Is There a Specific Austrian Demand Theory?

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Austrian economics is sometimes considered as an alternative to the mainstream. Regardless whether this holds true in other areas, the present paper argues that it is not the case as far as the demand theory is concerned. I attempt to show that the Austrian version of the theory is in fact equivalent with the neoclassical (in its 'revealed preference' incarnation). In particular, it is shown that the law of marginal utility, which is considered to be the key element of the Austrian approach, is irrelevant for deriving individual demand; the crucial assumption of both, the Austrian and the neoclassical theory is that of an existence of preference ordering. The paper proceeds as follows: in part I the meaning of the law of marginal utility is discussed; part II criticizes Rothbard's derivation of demand from the law of marginal utility; an example is given that demand can be increasing without violating the law. Part III compares the Austrian and the neoclassical approach; part IV is conclusion.

I. The law of marginal utility

The cornerstone of the Austrian demand theory is the law of marginal utility (*LMU*). It must be emphasized that for the Austrians this law is different from the 'law of satiable wants', which is sometimes (and in the mainstream almost exclusively) addressed to as *LMU* too. It is formulated as follows: *whenever the supply of a good increases by one additional unit, provided each unit is regarded as of equal serviceability by a person, the value attached to this unit must decrease. For this additional unit can only be employed as a means for the attainment of a goal that is considered less valuable than the least valued goal satisfied by a unit of such good if the supply were one unit shorter.*[1]

Let us examine in more detail what this law says; first, we focus on the meaning of the term '*unit*'. Rothbard (2009 [1962], p. 74) makes clear that what is meant is not any *physical* unit, but a *relevant* unit – as viewed by the consumer himself. For example consider a consumer who ranks 3 different types of salads (X, Y, Z), each of which requires 4 tomatoes as follows:

1. A salad X, which can be produced only with 4 tomatoes.
2. A salad Y, which can be produced only with 4 tomatoes.
3. A salad Z, which can be produced only with 4 tomatoes.

[1] This particular formulation is Hoppe's (2007 [1995], p. 14). For alternative formulations and discussion cf. e.g. Mises (1996 [1949] p. 199ff.) or Rothbard (2009 [1962], p. 21ff.).

The relevant unit is now 4 tomatoes; according the *LMU* third unit will be valued less than second, and second less than the first:

1. The first 4 tomatoes
2. The second 4 tomatoes.
3. The third 4 tomatoes.

Now, let us see what a *'unit of equal serviceability'* means. Consider the following example of a consumer ranking:

1. A cake *A*, which can be produced only with 2 eggs.
2. A cake *B*, which can be produced only with 3 eggs. [2]
3. A cake *C*, which can be produced only with 1 egg.

Let us take 1 egg as a unit; the first egg can be used only for satisfying the least important end, i.e. to bake the cake *C*. The second egg enables us to produce the cake *A*, which is valued the most. Therefore, second egg is valued higher and *LMU* seemingly does not hold. To rewrite the previous scale in terms of means (eggs) rather than ends (cakes):

1. The second egg
2. The third egg
3. The first egg

However, the first egg and the second egg are not capable of satisfying the same range of ends, they are not of *equal serviceability*. For that matter, *LMU* is not violated – to apply it here we only have to appropriately define a relevant unit. In this case it is 3 eggs. It is straightforward to see, that the first 3 eggs are of equal serviceability as the second 3 eggs (they can gratify either the second or the first and the third ends:

1. The first 3 eggs (cakes *A* and *C*)
2. The second 3 eggs (a cake *B*)

In general, in the cases where various ends require different amount of goods, we take the end which requires the maximum amount of a good and we define this amount of good as the relevant unit.

Finally (and most importantly), observe that *LMU* implies that an individual can rank his ends in terms of their importance to him. Whereas an existence of such a preference ordering is the crucial topic in the

[2] This ranking *does not* imply that 2 eggs are preferred to 3 eggs, i.e. that less is preferred to more!

neoclassical consumer theory, in the Austrian theory it is usually taken for granted.[3] As the neoclassical analysis shows, the assumption of this ordering is sufficient to obtain all the conclusions of the demand theory; *LMU* thus turns out to be superfluous, as it is shown in the next section.

II. *LMU* and demand

Rothbard claims that *LMU* implies that demand curve for a good is always non-increasing;[4] this, however, is incorrect. *LMU* does not imply anything as far as demand is concerned. The reason is, to put it briefly, that *LMU* holds only for units of equal serviceability but consumer has ends which differ in the size of the relevant unit and hence purchases units of different serviceability. To show that Rothbard's claim is unjustified, consider his example of value scale:[5]

1. 7 grains of gold
2. The first pound of butter
3. 6 grains of gold
4. 5 grains of gold
5. The second pound of butter
6. 4 grains of gold
7. 3 grains of gold
8. The third pound of butter
9. 2 grains of gold

This value scale involving comparisons between *absolute* amounts of gold and *additional* units of butter is at first sight rather bizarre – it is not clear what the consumer's endowment at each situation is;[6] one would rather expect a value scale comparing various combinations of gold and butter. Nevertheless, Rothbard makes clear that what he has in mind is that the amounts of gold are various *prices*; hence, what he asserts to be a value scale *is already a demand schedule* (Table 1). Now, what makes sure that the demand for butter is non-increasing? As Rothbard (*op. cit.*, p. 239) puts it:

[3] Rothbard (*op. cit.*, p. 6) writes: "The actor may be interpreted as ranking his alternative ends in accordance with their value to him." He never considers that this assumption may be violated. Cf. also Mises (*op. cit.*, p. 94).

[4] "…because of the law of utility, an individual demand curve must be either "vertical" as the hypothetical price declines, or else rightward-sloping (i.e., the quantity demanded, as the money price falls, must be either the same or greater), not leftward-sloping (not a lower quantity demanded)" (*op. cit.*, p. 240) and further he writes that "this is the necessary configuration of every buyer's demand schedule" (*op. cit.*, p. 240).

[5] Rothbard (*op. cit.*, p. 239).

[6] For instance, when buying the second pound of butter, did the consumer buy already the first one? If so, at what price?

> "His [buyer's] maximum buying price for a second pound of butter will be considerably lower. This result is always true, and stems from the law of utility; as he adds pounds of butter to his ownership, the marginal utility of each pound declines. On the other hand, as he dispenses with grains of gold, the marginal utility to him of each remaining grain increases."

PRICE (grains of gold)	QUANTITY (pounds of butter)
$p = 8$	0
$p = 7$	0
$p = 6$	1
$p = 5$	1
$p = 4$	2
$p = 3$	2
$p = 2$	3
$p = 1$	3

Table 1[7]

As we have seen in the previous section, this statement is correct only if a pound of butter is a relevant unit – only then *LMU* applies. Otherwise there is no guarantee that the first pound of butter is valued higher than the second pound. Hence, Rothbard does not *derive* downward sloping demand from the value scale: his value scale *is* already a demand schedule and he already *assumes* it to be downward sloping. It is easy to show that demand can be increasing (without violating *LMU*), as it is shown in the following example.[8]

Assume that a consumer is endowed with 6 tomatoes and has the following ranking of ends:

1. A cake *A*, which can be produced only with 2 eggs.
2. A salad *X*, which can be produced only with 4 tomatoes.
3. A cake *B*, which can be produced only with 3 eggs.
4. A salad *Y*, which can be produced only with 4 tomatoes.
5. A cake *C*, which can be produced only with 1 egg.
6. A salad *Z*, which can be produced only with 4 tomatoes.

[7] Reproduced from Rothbard, (*op. cit.*, p. 240).
[8] It is nothing but an example of a Giffen good.

I now argue that at the price 1 tomato for 1 egg (p = 1), the consumer will demand 2 eggs, whereas at the price 2 tomatoes for 1 egg (p = 2) he will demand 3 eggs.

At p = 1, there are seven feasible bundles (the first figure in the ordered pair denotes number of eggs, the second one denotes number of tomatoes), as shown in the first column of the table below. The numbers in the second column represent ranking of the ends, which will be satisfied with the respective bundle:

BUNDLES OF GOODS (eggs, tomatoes)	ENDS SATISFIED
(0,6)	2nd (*X*)
(1,5)	2nd, 5th (*X, C*)
(2,4) (K)	1st ,2nd (*A, X*)
(3,3)	1st, 5th (*A, C*)
(4,2)	1st, 5th *(A, C)*
(5,1)	1st, 3rd *(A, B)*
(6,0)	1st, 3rd, 5th *(A, B, C)*

Table 2

The bundles (2,4) and (6,0) suggest themselves to be chosen; since the consumer's ranking does not give us the answer, whether satisfying the 2nd, end is more important than simultaneous satisfying of the 3rd and 5th ends, it is possible that the consumer will choose the bundle (2,4).

At p = 2, there are four feasible bundles:

BUNDLES OF GOODS (eggs, tomatoes)	ENDS SATISFIED
(0,6)	2nd (*X*)
(1,4)	2nd, 5th (*X, C*)
(2,2)	1st *(A)*
(3,0) (L)	1st, 5th *(A, C)*

Table 3

In this case, the bundle (3,0) is chosen. Plotting in a diagram, we get the following:

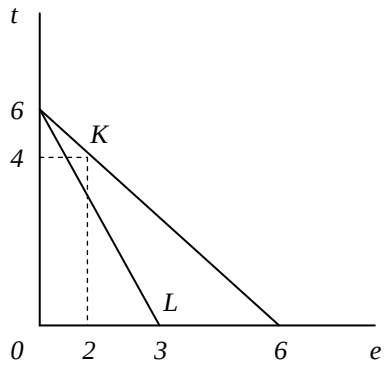

Fig. 1

Or, in terms of demand for eggs:

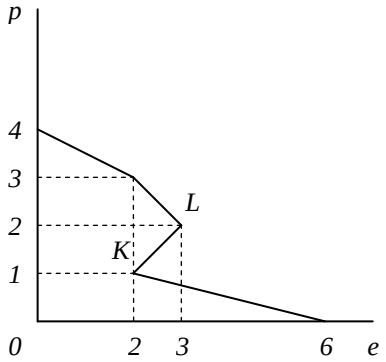

Fig. 2

PRICE (tomatoes/1 egg)	QUANTITY (eggs)
$p = 6$	0
$p = 5$	0
$p = 4$	0
$p = 3$	2
$p = 2$	3
$p = 1$	1

Table 4

III. Austrian and neoclassical demand compared

We have seen that *LMU* does not ensure that demand is non-increasing and in fact plays no role in the Austrian demand theory. It is now in place to compare the Austrian approach to the neoclassical. Fortunately, this comparison can be brief.

The crucial assumption of the neoclassical approach is that of *consistency*. Mises (1996 [1949], p. 103) criticized this assumption not realizing that his own approach rests on this very assumption too: constructing preference scale requires that preference relation be transitive. As was mentioned before, Austrians have scarcely paid attention to this fact. Other arguments raised by Rothbard (1997 [1956], 2009 [1962]) against the neoclassical theory can be easily dismissed: he argues strongly against the employment of the concept of indifference and against the use of continuous utility functions; reply to his criticism is that the revealed preference approach does require neither indifference nor utility functions. However, for the revealed preference theory has Rothbard again nothing but words of dissent: first, he argues that it assumes constant preferences. The answer is: yes, it does, and so does his analysis. If we let preferences change haphazardly, individual demand could not even be derived. His second argument is that the revealed preference approach must make use of index numbers – this, of course, is plain wrong. At close examination, the concept of revealed preferences is equivalent with his concept of demonstrated preferences, notwithstanding his claims to the contrary.

IV. Conclusion

I have argued that (i) *LMU* is irrelevant for the demand theory and in particular, I have provided an example that it does not (contrary to Rothbard's claim) imply non-increasing demand; (ii) the Austrian and neoclassical demand theory are equivalent – they both rely on the assumption of the existence of preference ordering. If my argument is correct, there seem to be some important implications to it. On the methodological level, the role of *LMU* requires reconsideration. Status of this law as praxeological has been already shaken by Nozick's (1977) remark that it requires (non-praxeological) concept of indifference; in the present paper this law obtained a further blow. The most interesting question, however, seems to me the following: what are the real (and not only apparent) differences between the neoclassics and the Austrians? I believe that if the answer sought for thoroughly the result might be surprising.

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