is -100 , such that $S_H + S_{gov} = I$, a convenient check for the hitherto calculations. **Remarks:** Failure to answer the question on whether the government runs a deficit and failure to establish the saving identity in a recognizable way cost points. A ‘deficit surplus’ cannot be recognized as an answer.

- (e) It is stated that government wishes to balance the budget by changing taxes, so G must be as is, and $T = G$. Raising taxes is a fiscal contraction, of course, and interest must fall as well as Y and C . The same LM curve and a modified IS curve yield $Y = 7600$ and $i = 22\%$. $C = 4900$ and $I = 2100$ result from simple insertion. A graph should show an immobile LM curve and an inward (left) shift of the IS curve. **Remarks:** Answers without graphs or incorrect graphs yield 10 points. Graphs without calculations carry 3 points if carefully done. Changes in G are taken as a severe logical mistake.

(f) It is stated that T can be changed by the government but budget needs to be balanced, and thus $T = 600$ must still hold, as G is not allowed to move. However, a monetary expansion can now be used to attain the old level of $Y = 7750$. The IS curve of part (e) must be used together with an LM curve with still undetermined money. The IS curve with the given $Y = 7750$ yields an interest rate of $i = 19\%$, and real money evolves as $M/P = 1360$, of course slightly more than before. C must be at the (c) value, while $I = 2160$ is now larger, due to the low interest rate. **Remarks:** Graphs should clearly show the outward (right) movement of the LM curve, such that the eventual equilibrium has the same Y and lower i than the original in (c). Students found this part difficult, and there are relatively few good answers. Nonetheless, this is a well-designed example, and it shows nicely the effectiveness of a policy mix.