

Economic Theory's Curves

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Abstract

Economic theory's "curves" are not curves.

1 The Supply and Demand Curves

The price of a given commodity depends on its supply and demand quantities. In economic theory a commodity's supply and demand curves are represented in a *Supply and Demand Diagram* as in Fig 1.

Since price depends on *both* supply and demand quantities, it cannot be determined solely on the basis of *one* of these variables. In other words, there cannot be a one-to-one correspondence between price and supply or between price and demand. But the *Supply and Demand Diagram* implies (see the A-B-C line) the existence of a one-to-one correspondence between price and supply and a one-to-one correspondence between price and demand as well as a one-to-one correspondence between supply and demand.

If the correspondences that the supply and demand curves imply exist, then a commodity's price depends only on its demand independently of its supply (or only on its supply independently of its demand), an obviously false proposition. In fact, the "curves" do not exist because a relation among three variables is not a curve and in each case, in the relation between the three variables (price, supply quantity, and demand quantity) one variable is ignored.

2 Economic Theory's "Curves" – the General Case

A function of three variables is not a curve and, in general, a relation among more than two variables is not a curve as is the case for a three dimensional topographic map. It may be a curve only if the values of all but two of the variables are fixed or otherwise explicitly specified.

Economic theory deals with a complex system with a large number of inter-dependent variables. In this system there does not exist a set of two isolated variables that are independent of any other economic variable. It follows that economic “curves” are not curves except when the values of *all* but two of these variables are properly specified and fixed. For an example see the comment on Hicks’s “Generalization to the case of many goods” in §3.4.2 of Barzilai [11]. For other examples see Mas-Colell et al. [12].

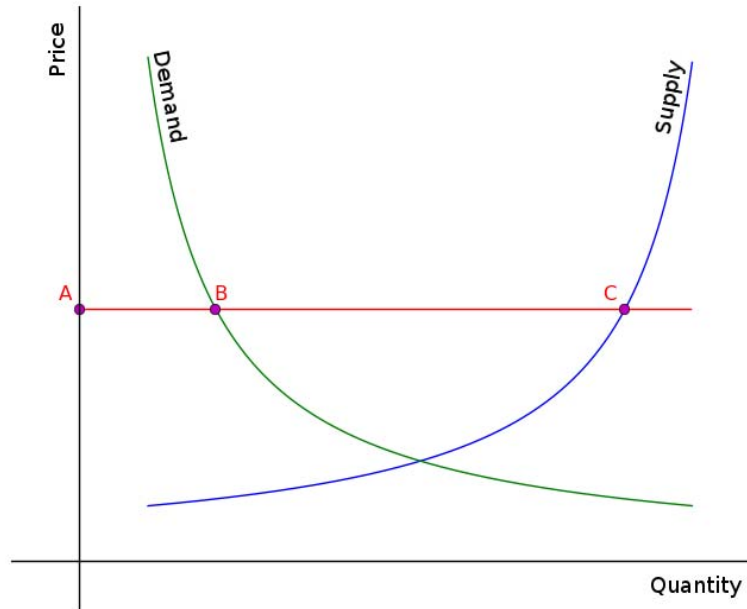


Fig. 1 Supply and Demand Curves

3 Summary

The economic “curves” error is one of many that require correction. For details see Barzilai [1–11].

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