**HOW WE LEARN ECONOMICS—THE USE OF THEORY**

**Theory**

We learn economics through the use of theory. A theory is a set of propositions explaining the causes of a phenomenon. The word "model" is generally used as a synonym for theory.

There is a distinct difference between theory and mere description. A theory identifies causal links between phenomena in a logically integrated structure. A description merely offers information but does not identify causal connections. As a frequently cited quote from Poincaré states: "Science is built of facts the way a house is built of bricks; but an accumulation of facts is no more science than a pile of bricks is a house." This remark is just as apt if "theory" is substituted for "science" in it. Theory goes beyond a mere accumulation of facts to explain the causes of a phenomenon.

Let's say students had to write a paper on "Spending in America." One student writes a paper full of details on what people buy, when and how they buy, what various age groups purchase, and so on. Another student writes a paper on what factors affect the level of spending, identifying people's income and expected income as causal factors. The first student is merely describing, presenting a pile of facts. The facts presented by the first student may be very important and could be the basis of new insights on people's spending behavior. The point is, however, that the mere presentation of facts alone is not theory. The second student is building theory, attempting to explain the causes of a phenomenon.

Theory building involves: identifying a phenomenon the cause of which needs to be explained; definitions; abstraction; identification of causal connections; empirical evidence; theory reformulation.

**A phenomenon to be explained**

Anyone who wants to build a theory must first find a phenomenon the cause of which needs to be explained. In the famous story on Sir Isaac Newton, we are told he was sitting under a tree when an apple fell on his nose. This caused him to ponder what caused unsupported objects to fall to the ground and led him to develop his theory of gravity.

**Definitions**

Terms used in a theory must be defined so people will understand exactly to what the theory refers. In the theory on spending mentioned above, the student developing it would have to tell us what she means by spending, income, expected income, and so on.

**Abstraction**

In developing a theory we must abstract from, i.e. ignore, details not relevant to the specification of the causal link(s) our theory seeks to establish. Abstraction is used in many areas of life. For example, a map is drawn by focusing on the location of places and ignoring the architecture of buildings, their decorative features, etc., not relevant to showing how to get from one place to another. A theory is not a total replication of reality just as a map does not show all features of a locality. A theory is a generalization that enables us to focus on aspects of reality in which we are interested without getting encumbered with unnecessary detail.

For example, to develop a theory of what influences the total amount people spend we may ignore details such as what clothing they wear when making purchases, what kind of hairstyles they have, etc., if we view these details as irrelevant to what influences spending. People's incomes, however, will not be ignored because in all likelihood a sensible theory of spending will involve a causal connection between income and spending.

Abstractions are often explicitly stated in a theory as assumptions. An assumption in this context is whatever is held to be true for the purpose of theory construction. For example, to develop a theory to explain what quantity of a commodity people will buy and the price they will pay for it, we may, for the purposes of our theory, assume people know how much they want to buy at each price level. That is, we abstract from the detail that people may not necessarily know this information precisely. Nevertheless, once we develop such a theory, as we do when we study **micro**economics, we will find it gives an appropriate guide to what happens in the real world. If, however, we attempted to incorporate all details when developing the theory, it would be rather difficult for our minds to focus on the key causal links and these would probably drown in the sea of excess detail.

**Specification of causal links**

The purpose of building a theory is to establish the cause of a phenomenon. The heart of the theory is the specification of what causes the phenomenon. Definitions and abstraction are all geared toward the attainment of this objective.

**Empirical evidence**

For a theory to be viewed as appropriate the causal links it specifies must approximate those that are observed in the real world. If what is claimed by a theory is supported by empirical evidence, the theory holds. If valid evidence contradicts a theory, the theory has to be altered, or discarded, or cannot be viewed as a guide to what happens in the real world.

The attempt to obtain evidence may not be easy. One major challenge is that in the real world many occurrences often happen at the same time, making it difficult to ascertain which one or more of several possible factors may have caused the event. (The same problem is faced in many areas of human life. For example, if your grades improve, is it because the examinations are easier, you have become better at taking tests, you have acquired better study skills, you are eating better so you are healthier and more capable at doing mental work, you are emotionally more stable because your family members are getting along better, you have stopped seeing someone who wasted a lot of your time…? It can be hard to determine which one or more of these factors were the real causes.) In spite of the difficulty of obtaining proof, however, supportive empirical evidence is the only indicator that confirms a theory.

**Theory reformulation**

If evidence suggests a theory is inaccurate, it may be necessary to reformulate the theory to make it a better predictor of real world events. (If the theory is so way off in it predictions that it cannot be salvaged, it should be discarded and a new theory sought.)