

## The Theorem of the Elimination of Price Differences

### Outline

1. [Regularities in Market Phenomena](#)
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The ultimate goal of the economist as scientist is to possess a collection of theorems to enable him to evaluate intervention arguments. He must proceed step-by-step, as pointed out in my essay "[The Structure of Mises's Treatise: How He Attained a Position to Achieve the Ultimate Goal of Economic Science](#)." The economist recognizes the multitude of interconnected actions that contribute to the cause of market phenomena even under the simplified conditions of pure capitalism. So he first builds theorems for the imaginary [direct exchange economy](#) that disregards time-related changes. Such theorems comprise the [law of consumer sovereignty](#). It is true that the individualist economists did not solve the difficult theoretical problems of incorporating time-related change and money holdings into their theory. Nevertheless, they blazed the trail toward a correct understanding of how to build economic theorems.

An economic theorem is a statement that describes a sequence of entrepreneur actions under the conditions of capitalism. Each action is motivated by the profit incentive. To build an economic theorem, an economist assumes that some event provokes entrepreneur action by making some set of actions profitable that were not so prior to the event.

The starting point of a theorem is a state in which the functions required to satisfy the material wants of consumer-savers are performed routinely. Factors of production are supplied and employed in the production of the same consumer goods routinely. In the absence of change, the same consumer goods would be produced with the same factors in the same way routinely, again and again. The incentive to change – the profit incentive – is completely absent. The entrepreneur function of identifying factors of production, putting them to their most profitable use, and bearing uncertainty is completely absent. There are no entrepreneurs.

Starting with this situation, the economist introduces a specific factor that provokes a change. Due to the multitude of contributory causes of the market phenomena, he has no choice but to assume that only a single factor, or a small combination of factors, provoke the change. He assumes that no other factors provoke a change. In other words, he employs *ceteris paribus* assumptions.

The introduction of the change activates the entrepreneur role, which now perceives a profit opportunity from adjusting to the change in order to conform to the [law of consumer sovereignty](#).

**Economic theorem:** a statement that describes:

1. A sequence of actions that are undertaken by a number of individual actors under the conditions of capitalism in anticipation of money profit.
2. A specific final outcome of that sequence.

A period of adjustment ensues during which individuals acting as entrepreneurs compete in their respective efforts to maximize profit. At the end of the period, a new situation is established in which entrepreneurs no longer perceive opportunities to profit. In that situation, routine production and consumption is again established which continues indefinitely. The entrepreneurs, so to speak, retire from the scene.

The individualist economists, who provided the foundation for Mises's elaborate description of the theorem-building process, were preceded by the classical economists and early business writers who observed market interaction in pre-industrialized Europe. The accomplishments of the individualist economists can best be understood by first referring to these earlier contributions. The aim of this essay is to introduce theorem-building by identifying the most fundamental of the economic theorems, namely the theorem of the elimination of price differences. It does this by focusing on the historical roots of this theorem in these pre-Mises writings. It begins by introducing the concept of regularities in market interaction. The observation of such regularities is the element that initiated interest in market interaction and ultimately led to the theorem of the elimination of price differences. Then it briefly describes the contributions of the classical and individualist economists, respectively. It ends by describing the fundamental theorem.

## 1. REGULARITIES IN MARKET PHENOMENA

The earliest suggestions that relate to theorem-building were made by the various business writers who reported relationships situations that they observed in the early money-using markets of the mid-second millennium. He refers to three such relationships. The first relates to a system of commodity money like gold coins. Assume that sellers of goods assign the same purchasing power to coins with the same face value even though they contain different percentages of metal content. A hat seller, for example, may accept a one-dollar gold coin that contains 99 per cent gold and also a one-dollar gold coin of the same size that contains only 90 per cent gold. In cases of this sort, the early business writers observed that the higher gold-content coins were withdrawn from circulation, melted down and used to produce coins that contain 90 per cent gold. The writers concluded from this that "bad money drives out the good." Today, this is called "Gresham's law," named for a writer in the sixteenth century. See Mises's discussion in his treatise *Human Action* (1966 – HA: 760). The second relationship is between the money supply and the purchasing power of money. People observed that if the quantity of money increases, the purchasing power of the money tends to fall. The third relationship is between the amount of a particular good supplied and its price (HA: 231). The greater the supply the lower the price. Alternatively, if the price is relatively high, the supply is likely to rise.

Mises called these relationship [\*regularities\*](#). The early business writers, he said, were the first to report these regularities.

In recording their observations, the business writers speculated on why these regularities were present. Their speculations required them to use the counterfactual. What would happen, they asked if the gold content of the coin had not changed, if the quantity of money had not increased, or if the amount of the good supplied decreased instead of increased? In answering these questions, they displayed an elementary understanding of how to build economic theorems

## 2. THE CLASSICAL ECONOMISTS

The classical economists were concerned about the effects of economic policies that restrict market interaction. Since there is no other way to formulate hypotheses about the effects of a policy than to build an economic thought, they also built them. When Smith, for example, analyzed the effects of a tariff barrier on the price of a good that was partly imported, he started with a system in which price differences had been for the same good had been eliminated (Smith 1776). He then introduced the tariff and contemplated the sequence of events that would occur during a period of adjustment to a new price. When Thomas Malthus produced his so-called “principle of population,” he employed the same procedure, applying it not to the elimination of price differences but to the elimination of differences between the amount of food required for a growing population to sustain itself and the amount of food that the population was capable of causing to be produced under various assumed conditions (Malthus 1798). Ricardo also used the procedure. In the simplest theorem of comparative advantage, there are no prices. However, in the more elaborate theorems he employed an image of a grand economic system. In these he used the theorem to illustrate how the presence of comparative advantage becomes manifest in market interaction and, like Smith, how tariff barriers causes the price of an imported good to be higher (Ricardo 1817).

## 3. INDIVIDUALIST ECONOMISTS

The classical economists were the first to conceive of a system of interrelated prices of consumer goods and factors of production in which price differences in all markets tend to be eliminated. Classifying the factors of production into three types – land, labor and capital – they sought to use the theorem to explain the price of each. But they lacked the unifying framework of consumer sovereignty that the individualist economists later introduced. The individualists introduced the idea that all market phenomena, including the prices of the factors of production, are determined in accord with the underlying desire to satisfy consumer wants. They invented the law of consumer sovereignty. Correspondingly, they expressed their theorems by referring to the functions and roles, as described in my essay “[The Basic Functions and Roles of Economics](#).”

In addition, they recognized that for an item or action to be a factor of production, the entrepreneur role must know the relationship between it and the consumer good it helps to produce. Thus, they explicitly made entrepreneur knowledge an intricate part of the grand system. In conjunction with this, they showed that individuals acting in the entrepreneur role appraise every factor of production according to its anticipated contribution to profit. The price bids and acceptances reflect the separate combined appraisals of all of them. In making their appraisals and bids for factors, they employ their independent knowledge of the marginal contribution of the factor. The theorem today reflects these changes.<sup>1</sup>

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<sup>1</sup>Mises expresses this idea by writing that the “prices of the goods of higher orders are ultimately determined by the prices of the goods of the first or lowest order, that is, the consumers’ goods” (HA: 333). A higher-order good is a factor of production that is farther up the supply chain than (raw wheat) some other

## 4. THE FUNDAMENTAL THEOREM

The most basic theorem in economics is what I call the theorem of the elimination of price differences.<sup>2</sup> This is the theorem that competitive entrepreneur profit-seeking action causes a tendency toward an equalization of prices for the same consumer goods and factors of production in all subdivisions of the market, due allowance being made for the cost of transportation and the time absorbed by it. A more complete expression of the theorem is contained in the attached box. The theorem helps explain the relationship between a particular class of profit-seeking actions and prices. It is useful to call such actions “arbitrage.” In successful arbitrage, an individual acting in the entrepreneur role first identifies a price difference. In other words, she identifies a difference between the price she expects to pay in order to buy a material good or a legal right and the price she expects to receive when she sells it. Then,

**Theorem of the elimination of price differences:** Beginning with a starting point of routine behavior in which the prices of the same consumer goods and factors of production in all subdivisions of the economy, due allowance being made for the cost of transportation and the time absorbed by it, are the same; the economist introduces a factor that incentivizes entrepreneur action which disrupts this equality. Following this disruption, entrepreneur profit-seeking action causes a tendency toward a final situation in which the prices are again equal in all subdivisions of the economy, due allowance being made for differences in the cost of transportation and the time absorbed by it.

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factor and that is used to help produce the lower-order factor (baking flour).

<sup>2</sup>Mises calls this the theorem of the “abolition of price differences not caused by the costs of transportation and trade barriers” (HA: 331). He describes the mental process of building this theorem as follows.

We think on the one hand of a state of affairs which leads to acts of exchange; the situation is such that the uneasiness of various individuals can be removed to some extent because various people value the same goods in a different way. On the other hand we think of a situation in which no further acts of exchange can happen because no actor expects any further improvement of his satisfaction by further acts of exchange. We proceed in the same way in comprehending the formation of the prices of factors of production. The operation of this market is actuated and kept in motion by the exertion of the promoting entrepreneurs, eager to profit from differences in the market prices of the factors of production and the expected prices of the products. The operation of this market would stop if a situation were ever to emerge in which the sum of the prices of the complementary factors of production – but for interest – equaled the prices of the products and *nobody believed that further price changes were to be expected*. Thus we have described the process adequately and completely by pointing out, positively, what actuates it and, negatively, what would suspend its motion (HA: 334, italics added).

In this passage Mises writes only of the prices of the consumer goods and factors of production, as if the goods and factors themselves could not change. It is evident, however, that the particular items in these classes may change during the period of the operation of the market. The particular goods and factors at the starting point may be different from those that are deduced to exist at the imaginary time at which the operation theoretically stops. For example, some types of labor may be produced, while other types of labor may be replaced by machines. Similarly, new material factors may be discovered while existing factors may be completely used up.

assuming that her expectations are correct, she buys it at the lower price and sells it at a higher price.

Arbitrage may be embedded in the broader decision by a producer who aims to earn a profit from production and sale. In this broader decision, an identifies a difference between the expected price of a consumer good and the expected costs she must incur to produce it. She bids for the factors, produces the good, and then sells it at a lower price than the competitors.

**Arbitrage:** an action that is intended to profit from buying a good or legal right at a low price in order to sell it at a higher price.

The theorem of the elimination of price differences was employed by the individualist economists to produce a theorem about the relationship between the sum of the prices of a consumer good and the factors of production required to produce it. The theorem says that there is a tendency for the price of the product to equal the sum of the factor prices.

The theorem of the elimination of price differences is the basis for all of the theorems produced in economics. For example, the economist builds a theorem about the effects of a market intervention by beginning with a state in which there are no differences in prices to be eliminated. No one expects to profit from arbitrage or from changing the production and sale of goods. One might say that the system is at rest. Next he introduces the intervention, which provokes a change in the profit calculation. The profit-motivated arbitrage and production-sale that follows alters the prices of the products and factors of production. Due to the theorem of the elimination of price differences a new set of tendencies arise toward a new state of rest of the various prices.

**Theorem of the relationship between the price of product and the prices of the factors required to produce it:** Due to arbitrage and other entrepreneur action, market interaction under capitalism tends toward a state of rest at the price of each consumer good (first-order good) equals the sum of the prices of the factors needed to produce it.

Due to the theorem of the elimination of price differences a new set of tendencies arise toward a new state of rest of the various prices.

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#### REFERENCES

Mises, Ludwig von. (1966) *Human Action: A Treatise on Economics*. Chicago: Henry Regnery Company (First published in German in 1940).