E C O N O M I C S B U L L E T I N

A big picture for teaching macroeconomics principles

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Abstract

The economy can be viewed as consisting of four sectors, the goods and services, labor, monetary, and international sectors, with overall equilibrium consisting of simultaneous equilibrium in each of these sectors. Interactions among these markets create headaches for students. The "big picture" of this paper is a verbal story (supplemented with an oversimplified diagram) that an instructor can tell to exposit this to beginning students. Furthermore, by explaining how these headaches are minimized students are provided an overview of how a typical macroeconomics principles course is structured.

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1. Introduction

This paper proposes a big picture of the economy that can be used to ease students into the general equilibrium morass of the macroeconomics principles course. Although this big picture is based on a diagram, it should properly be viewed as a verbal story an instructor can tell to provide for students a perspective on how the macroeconomics principles course is structured. In this respect, its goal is to introduce students to the following four ideas:

a) the economy consists of four subsectors, the goods and services sector, the labor sector, the monetary sector, and the international sector, with overall equilibrium corresponding to simultaneous equilibrium in each of these subsectors;
b) the subsectors interact, which causes difficulties when telling stories about how the economy reacts to shocks;
c) these stories are greatly simplified by recognizing that two of these markets (the monetary and the international sectors) clear very quickly, so that explanations can put them in the background and focus on the sluggish labor market and goods and services market; and
d) explanations are facilitated by using a diagram worth more than a thousand words, showing possible equilibria in these two sluggish markets.

These ideas can provide a broad perspective from which students can view the development of the course. But be forewarned: To achieve its purpose this big picture entails incomplete explanations and graphical shortcomings (examples of which appear in the appendix), which from a technical point of view could cause confusion. Confusion does not arise, however, because early in the course students do not know enough to recognize technical failures, and later in the course the details of this big picture have faded from memory and have been replaced by more rigorous analysis.

It should also be noted that this big picture has been created to match the general structure of typical principles courses and textbooks, and so has a Keynesian flavor. Most competing views of macroeconomics are variants of this general structure, however, in that their fundamental differences boil down to different assumptions regarding things like dynamics, expectations, and price flexibility. In this respect this big picture provides an overall perspective to help students deal with the details of these differences.

2. The Four Subsectors

Economists divide the economy into four sectors, with overall equilibrium corresponding to simultaneous equilibrium in each of these four sectors. The first of these sectors is the goods and services sector, highlighting the level of income and the overall price level. The second is the labor sector, highlighting the wage rate and the level of employment/unemployment. The third is the monetary sector, highlighting the interest rate and the economy's money supply. The fourth is the international sector, highlighting the exchange rate and the balance of payments. These highlighted variables are what much of macroeconomic analysis at the principles level is designed to explain: income, prices, unemployment, interest rates, and exchange rates.

An oversimplified graphical summary is shown in Figure 1, in which each of these four markets is represented by a "supply" and a "demand" curve. In the upper left corner is the goods and services (g&s) market, with the overall price level on the vertical axis

and the quantity of g&s on the horizontal axis. In the lower left corner is the labor market, with the wage rate on the vertical axis and quantity of labor on the horizontal axis. In the upper right corner is the monetary sector, with the interest rate on the vertical axis and the quantity of money on the horizontal axis. In the lower right corner is the international sector, with the exchange rate on the vertical axis and the quantity of dollars supplied/demanded on the foreign exchange market measured on the horizontal axis.

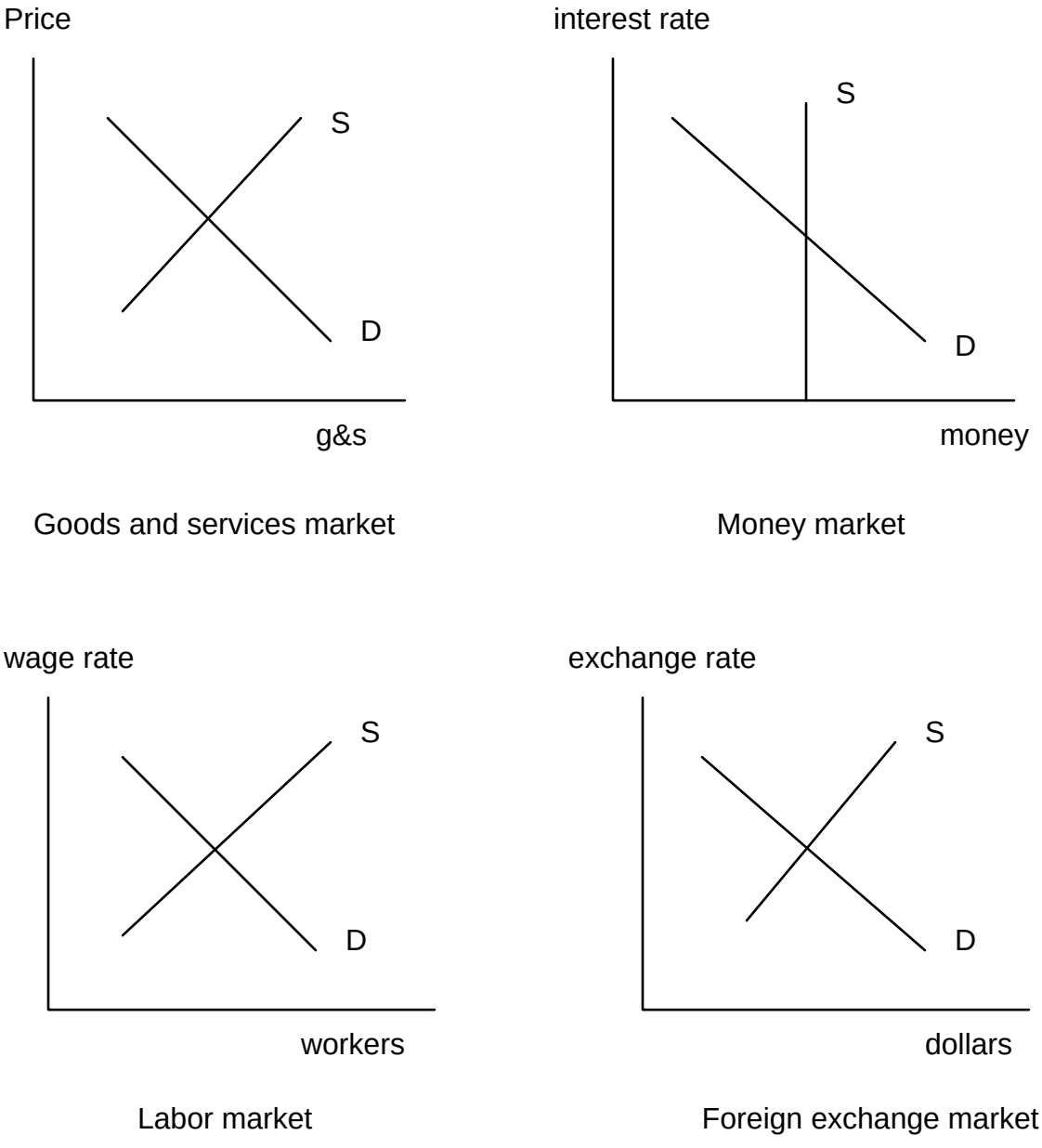

Figure 1: The Big Picture

A rough story could be told to explain the slopes of the curves, but since the purpose of this exposition is to provide a big picture, it is better not to do any explaining of the curves. (Because it is different, an exception should be made for the vertical supply curve in the money market.) Any such explanations would divert student attention from the big picture, and would in any event be misleading because of subtleties involved, as explained in the appendix. Just set up the general idea of four subsectors, with "supply" and "demand" curves providing beginning students a simple means of visualizing economic activity in these sectors.

3. A General Equilibrium Headache

At this point an instructor can tell students that macroeconomic analysis looks as though it will be easy. All we have to do is figure out each of these four markets and we are done; this looks to be the case on the diagram because there are no apparent connections between the markets. But these markets do interact, which is what causes so many problems for students. A shock shifting a curve in one sector will change variables determined in that sector, but these variables affect the curves in other sectors. For example, a change in the exchange rate shifts the aggregate demand for g&s curve, a change in income shifts the demand for money curve, a change in the interest rate shifts the demand for dollars on the foreign exchange market curve, and a change in the price level shifts the demand for labor curve.

An instructor may want to tell in rough form a story about how a shock to one sector ends up requiring an explanation that involves all sectors. For example, suppose there is an increase in aggregate demand for g&s because the government decides to increase its spending. This shifts the aggregate demand for g&s curve to the right in the g&s market. This extra demand bids up prices. The higher price level shifts the demand for labor curve to the right because now it is more profitable for firms to hire workers. With more labor working, income increases. This higher income shifts the demand for money curve in the monetary sector to the right, because at higher income levels people will want to carry more money around to facilitate a higher level of expenditure. This increases the interest rate, the price of money. This higher interest rate shifts the demand curve in the foreign exchange market to the right because foreigners will want more dollars to buy more of our bonds paying this higher interest rate. This bids up our exchange rate. The higher exchange rate makes our exports more expensive to foreigners, so our exports fall, shifting back somewhat the original shift in the demand curve in the g&s market. An instructor can make this more complicated by noting other connections, such as that income changes also affect imports and thus the supply of dollars on the foreign exchange market, and that interest rate changes also affect the demand for g&s because at higher interest rates it is more expensive to borrow to finance spending.

The bottom line here is that any such story will go on and on, creating a headache for students: Any analysis of what is happening in one market immediately gets tangled up with repercussions from activity in the other three markets.

4. Minimizing the Headache

At this stage an instructor has painted a big picture for students, and explained to them why analysis of the macroeconomy will be so challenging. The next thing the

instructor needs to do is address the question “In this course how are we going to minimize the headaches created by the interactions among these four markets?” Each instructor will have his/her own way of doing this; what follows is one possible strategy, involving three steps.

1. Build up an understanding of the macroeconomy by starting with one sector and sequentially adding on additional sectors, rather than beginning by modeling all of the sectors simultaneously. In particular, begin with the g&s sector, ignoring the other sectors. Once the operation of this sector is understood, introduce an additional sector, enlarging the model. A typical choice here is to incorporate the monetary sector. After becoming comfortable with this extended model move on to incorporate another sector. The order of entry is whatever an instructor prefers. I add the labor sector first, but then fade it from sight, by assuming recession, when I enter the monetary sector and then the international sector.

2. Exploit the fact that the monetary and international sectors are dynamically very efficient. They adjust to shocks within hours, thanks to the actions of thousands of individuals who are watching these markets very closely, looking for ways to make money from pricing mistakes. In contrast, the g&s and the labor markets adjust very slowly to shocks. It takes time for firms to change output, for example, and workers are reluctant to bid down their wage in the presence of unemployment. Because of this efficiency in the monetary and international sectors, macroeconomic explanations are much more concerned about what is going on in the labor and g&s markets. Activity in the monetary and international sectors can be put in the background and be assumed to equilibrate these markets quickly in predictable fashion, simplifying things enormously. Furthermore, the direct influence of activity in the monetary and international sectors is predominantly on the g&s market (through the demand curve) rather than on the labor market. Consequently, when the activity of the monetary and international markets is put into the background, this is done by hiding them within the g&s market. So the second way in which headaches are minimized is to incorporate, for expositional purposes, the monetary and international sectors into the g&s sector, reducing the big picture from four markets to two (sluggish) markets.

3. Explain that later in the course a diagram worth more than a thousand words will be introduced, creating a visual aid to facilitate the telling of stories about how and why the macroeconomy does what it does. This diagram has a curve representing equilibrium in the g&s market, and a curve representing equilibrium in the labor market, the two markets left in the big picture. The overall price level is on the vertical axis in this diagram, and national output/income is on the horizontal axis. A downward-sloping curve, called the *equilibrium in the g&s sector curve*, is made up of combinations of overall price level and income that would create equilibrium in the g&s sector (and also, because they are now incorporated into this sector, the monetary and international sectors). An upward-sloping curve, called the *equilibrium in the labor sector curve*, is made up of combinations of overall price level and income that would create equilibrium in the labor sector. At their intersection, both sectors are in equilibrium, and because the monetary and international sectors are kept automatically in equilibrium by efficient adjustment forces, this intersection corresponds to a situation in which all four sectors are simultaneously in equilibrium.

So the third way in which headaches are minimized is by using this single diagram in place of the four diagrams comprising the big picture. Instructors will recognize it as the well-known AS/AD diagram.

The proposal of this paper will not guarantee students an easy understanding of macroeconomics, but if they get the big picture, that the economy is analyzed by breaking it into four sectors that interact, and that the AS/AD diagram is a graphical simplification of this, they will be better prepared to struggle with the finer points that make up the contents of their macroeconomics principles course.

Appendix: Caveats

It is important to recognize that the big picture story is suitable for a very early lecture, before students have been introduced to any of the modeling features of the course. A good point at which to introduce it is just before discussing the traditional Keynesian model, after completing the usual preliminaries such as reviewing microeconomic supply and demand, and discussing the measurement of macroeconomic variables such as GDP, the CPI, and unemployment. At this stage of the course students will not have any knowledge of macroeconomic modeling and so will not be bothered by a long list of subtleties and technical faults of this big picture, such as those listed below. In my experience no student has ever raised any of these issues; instructors are advised not to raise these issues, for fear of diluting the big picture message.

a) Aggregate supply in the g&s market is income and so affects aggregate demand.
b) The inflation rate, a key macroeconomic variable, does not appear.
c) The distinction between real and nominal variables is hidden.
d) The market for financial assets is implicit in the monetary sector; a change in money demand implies an equal and opposite change in the demand for financial assets.
e) The market for capital goods, a subset of the goods and services market, is not identified, handicapping analysis of economic growth.
f) The difference between the demand for money in the monetary sector and the demand for dollars in the international sector is not explained.
g) The “equilibrium in the g&s sector” curve and the “equilibrium in the labor sector” curve are called the AD and the AS curves, tempting students to think of them as analogous to microeconomic demand and supply curves, creating understanding/interpretation problems.
h) There are two versions of the “equilibrium in the labor sector” curve (i.e., two versions of the AS curve), one representing short-run equilibrium in the labor sector, and another representing long-run equilibrium in the labor sector.
i) Most macroeconomics principles textbooks define the AS curve in vague terms as showing the output forthcoming at different price levels, obscuring its connection to the labor market.