The Textbook Aggregate Demand Curve

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Currently there is confusion in the textbooks about the AD curve. In this paper I (1) trace the history of the aggregate demand curve, showing how the confusion about the AD curve came about; (2) offer a suggestion to resolve the confusion; and (3) in the process, provide some insight into what is the central issue in dispute between Keynesians and Classicals.

My recounting of the history begins in the early 1930s, when a number of Hayek's L.S.E. young Turks arranged to meet some Cambridge students to teach them about the difficulty with the concept of aggregate demand. Abba Lerner recounts the story as follows:.

> We had heard that some very strange things were happening in Cambridge. We couldn't quite make out what it was, something about the elasticity of demand for output as a whole, and we knew that was nonsense, because we were brought up properly on Marshall, and we knew all about elasticity and demand curves. We knew that if you drew a demand curve you had to assume all the other prices were fixed; otherwise you wouldn't know what the demand curve for this item was. If you were to draw a demand curve for another item (for example, say you wanted to look at the consumer surplus which you could enjoy from being able to buy some item for less than you would have been willing to pay), it was your duty to wipe out the first demand curve because the first one was allowing the price to vary. You had to have the prices fixed for everything else if you were going to draw a demand curve. Knowing this, we knew that demand curves, demand and elasticity, referred only to partial analysis, and, yet, somehow in Cambridge they must have known that and still, very perversely, they were talking about elasticity of demand for output as a whole.
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> Well, Joan Robinson started explaining it to us, but we didn't understand her, and so we arranged to have a weekend meeting symbolically at a place called Bishop's Stortford, halfway between London and Cambridge. There was a London contingent and a Cambridge contingent, and we spent a whole weekend trying to find out what they were doing. Joan Robinson was in charge. She was aided by a few other people from Cambridge and Oxford. Her husband [Austin Robinson] dropped in for a while; R. F. Kahn came once, James Meade was also there. I think there were one or two others but I've forgotten now who they were. Mainly, however, it was Joan Robinson in charge, and as we would try to understand, she'd say, "Yes, that's right; now you're getting the idea ... No, no;

> now you've gone backwards." When the weekend was over we still didn't know what they were talking about. However, we were sufficiently impressed to publish an article by Joan Robinson, which we didn't understand, on the demand for output as a whole. This was the first we saw of the Cambridge idea.
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> The weekend meeting had not been too successful; we still couldn't understand each other - at least we couldn't understand them. They were confident that we were either just very stupid or backward - and we thought they were crazy, obviously doing something that didn't make any sense, but we couldn't quite put our finger on what was wrong.[1]

From the AE/AP to IS/LM

By the late 1930s many of those young Turks to whom Lerner refers were converted to Keynesian economics; after World War II they, and other converts, began to develop their Keynesian ideas into textbook models.

Their ideas became mainstream in the 1950s via the work of Tarshis, Lerner, Hansen, and Samuelson. Their texts, especially Samuelson's, marked the beginning of macroeconomics as a separate course; these texts determined the structure of the macroeconomics course and defined "the macroeconomic model" as an essentially Keynesian model.

In those first macro textbooks there was no AD curve. In its place was an Aggregate Expenditure Curve that was placed together with an Aggregate Production Curve to graphically depict a multiplier process like that discussed by Keynes in *The General Theory*. These two curves, often called the Keynesian Cross, determined aggregate equilibrium, price level assumed fixed.[2]

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[1] This statement is from an unpublished transcript of a recording of a Boston University Seminar (April 24, 1972) in which Alvin Hansen and Abba Lerner were discussing their roles in the Keynesian revolution.

[2] Sidney Weintraub, Paul Davidson, and Eugene Smolensky had a "Post Keynesian" aggregate supply/aggregate demand exposition of Keynesian economics in nominal, not real, income. Their exposition allowed price level to change and specified the aggregate production curve as upward sloping. Their model was, in many ways, more logical and more inclusive than the standard model, but for some reason it never caught on.

The Aggregate Demand Curve

The AE/AP model dominated macro textbooks at all levels in the 1950s, at which time the changing macro debate forced a change in the intermediate level texts. The reason for this change was the need for a model that would capture the debate between Keynesians and Classicals (monetarists) about integrating the role of money in the Keynesian model. That integration occurred via the IS/LM model, which was too complicated for most introductory books but which became the central focus of intermediate macro texts. Thus the state of the textbook macro model through the 1960s was bifurcated: introductory economics texts focused on the AE/AP model; intermediate texts focused on the IS/LM model.

Pedagogically, the IS/LM model had a cost since the Keynesian dynamics of the income multiplier process were hidden in the slope of the IS curve. Thus, where the AE/AP model separated out the effect of an initial shock and the multiplied effect of that shock on income, the IS/LM model did not; it focused on equilibrium points. Still, since one of the pedagogical exercises generally required of students was deriving the IS curve from the AE/AP model, the IS/LM cost was not too much to bear.

The IS/LM model served the intermediate textbooks well until the inflation of the early 1970s led to a desire to include inflation in the analysis. Heuristically, this had previously been done with the Phillips Curve, but since the Phillips Curve related rates of change of the price level with output (via unemployment) and the IS/LM model was a comparative static model related to the price level, rigorously adding inflation could not be easily accomplished in a formal sense via the Phillips Curve.

From IS/LM to AS/AD

To resolve the pedagogical problem of formally incorporating inflation, or more precisely the price level, into the IS/LM model AS/AD analysis began to be integrated into the intermediate macro textbooks as a further modification of IS/LM analysis. The derivation of the AD curve went as follows: As the price level changed, *ceteris paribus,*

the real money supply would change in the opposite direction, shifting the LM curve, and, consequently, the equilibrium real income. Thus, for every price level, there was a different equilibrium income. (In more complicated derivations, the Pigou effect could be included in the derivation.) By following through a thought experiment with various price levels, a curve in price/quantity space could be traced out. That curve was called an aggregate demand curve.

Exactly why it was called an AD curve is unclear since the Keynesian IS/LM model and the AE/AP models from which it was derived were models of equilibrium income, so what the curve actually traced was sets of *equilibrium* income and price levels. The only explanation I can come up with for the curve being called an AD curve is that in the Keynesian model aggregate equilibrium was demand-determined, and the equilibrium arrived at in the IS/LM model was conceived of as a demand-constrained equilibrium.

To complete the AS/AD model, two alternative AS curves were added to this AD curve, one a Classical AS curve that assumed perfectly flexible wages, the other a neoKeynesian upward-sloping AS curve that assumed fixed money wages, and hence non-equilibrating labor markets. (Since a number of Keynesians were unhappy with this model, prefixes started to be added the Keynesians at this time; Keynesians who used this fixed wage model acquired the name neoKeynesian.) In the resulting AS/AD model the distinction between neoKeynesians and Classicals was to be found in the differences about the labor market: neoKeynesians assumed fixed nominal wages; Classicals did not.

The problem with this resolution is twofold.

1. The AD curve derived from the IS/LM model included a multiplier effect. New Classicals denied the existence of such a multiplier effect, so the intermediate AD curve did not capture their position.

2. In the *General Theory* Keynes explicitly stated that fixed nominal wages were not the point of debate between him and the classics; this AS/AD resolution made it seem as if it were the issue.

Despite its problems, the AS/AD model caught on, less so in the intermediate course presentation, in which it originated, than in the introductory texts. Based on discussions with textbook publishers, authors and users of introductory texts, I believe the reasons the AS/AD model caught on at the introductory level were threefold: (1) it gave students a model similar to the one that they learned in micro; (2) it seemed analytically easier than the AE/AP model; and (3) it was seen as modern since the New Classical policy ineffectiveness vision comes directly from it.

All these reasons for switching have problems. For example, the AS/AD model didn't really give the student a model similar to the one they learned in micro since the AS/AD model referred to the price level, not relative prices, and the underlying adjustment dynamics were fundamentally different than in micro. No author actually claimed that the macro and micro models had similar disequilibrium dynamics, and many went to great lengths to tell students that the two were different. But that difference was a technical difference that was soon forgotten by most students and many professors. So the practical effect of switching to the AS/AD model was that the students came away believing that the disequilibrium dynamics of partial and aggregate analysis were similar. This is evidenced by the fact that the demand for the AS/AD presentation, and elimination of the AE/AP presentation, was especially strong in the largest segment of the introductory economics textbook market--community colleges--where many of the people teaching economics themselves sometimes had only minimal training in the intricacies of micro and macro theory.

The second reason was also inappropriate since to understand the AS/AD model correctly one had to understand its derivation, which required, at least, an intermediate-level understanding of macroeconomics. If authors of introductory textbooks had gone

through a full derivation of the AS/AD model it would not have been analytically easier than the AE/AP model, since its derivation was from the IS/LM model, itself a derivation of the AE/AP model. Thus one could understand the analytics of the AS/AD model only if one fully understood the AE/AP and the IS/LM model.

These issues were problematic for some of the leading textbook authors since they recognized the problems with AS/AD analysis. But the introductory economics textbook market is a highly competitive, demand-driven market, and it soon became believed by publishers that to be a "player" an introductory macro textbook had to use the AS/AD analysis.[3] (In the publishing trade, "player" refers to those books that are targeted to get at least 5-10% of the market in their publication year.) It soon became apparent that books not switching to the AS/AD format were losing market share, and authors received strong pressure from publishers to switch to what became known as the "modern AS/AD approach." Initially some held out, but in response to the gain in market share by those textbooks using the AS/AD model, it became mandatory that all players in the introductory economics textbooks market use an AS/AD framework. So in the 1990s all intro books use the AS/AD model; the only difference among them on this score is whether they also include the AE/AP model as well. The non-Keynesian books use only AS/AD analysis; the books that try to present a Keynesian view use both AS/AD and AE/AP analysis.

This switching to the AS/AD framework to make students feel comfortable with the new aggregate macro model's similarity to partial equilibrium micro is an ironic twist from the 1930s, when, as evidenced in the quotation from Lerner at the beginning of this paper, Classical economists were totally unwilling to think in AS/AD terms since doing

[3]Publishers base their views on reviews which reflect the market for introductory courses. Since few macro theory specialists teach introductory macroeconomics, publisher's views generally reflect non-specialists' views.

so would cause confusion between partial disequilibrium dynamics and aggregate disequilibrium dynamics.

The Shift in the Meaning of the AD Curve

Presenting students with a curve out of nowhere is difficult to do, even at the introductory level. To go through the full dynamics of the derivation of the AD curve was too complicated for an introductory text, which led to a different discussion of the slope of the AD curve in introductory texts than appeared in intermediate texts, and hence a different curve. The discussion in introductory texts focused only on the initial effect of a change in the price level on aggregate demand which is usually divided into three subcomponents--the Pigou effect, the international effect, and the Keynes effect (see, for example, McConnell 10th edition, pp. 195-196; Shiller 5th edition, pp. 121-122) whereas the discussion in intermediate texts derived the AD curve from IS/LM analysis and thus included the multiplied effect of any initial change in the slope of the AD curve. Thus, there are currently two aggregate demand curves being presented in the texts--what I call a microfoundations AD curve presented in most introductory texts, and an IS/LM-derived aggregate demand curve presented in most intermediate texts.

The two AD curves are, of course, related, and if the multiplier is zero, they become the same. Otherwise, depending on the degree of price flexibility, points on the intermediate AD curve are asymptotically approached by a shifting microfoundations AD curve as the multiplier process works its way through the model.

The introductory microfoundations AD curve is in many ways the preferable AD curve. It is, at least, a *ceteris paribus* curve and, in contrast to the intermediate AD curve, does not combine the disequilibrium dynamics of the Keynesian multiplier with the logical determination of the slope of the AD curve. Unfortunately, there is a serious problem with the way most of the introductory texts use this AD curve.

They combine this microfoundations AD curve with the intermediate AS curves. Doing so involves a logical fallacy. The AS curve which distinguished the Keynesian view by assuming fixed nominal wages was designed to fit with the intermediate AD curve and determine an aggregate equilibrium point on that AD curve. Its derivation is dependent on a specified level of output, which means that each AS curve is relevant only for one intersection point with the IS/LM-derived AD curve. (See T. Field and W. Hart (1990) and D. Colander (1992)) This means that the two curves cannot be logically combined. To combine the two together is like combining apples and oranges.

The result of combining these two together is a superficially satisfying analysis (because it looks like partial equilibrium analysis) that has no underlying logical basis. Not only is the introductory presentation of the AS/AD model logically flawed, it is also unrepresentative of what the model was meant to represent. Specifically, one of the central aspects of the Keynesian model was the multiplier--the view that the autonomous shifts in demand generate additional secondary shifts in aggregate demand; the standard introductory AS/AD model does not even allow for any such additional shifts!

A Proposed Resolution

What to do? One pedagogical solution would be to eliminate AS/AD analysis from the introductory texts. That is not going to happen for two reasons. The first is inertia. The second is that the Keynesian model is no longer generally accepted, and the AE/AP model does not do a good job of explaining the Classical vision of the economy and differentiating it from the Keynesian model.

A second pedagogical solution to the problem would be to use the intermediate demand curve in the introductory presentation of the AD curve and explain, in its initial derivation, how, in the Keynesian case, it already includes the multiplier. But that would make it difficult to present the Classical view that aggregate disequilibrium adjustment occurs with no multiplier effect.

The Aggregate Demand Curve

A third, and in my view preferred, pedagogical solution is to use the microfoundations AD curve and combine it with a microfoundations aggregate supply curve assuming full rationality and no wage inflexibility. In other words the AS curve is assumed perfectly inelastic in both cases so that wage or price flexibility is not a distinguishing feature of the Keynesian or Classical AS curve.

This assumption forces one to show explicitly the assumed interaction between aggregate supply and aggregate demand rather than embodying a dynamic interaction in the shape of the aggregate supply and demand curves. It makes explicit the difference between a shift of the AD or AS curves and a movement along them. In this construction the degree of wage and price flexibility affects disequilibrium dynamics, the multiplier, and interactive shifts of the aggregate supply and demand curves, rather than shapes of the AS curve and thereby makes the textbook AS/AD model more consistent with Keynes' *General Theory* in which Keynes specifically argues that wage and price flexibility is not the issue at dispute between himself and the Classics.[4]

The two views of disequilibrium dynamics presented by this third pedagogical solution is the following: Keynesians believe that in response to aggregate disequilibrium, an income adjustment process begins *before* the price adjustment process has time to bring the economy back to equilibrium. Those disequilibrium dynamics move the economy to another *short-run equilibrium* at which point short-run aggregate supply and demand are in equilibrium. This new AS/AD equilibrium is one of the many individual rational expectations equilibria that an aggregate economy can reach. It is characterized by individual rationality but, possibly, collective irrationality since this equilibrium may not be the best society can do. Classicals, on the other hand, see the disequilibrium adjustment to an autonomous shift in demand as occurring only through price level adjustment, with price levels adjusting to handle those real adjustments that

[4]For a technical discussion of this issue, see Colander (1992).

are not simultaneous supply and demand adjustments. Thus, in the Classical model, all fluctuations in output reflect individual desires. Cycles that exist are real business cycles. In the Keynesian model, fluctuations in output are larger than desired.

Conclusion

The above history represents a sad fact about the economic textbook market. In the majority of that market subtle issues of theory are not of serious concern and it is in no one's interest to make them of concern. Even when the issues are discussed in a technical manner, as they were in Field and Hart (1990), the discussion goes almost unheard. Thus, even though the issues I treat in this paper are not especially complicated, the textbooks continue to use two alternative aggregate demand curves with no discussion of the difference and most introductory textbooks continue to present a logically inconsistent AS/AD model which has a strong tendency to mislead students about the relationship between disequilibrium adjustment in the micro and macro models. It almost makes one long for the days Lerner mentions in the quotation presented at the beginning of this article when "all economists were brought up properly on Marshall."

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