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Giffen Behavior, Income Effects and Austrian Price Theory

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Abstract

Austrian price theory is riddled with inconsistencies surrounding the neoclassical income effect and Giffen behavior. It has sometimes been argued that neither the income effect nor Giffen behavior exist. This paper first argues that Giffen behavior is possible and can perfectly well be explained within the framework of Austrian price theory in the tradition of Mses. Moreover, it shows that income effects are real. They are merely an outgrowth of the law of diminishing marginal utility applied to money. The paper also outlines the expenditure approach to income and substitution effects as an alternative conceptualization that does not require any reference to quantifiable and measurable notions of utility, or an unambiguous and objective notion of real income.

JEL-Codes: B53; D01; D11

Keywords: Price theory; Giffen behavior; income effect; substitution effect

Price theory is arguably the most important building block of economics. Most economic phenomena can be understood within the analytical framework of demand, supply, and price formation. Sometimes the correspondence might not be apparent at first glance. But if one thinks a bit harder and looks beneath the surface, there almost always is a useful analogy in terms of price formation to elucidate and help us understand whatever the economic phenomenon under consideration. If economists cannot properly explain how market prices for goods and services form, how shadow prices for indirectly traded goods like time emerge implicitly as a by-product of human interaction, or how price changes trigger shifts in consumption patterns, how can they explain anything at all? Within the Austrian tradition, Ludwig von Mises (1998 [1949]) is widely credited for having fully integrated the price theoretic foundations of Menger (2007 [1871]) and Böhm-Bawerk (1930 [1891]) with monetary theory, business cycle theory (Mises, 1953 [1924]), and the theory of economic calculation (Mises, 1962 [1922]). One of the most detailed and pedagogical outlines of Austrian price theory can be found in Rothbard (2009 [1962]). A more recent and very accessible introduction is provided by Murphy (2015, ch. 10).

These references provide far more detail on the basic concepts and ideas of Austrian price theory than the present paper. Our purpose here is to first present the fundamental principle of price theory in the Austrian tradition, before providing a discussion of some contentious points within that tradition concerning Giffen behavior and the conceptualization of income and substitution effects. The final section of the paper provides a synthesis and argues that both these effects can be given meaningful interpretations not only in standard neoclassical price theory but also from the vantage point of Austrian economics in the tradition of Mises.

The fundamental principle of Austrian Price Theory

Mises (1998) famously defined economics as a branch of praxeology, the logic of human action. Humans act to influence the future state of the world in which they find themselves. Even if it is sometimes only the immediate future that almost instantaneously occurs – for example when drinking water to satisfy thirst – action always is directed towards changing the future. Any action can thus be understood as an exchange. One attempts to exchange one future state of affairs for another future state of affairs that seems more desirable. Every action thus involves a choice *for* something and implicitly *against* other alternatives. One purposefully pursues some goal and abstains from pursuing others. Any action thus involves an opportunity cost of forgoing the next best alternative. In this sense we can say that anything we do comes with a *price* to be paid. It is a subjective price determined by individual preferences and values. The price to be paid for any choice corresponds to the subjective value attached to the next best alternative foregone.

If one wants to impel other people to change their course of action, one must compensate them, from their subjective point of view, for the otherwise chosen course of action that they now must give up. In other words, one must fully compensate them for their felt opportunity costs. If one wants to buy a house, for example, one has to offer the seller a price that compensates for the opportunity costs of either keeping the house or selling to someone else. This usually means that one has to offer a price above the offer of the next highest bitter and above the reservation price of the seller. The latter is itself influenced by the seller's use value of the house when keeping it and the expected price at which one can reasonably sell the house within a given period of time on the market, That is to say, the seller's reservation price is determined by the estimated opportunity costs of selling the house to any given bitter. The assessment of opportunity costs is thus essential.

This principle – *that opportunity costs must be compensated* – holds in all voluntary market transactions at least in the *ex ante* sense. And it is the underlying principle of price formation on markets, where buyers and sellers of goods and services come together voluntarily. The market price for a specified unit of a good or service reflects the opportunity cost of using, consuming or merely commanding control over that unit on the margin. A potential buyer who wants to use, consume or control a given unit of a good must compensate the current owner of that unit for their opportunity cost by paying a sufficiently high price. The opportunity cost is also implicitly paid by the person who already owns the good and wants to keep it. This person foregoes the possibility of receiving the selling price in exchange for giving away the good and thus leaves more money in the pockets of the potential buyer who can spent it somewhere else. Hence, both a buyer who receives a good and a current owner who keeps it pay the price, directly or indirectly, that compensates for the opportunity costs of others.

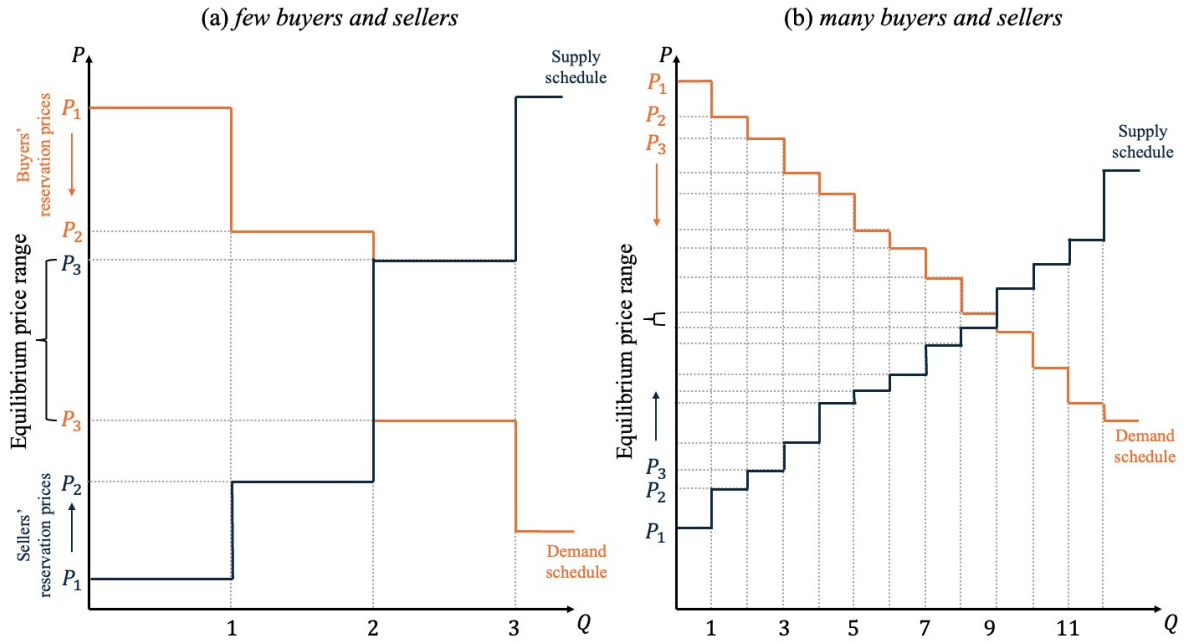
Any market transaction or any voluntary cooperation between individuals is characterized by this principle of compensating opportunity costs. The formation and evolution of market prices over time is guided by that principle. In a nutshell, we can say that market prices are low, when opportunity costs are low. They are high when opportunity costs are high. When opportunity costs for the use, consumption or control of certain goods increase or decrease, their market prices increase or decrease, respectively. This is why market prices help allocate resources efficiently. They are signals of the scarcity of goods relative to the needs and subjective preferences of market participants. They are signals of opportunity costs.

Demand and supply schedules can be understood as reflections of subjective opportunity costs measured in money. If the quantity supplied of a good is 100 at a unit price of $10, it means that the opportunity costs of selling for the current owners are lower than $10 for each of the 100 units supplied. For all other units not offered for sale at this price, the opportunity costs are higher. The same reasoning applies on the demand

side. If the quantity demanded at unit price $5 is 200, it means that for each of these 200 units the respective buyers estimate their opportunity costs of buying to be lower than $5. Those who abstain from buying believe their opportunity costs to be higher. In other words, they need the money for something else that is deemed more important.

We can derive the typical shape of demand and supply schedules from some simple and generally uncontroversial assumptions. We can assume reservation prices for both potential buyers and sellers as determined by their subjective opportunity costs to be given. At any price below their reservation prices buyers would buy. And at any price above their respective reservation prices sellers would be willing to sell. These assumptions suffice to derive the upward-sloping supply schedule and the downward-sloping demand schedule. The supply schedule is merely an ordering from lowest to highest reservation price (hence upward-sloping) on the side of the potential sellers or current owners of the good. And the demand schedule is an ordering from highest to lowest reservation price (hence, downward-sloping) on the side of potential buyers of the good.

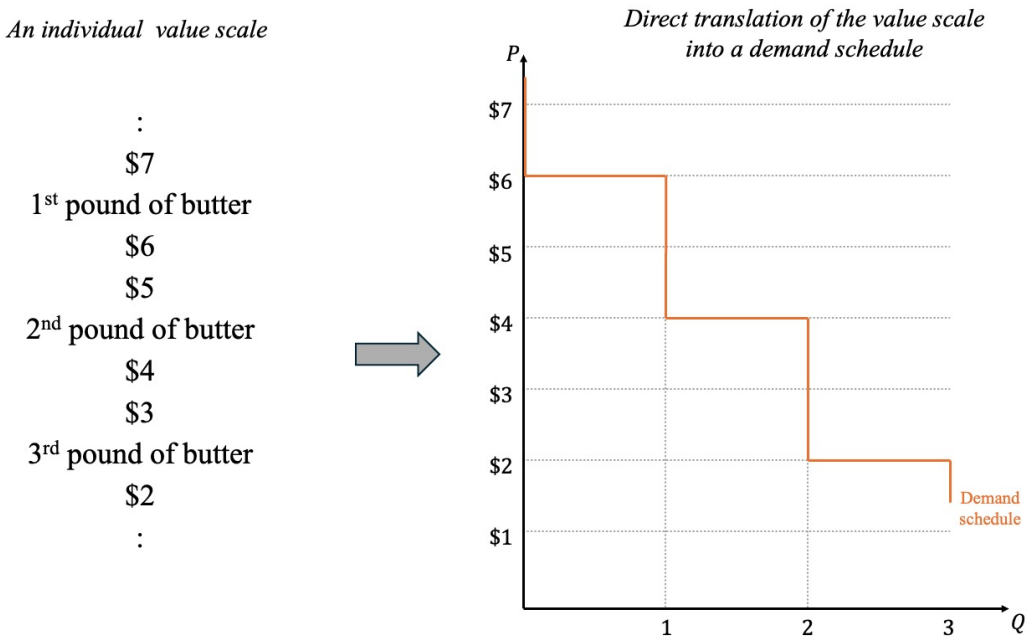
Figure 1: Demand, Supply and the Equilibrium Price Range as a Function of the Number of Market Participants



Downward-sloping demand schedules and upward-sloping supply schedules suffice to determine equilibrium prices at which markets clear. Because of the discrete nature of buying and selling decisions, there often is a range of potential prices at which a given market clears. The more buyers and sellers are involved the smaller the equilibrium price range tends to be as illustrated in Figure 1. Demand and supply are depicted as step functions to reflect the discrete nature of buying and selling decisions in most cases where goods are not perfectly divisible into smaller subunits.

The downward-sloping shape of the demand schedule is often referred to as the *law of demand*. However, the exact status of that law is somewhat unclear in the Austrian literature. Rothbard (2009, p. 285) writes, for example, that "a fall in the price of a good will always increase the quantity of the good demanded (by the law of demand)", suggesting that it is a universal law that always holds. This would mean that demand schedules are always downward-sloping without exception. This claim, however, is untenable, as can be shown by looking at individual buyers of potentially multiple units of a good.[1]

Figure 2: From Individual Value Scales to Demand Schedules



Demand schedules in Rothbard's exposition are derived from individual value scales, such as the one shown in the left panel of Figure 2 (compare Rothbard, 2009, p. 239). Such a value scale indicates that the potential buyer of butter values $7 more highly than the first pound of butter, which in turn is valued more highly than $6. Hence, at a price of $6, the buyer would buy the first pound of butter. At a price of $7 the buyer would abstain. The buyer's reservation price for the first pound of butter is therefore $6. By the law of diminishing marginal utility, a second pound of butter would only be bought at a lower price, in this case $4. The third pound would only be bought at a still lower price of $2. So far so good, but there is a conceptual problem. The logic of the value scale is not reflecting what economists typically mean when they talk about a demand schedule. We can translate value scales of this sort directly into demand schedules, which would

[1] Notice that the simple derivation of downward-sloping demand and upward-sloping supply schedules holds without exception in cases where any one buyer only buys one unit or no unit of the respective good. In such cases, the typical shape of the curves follows from the simple fact that value is subjective and reservation prices differ between individuals.

always be downward-sloping as illustrated in the right panel of Figure 2 (Rothbard, 2009, Table p. 240). However, this translation involves a cognitive leap. The value scale implicitly assumes that each unit of the good is bought exactly at the reservation price and not at any price below the reservation price, because otherwise we could not hold constant the reservation price for the next unit. In the above example this means that the first pound of butter is bought at $6, which by assumption leads to a reservation price of $4 for the second pound of butter. If the second pound is bought at a price of $4, the reservation price for the third pound would be $2. But if the first pound only costs, let's say $1, the reservation price for the second pound might be $5. This is the case, because after buying the first unit at $6 the marginal value of money is higher, than in the alternative scenario where the first unit is bought at a price of $1, *ceteris paribus*. This, again, is an implication of the law of diminishing marginal utility. If more money is preserved in the cash balance, the marginal utility of money is lower and one might be willing to spend more on additional units of the good, or indeed on units of other goods. In other words, the reservation price for an additional unit is dependent on how much money is needed to buy the previous units.

It follows that a demand schedule directly derived from a value scale is not what most economists, and even Rothbard himself, define a demand schedule to be, that is, *the quantities that one wants to buy at given unit prices of the good* – in Rothbard's (2009, p.240) own word: "the amount of each good that he [the buyer] will consume at each hypothetical money price on the market." Such a demand schedule would have to account for the fact that if the market price of a good is lower or higher, the prices paid for all units bought by a consumer are lower or higher, respectively. Hence, the basis for holding the reservation prices for consecutive units in the hypothetical value scale constant is jeopardized.

Value scales as presented by Rothabrd, in fact, do not capture the income effect of standard neoclassical economics. By constructing a value scale, one implicitly assumes that each of the previous units is bought at the respective reservation price, and hence there is no income effect with respect to those units if an additional unit can be bought at a lower price. One can therefore say that a demand schedule directly derived from a value scale is income-compensated. By implicitly keeping the marginal value of money constant, it neutralizes the income effect and is thus necessarily downward-sloping as any other income-compensated demand function in standard neoclassical economics.

Contentious Aspects of Austrian Price Theory: Income and Substitution Effects

To say that the demand schedule that Rothbard derives from a value scale neutralizes the income effect is not to say that such an effect does not exist. In fact, as outlined above,

by the law of diminishing marginal utility – which does apply to money as to any other economic good – the effect naturally emerges as a result of a price change whenever buyers pay the same price for all units of the good that they purchase. This is the typical situation that individual consumers face on markets. This implies that a demand schedule that traces the quantity a potential buyer wants to buy of a good as a function of the unit price does not necessarily have to be downward-sloping. It could potentially be upward-sloping over some limited price range. In other words, Giffen behavior, where a consumer buys more of a good when its unit price is higher, is not ruled out by Austrian price theory. Although such behavior might be very rare, there is nothing in the subjective value foundation and in marginal analysis that necessarily prevents it.

We can in fact imagine plausible cases where Giffen behavior emerges. Take for example a consumer who wants to buy two pairs of sandals for the summer. She has a maximum budget of $200. Let us assume that there are two varieties of sandals: *Birkenstocks* at a unit price of $150, and *BOnova* at a unit price of $40. She decides to buy one pair of *Birkenstock* and one pair of *BOnova*. For a total of $190, which is within her budget. She saves $10 for other expenses. But what if the unit price of *BOnova* is $60 instead of $40. In this case, the initial bundle of one pair of *Birkenstock* and one pair of *BOnova* is too expensive for her. It would cost $220, which is above her designated budget. Since she really wants to have two pairs, she decides to buy two pairs of *BOnova*. They cost $120, which allows her to save $80 for other expenses.

What this little example stipulates is simply that the consumer has the following preference orderings:

1.) $(1\ Birkenstock, 1\ BOnova, \$10) > (0\ Birkenstock, 0\ BOnova, \$200)$,
Hence, if $P_{Birk} = \$150$ and $P_{BO} = \$40$, she buys one pair of each and keeps $10.

and

2.) $(0\ Birkenstock, 2\ BOnova, \$80) > (1\ Birkenstock, 1\ BOnova, -\$20)$,
Hence, if $P_{Birk} = \$150$ and $P_{BO} = \$60$, she buys two pairs of *BOnova* and keeps $80 instead of buying one pair of each and overdrawing her budget by $20.

This is a perfectly feasible scenario. When we look only at the unit prices of *BOnova* and the respective quantities bought, we obtain Giffen behavior. At a unit price of $40 one pair is bought, and at a unit price of $60 two pairs are bought, under otherwise equal conditions. There is an upward-sloping demand schedule between the two prices.

Such behavior seems perfectly possible, but if demand schedules are always and everywhere downward-sloping (or at least vertical), such behavior could not exist. Standard neoclassical economics explains such behavior by negative income effects: Consumers tend to buy more of inferior goods when real income declines, but a price increase itself reduces real income. So, in some exceptional cases, a price increase of an inferior good may lead to an increased quantity demanded of that good, if the negative

income effect is strong enough. Notice that the previous example matches exactly such a case. It is, in fact, structurally very similar to the classic example suggested by Giffen himself, which was repeated in Marshall's *Principles of Economics*:

> There are however some exceptions. For instance, as Sir R. Giffen has pointed out, a rise in the price of bread makes so large a drain on the resources of the poorer labouring families and raises the marginal utility of money to them so much that they are forced to curtail their consumption of meat and the more expensive farinaceous foods: and, bread being still the cheapest food which they can get and will take, they consume more, and not less of it. (Marshall, 1930)

In this short passage, Marshall points to the key problem, namely, the marginal utility of money. It does not stay constant when a money price changes. However, when working with value scales from which Rothbard (2009, pp. 239-40ff.) derives demand schedules, one must hold it constant at least implicitly as explained above. In most cases this may seem irrelevant as the marginal utility of money does not change a lot, but it is clear that it could matter in at least some cases. And however small the effect may be, it is also clear that it exists.

It might therefore come as a surprise that Austrian economists have largely rejected the existence of this effect, given that they emphasize more than most other economists that money is itself an economic good that is valued and demanded for its services and that is not simply a *numéraire*. It has marginal value and is subject to the law of diminishing marginal utility. Admittedly, Rothbard (2009, p. 915) refers to the income effect in quotation marks and admits that it can in rare cases explain why people whose incomes are taxed might work more rather than less. However, Salin 1996), one of the main proponents of the modern Austrian school, explicitly deals with the theoretical concept of the income effect and calls it a "myth." He even rejects the possibility of backward-bending labor supply curves that Rothbard himself thought were possible.

This issue has raised a great controversy. It has been argued that Austrian price theory is contradictory, especially when it comes to the widely accepted neoclassical notions of income and substitution effects (Caplan, 1999). Targeting Rothbard (2009 [1962]) in particular, while responding to Block (1999) and Hülsmann (1999), Caplan (2001, p. 80) even goes so far as to claim that if Austrian economics does not solve the obvious tension between a strict interpretation of the laws of supply (always upward-sloping) and demand (always downward-sloping) and the existence of income and substitution effects, everything in Austrian economics "from interest-rate determination to monetary economics to the theory of price controls – rest upon error."

A straightforward solution is to admit that the income effect matters, or something very similar to it. However, Salerno (2018) echoes Salin (1996) and calls the income effect an "illusion." In contrast to Salin, however, Salerno agrees with Gonzalez (2000) that a

backward-bending labor supply curve is possible, but disagrees with him in that an income effect is necessary for it. In fact, Salerno (2018, pp. 37-43) claims to reconstruct the backward-bending labor supply curve solely based on the law of diminishing marginal utility. And he does so successfully. However, he overlooks the simple fact that the income effect is itself an outgrowth of that law as we have explained above. The income effect is at work when it comes to a backward-bending labor supply curve as the marginal utility of money and what it can buy relative to leisure diminishes if the wage rate increases. And the same effect can explain Giffen behavior on the demand side. Austrian price theory is perfectly capable of explaining such phenomena and it essentially uses the same theoretical notions that are encapsulated in the neoclassical income effect.

Towards a Synthesis: The Income Effect Reconsidered

While some of the critiques of neoclassical price theory by Salin (1996) and Salerno (2018) are well taken, the overall conclusion that the income effect is a "myth" or an "illusion" is overblown. Israel (2018) has proposed a new conceptualization of the income effect within Austrian or causal-realist price theory that Salerno (2019) has rejected without resolving the contradiction pointed out by Israel (2018), namely, that his argument against the income effect requires that 1.) the prices of all other goods, and 2.) the purchasing power of money are held constant, when constructing a demand curve. This is a plain contradiction, because there can be no price change along the demand curve if both all other prices and the purchasing power of money are held constant. A price change along the demand curve, when all other prices are held constant, necessarily changes the purchasing power of money. The change might be small, but it is the cause of the income effect. If the price decreases along the demand curve, consumers can buy more. They have a higher purchasing power. If the price increases along the demand curve, they have lower purchasing power.

Israel (2020) has clarified some points of the criticism and has provided a brief overview of the standard neoclassical decompositions of income and substation effects in contrast to the alternative conceptualization that is fully in line with Austrian price theory. Israel (2022a) has presented a generalization, which he calls the "expenditure approach" to income and substitution effects. It has been applied to criticize the standard textbook-analysis of deadweight loss from taxation (Fegley et al., 2023). These have so far been the last contributions to the debate.

However, some previous points by Salin (1996) have not been discussed explicitly in the debate. He had argued, for example, that

> The existence of the income effect assumes that the concept of income can be defined in a non-ambiguous way. It can be measured and quantified. In fact, this

> is not true. Income can only be understood using a precise concept of utility which does not allow room for measurement. (Salin, 1996, p. 96)

He also wrote:

> Contrary to the belief that the income effect is a general principle, it is in fact only a possible consequence of a specific assumption. The substitution effect – consistent with the general theory of utility – is the only general principle. (Salin, 1996, p. 96)

Both claims are misguided as I will show in the remainder of this paper. It is true that income is a complicated notion that is hard to define unambiguously. It is often impossible to clearly differentiate income from wealth, for example, as Gottfried Haberler pointed out in his analysis of index numbers (Haberler, 1927; Israel, 2024). However, when we restrict ourselves to the narrower notion of monetary income, things become more manageable. It is still true that one would need a precise and measurable "concept of utility", as Salin argued, in order to quantify *real* income, but *nominal* income does not require such a concept. Indeed, we do not even have to be able to measure nominal income in a precise way or be able to distinguish it clearly from a person's wealth position, in order to appreciate the existence of something like the income effect.

No matter what a person's income or wealth is, a person is made better off, if a certain good can be bought at a lower price. A person is made worse off if that good can only be bought at a higher price. In that sense a price change along the demand curve changes real income and wealth, regardless of their exact quantities. We can make this qualitative statement without reference to any measurable and quantifiable concept of utility, simply based on first principles of consumer choice and subjective value theory. Any price change along a demand schedule engenders such an effect, unless it is assumed away, as is done in the construction of income-compensated demand schedules. Salin is therefore wrong to claim that the income effect is not a "general principle" that only exists in special cases. Income effects are general phenomena that do not exist only in special cases where we rule them out by assuming that the marginal value of money or its purchasing power remain constant.

Within the context of a monetary economy, where goods are bought with money and where there are money prices for all relevant goods, we can go further than merely making the qualitative claim that the income effect exists, when a money price changes along the demand schedule. We can in fact quantify the effect in terms of money. And for that we do not in fact need a quantifiable notion of utility.

A consumer's demand schedule for a specific good can be understood as a set of counterfactual scenarios for a given situation (Hülsmann, 2003). It gives the quantities of the good that the consumer wants to buy at various money prices under otherwise equal conditions, including the (expected) money prices of other goods. In fact, everything is

held constant that has an impact on the consumer's demand in that situation and is not itself dependent on the money price of the good in question. This is why, Israel (2018, 2020) pointed out that it is not the purchasing power of money *per se* that is held constant, as Salerno (2018) argued, but rather the purchasing power of money with respect to all other goods, or put differently, all other money prices. More precisely, what matters is the expectation of what the purchasing power of money is with respect to other goods in the future, or the subjectively felt opportunity cost of expending money on the good in question in the given situation.

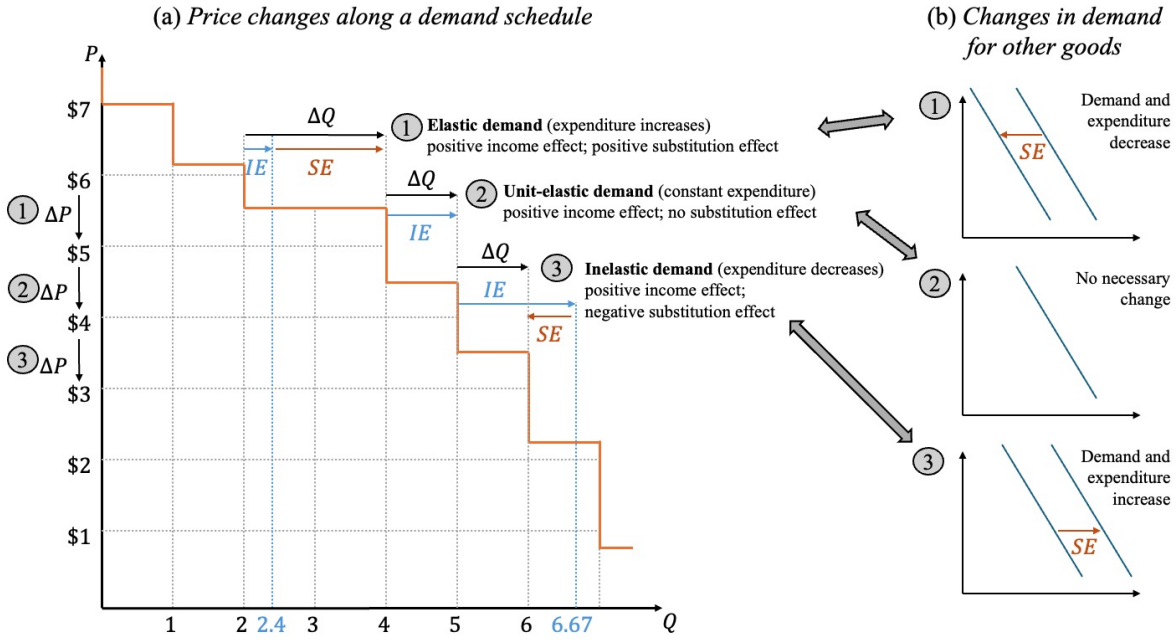
For any such situation there is an actual money price P_a at which the good can be bought and an actual quantity of the good Q_a that the consumer buys. And then there are many counterfactual prices and quantities. We can give a more precise account of the income effect by comparing the factual with the counterfactual scenarios. Let us say that there is the counterfactual price P_c at which the consumer would have bought the quantity Q_c. The implied change for the consumer in terms of income or wealth between the factual and the counterfactual scenario can be measured very easily in terms of money. It is given by the difference in the expenditure needed to buy the quantity Q_a at the actual and the counterfactual price: $(P_a - P_c) * Q_a$. For example, if $P_a = \$5$ and $Q_a = 4$, then the consumer would gain \$8 if the price was only $P_c = \$3$. The quantity chosen, $Q_a = 4$, would only cost \$12 instead of \$20. The consumer is made richer by \$8 in this counterfactual scenario. If the price was $P_c = \$6$, the chosen quantity would cost \$24 instead of \$20. The consumer is made poorer by \$4 in this counterfactual scenario. The question is how the additional funds are spent or how the implied loss is made up. The consumer would decide to buy a different quantity Q_c at the counterfactual price and this might imply substitutions with respect to other goods.

As explained in Israel (2022a), genuine substitutions between the good in question and other goods emerge only in cases where the total expenditure on the good in question changes. For example, if we consider a price change from $P_a = \$5$ to $P_c = \$2.50$ and the consumer would buy $Q_c = 8$ instead of $Q_c = 4$, total expenditure remains unchanged at \$20. This means that the consumer does not have to economize on other goods. There is no reduction in the consumption of other goods necessary to finance the increase in the quantity demanded from $Q_a = 4$ to $Q_c = 8$. Hence, no genuine substitution occurs. The increase in the quantity demanded can be financed entirely out of the income effect. The expenditure approach outlined in (Israel, 2022a) therefore defines the income effect for the quantity demanded as the change that would occur under unit-price elasticity, that is, with constant expenditures. Any deviation from that would be classified as a substitution effect.

The expenditure approach to income and substitution effects is fully in line with Austrian price theory. It does not require measurable or cardinal utility. It can be spelled out in terms of phenomena observable in the real world: quantities demanded, money prices

and expenditures. Figure 3 provides some illustrations of the effects in cases where the selling price decreases along the demand schedule over an elastic, unit-elastic, and inelastic segment. The right panels of Figure 3 illustrate the implications for demand on other goods.

Figure 3: The Expenditure Approach to Income and Substitution Effects



Over an elastic segment of the demand schedule (case 1), a price decrease leads to an increase in expenditure and therefore necessarily implies a reduction of demand for at least one other good. Over a unit-elastic segment of the demand schedule (case 2), expenditure remains constant after a price change. There are no necessary implications for the demand on other goods. If demand is inelastic (case 3), a price decrease leads to a lower expenditure on the good in question and hence implies increased demand for at least one other good.[2]

The analytical advantage of the expenditure approach to income and substitution effects is that it puts to the forefront the interconnection of markets. Increased or reduced expenditures on one good imply reduced or increased expenditures for others. Hence, price changes along a demand curve for one good translate into price changes for other goods depending on the elasticity of the demand schedule. Let us assume that the price for a good decreases, because of technological innovations and productivity gains. When consumer demand is elastic as in case 1 in Figure 3, there necessarily is a reduction in demand for at least one other good. The price of that good will thus tend to fall. This is how the price decrease for one good can spread to other markets. Productivity gains in

[2] Note that the other good could be money itself. We would have a reduced cash balance demand in case 1 or an increased cash balance demand in case 3.

one area of the economy may not only reduce prices in that area but also elsewhere. In case 3, where the demand schedule is inelastic, there is an increased expenditure on at least one other good. Its price will tend to rise, opening better profit opportunities for the sellers of that good. This is how productivity gains in one area of the economy may improve profit opportunities elsewhere, merely through substitutions in demand, that is, changing expenditure shares on different goods. The expenditure approach to income and substation effects helps elucidate these connections.

Table 1: Summary of Possible Cases of Income and Substitution Effects Following the Expenditure Approach

Price (ΔP)	Income effect (IE)	Substitution effect (SE)	Quantity (ΔQ)	Expenditure	Price Elasticity
decreases	positive	positive	positive	increases	elastic (case 1, Figure 3)
decreases	positive	0	positive	unchanged	unit-elastic (case 2, Figure 3)
decreases	positive	negative ($\|IE\| > \|SE\|$)	positive	decreases	inelastic (case 3, Figure 3)
decreases	positive	negative ($\|IE\| < \|SE\|$)	negative	decreases	positive (Giffen behavior)
increases	negative	negative	negative	decreases	elastic (case 1 reversed)
increases	negative	0	negative	unchanged	unit-elastic (case 2 reversed)
increases	negative	positive ($\|IE\| > \|SE\|$)	negative	increases	inelastic (case 3 reversed)
increases	negative	positive ($\|IE\| < \|SE\|$)	positive	increases	positive (Giffen behavior)

Table 1 summarizes all possible cases including cases of Giffen behavior, which, as rare as they may be, are possible in principle. We can see the important difference between standard neoclassical price theory and the expenditure approach. The income effect according to the expenditure approach is always in the opposite direction of the price change. The income effect is passive. A price decrease implies a positive income effect. A price increase implies a negative income effect. In contrast, in standard neoclassical price theory, the income effect can go in any direction, while the direction of the substitution effect is always in the opposite direction of the price change. Hence, in standard neoclassical price theory, it is the income effect that brings about Giffen behavior. The expenditure approach reverses the roles: the income effect is passive, always in the opposite direction of the price change, and the substitution effect plays the active role. Substitution effects can go in any direction. Only in the special case of unit-price elasticity are they absent. Hence, in some sense, Salin (1996) and Salerno (2018)

are correct. Substitution effects are crucial in understanding consumer behavior and price formation. But the income effect always plays a role in the background. It is neither a myth nor an illusion. It refers to a real phenomenon of the human experience.

Concluding Remarks

The income effect results from changes in the marginal utility of money. Price changes along a demand curve, unless it is income-compensated, trigger changes in the marginal utility of money and thus engender income effects. We can hold the marginal utility of money constant in our analysis and thus construct an income-compensated demand schedule, but this by no means implies that there are no income effects. The infamous *law of demand* is derived by holding the marginal utility of money constant and thus assuming income effects away. Without this assumption, money is subject to the universal law of diminishing marginal utility. That is to say, money itself plays an active role in price theory.

The Austrian tradition takes full account of the fact that money itself is an economic good that is valued for its services. It is not merely a *numéraire* as many standard neoclassical accounts would have it. Money is therefore not merely a facilitator of exchange, that could or should remain neutral otherwise. As a general medium of exchange, it opens the possibility for rational economic calculation in terms of profit and loss and therefore is a driving force of its own. It never can be neutral as Menger and Mises emphasized (Israel, 2022b; Salerno et al., 2020). Much of the mainstream literature on money and price theory explicitly or implicitly assumes that money does not or should not play an independent role in the economy. But this is a fundamental error from the perspective of Austrian economics as Rothbard (2009, p. 285) pointed out:

> Many writers have erred in believing that money can somehow be abstracted from the formation of money prices and that analysis can accurately describe affairs "as if" exchanges really took place by way of barter. With money and money prices pervading all exchanges, there can be no abstraction from money in analyzing the formation of prices in an economy of indirect exchange.

Against this backdrop, it is all the more surprising that Austrian price theory has been riddled with inconsistencies surrounding the neoclassical income effect. The expenditure approach summarized in this paper provides an alternative which reconciles Austrian price theory and the income effect, which is simply an outgrowth of the law of diminishing marginal utility applied to money.

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