



The Z Curve: Supply and Demand for Giffen goods

A curva Z: Oferta e Demanda para os bens de Giffen

La curva Z: oferta y demanda para los bienes de Giffen

Gabriel Philbois – Loyola University New Orleans – gabriel.philbois@gmail.com

Walter E. Block – Loyola University New Orleans – wblock@loyno.edu

Palavras-chave:

Curva de Demanda;
Curva de Oferta; Bem
de Giffen; Teoria do
Consumidor.

RESUMO

A demanda por um bem de Giffen é atípica, isto é, cresce conforme o preço aumenta. A representação tradicional desse fenômeno é uma curva de demanda com inclinação ascendente. O modelo é muito problemático, pois implica que a demanda pode oscilar entre o infinito e um infinito negativo. Um cenário, no mínimo, irrealista. Nesse artigo, discutimos brevemente os problemas do modelo tradicional, propondo um melhor: a curva Z. Como os bens de Giffen são uma consequência de uma redução na renda do consumidor, a curva Z ilustra os efeitos dessa mudança sobre a riqueza. Nosso objetivo aqui não é descartar totalmente a construção mental dos bens de Giffen. Em vez disso, propomos o que acreditamos ser um método mais preciso de representação gráfica dos bens de Giffen.

Keywords:

Demand Curve; Supply
Curve; Giffen Good;
Consumer Theory.

ABSTRACT

The demand for a Giffen good is atypical, i.e. it increases as prices rise. The traditional representation for this phenomenon is a simple upward sloping demand curve. This model is very problematic, because it implies that demand can oscillate between infinity and negative infinity, an unrealistic scenario to say the least. In this paper we briefly discuss the problems with the traditional model and propose a better one: the Z curve. Because Giffen goods are a consequence of a reduction in the consumer's income, the Z curve illustrates the effects of this change on wealth. Our goal here is not to dismiss the mental construction of Giffen Goods entirely. Rather, we bring forth what we believe to be a more precise method to graphically represent Giffen Goods.

Palabras clave:

Curva de Demanda;
Curva de Oferta; Bien
de Giffen; Teoría del
Consumidor.

RESUMEN

La demanda por un bien de Giffen es atípica, es decir, crece conforme el precio aumenta. La representación tradicional de este fenómeno es una curva de demanda con inclinación ascendente. El modelo es muy problemático, pues implica que la demanda puede oscilar entre lo infinito y un infinito negativo, un escenario, al menos, irrealista. En este artículo, discutimos brevemente los problemas del modelo tradicional, proponiendo un mejor: la curva Z. Como los bienes de Giffen son una consecuencia de una reducción en la renta del consumidor, la curva Z ilustra los efectos de ese cambio sobre la riqueza. Nuestro objetivo aquí no es descartar totalmente la construcción mental de los bienes de Giffen. En vez de eso, proponemos lo que creemos que es un método más preciso de su representación gráfica.

Recebido em: 02-abr-2018

Classificação JEL: D01, D11

Aprovado em: 04-jun-2018

INTRODUCTION

The Giffen good has had a bandit-like existence in economic theory. It is sometimes used to “punish” naïve, unsuspecting intermediate microeconomics students who have been taught in their introductory economics courses that demand curves always slope in a downward direction. At other times it is taken seriously, as a depiction of what actually happened in Irish history with the potato as Exhibit “A” in this context.¹ But most often, at least in the professional mainstream literature ([LIPSEY; ROSENBLUTH, 1971](#); [SPIEGEL, 1994](#)), it serves as a curiosity, an aberration. Its lesson, if a lesson there be, is that there are exceptions to general rules.

In section I we offer a criticism of this economic model. Section II is given over to an exploration of the upward sloping demand curve. The burden of section III is to consider the upward sloping demand curve with a budget limit. In section IV we offer the Z curve, the main contribution of the present paper. We conclude in section at the end.

1 CRITICISMS OF THE GIFFEN GOOD CONCEPT

The most serious objection to the Giffen good is that nothing, nothing whatsoever, should be altered as one moves down² the demand curve, except, of course, price and quantity ([MISES, 1998](#); [ROTHBARD, 2004](#)). This means, specifically, that wealth must not be allowed to vary. To wit, when prices fall, consumer affluence rises. If the good comprises a large enough proportion of the budget, and the income effect in the direction of greater purchases³ outweighs the substitution effect toward decreased buying, then, yes, indeed, this logically implies an upward sloping demand curve. The criticism, then, is that just as we do not allow prices of complements, or substitutes, or the weather, or changes in tastes, or anything else, to vary as we move along a demand curve, so must we adopt an identical policy for wealth. Shorn of this aspect of the demand curve the Giffen good becomes an utter impossibility⁴.

It is true that Giffen goods are often used as a mental construction to demonstrate the limitations of Marshallian demand curves as compared to Hicksian curves. Hicksian demand curves exist to illustrate the difference between the income effect (omitted in Marshallian curves) and the substitution effect. This is a crucial distinction: Hicksian curves strictly obey the law of demand, while Marshallian curves better represent real world consumer decisions. As such, Giffen

¹ For other cases, see [Battalio, Kagel and Kogut \(1991\)](#), [Jensen and Miller \(2001\)](#) and [McKenzie \(2002\)](#).

² Or indeed, in either direction.

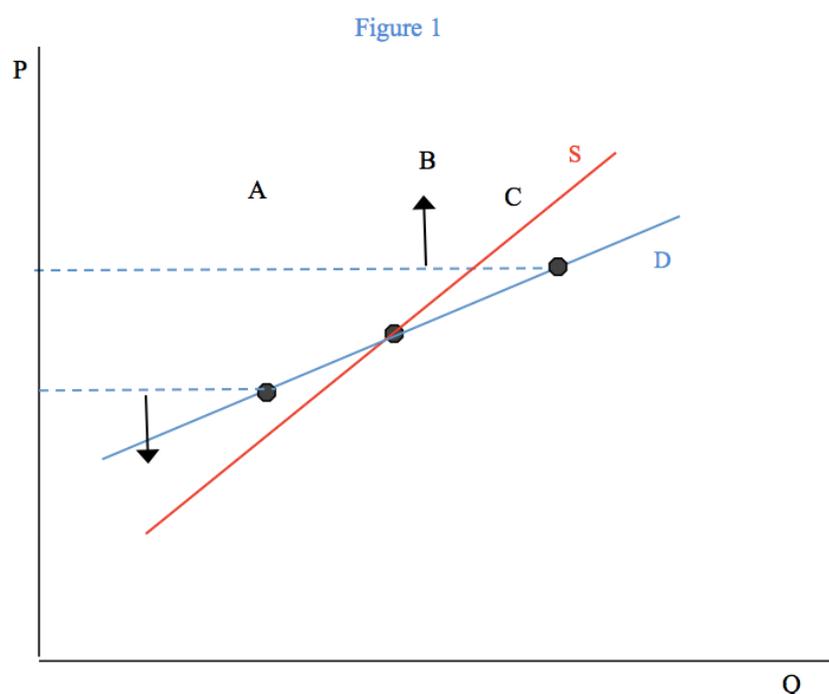
³ For normal, not inferior goods.

⁴ For critiques of the Giffen upward sloping demand curve along these and yet other lines, see [Barnett and Block \(2010; 2012\)](#), [Block and Philbois \(s/d\)](#), [Block and Wysocki \(2018\)](#), [Klein \(s/d\)](#), [Klein and Salerno \(s/d\)](#) and [Murphy, Wutscher and Block \(2010\)](#).

goods are a mental construction used to evaluate a mental construction, not to describe reality. While mental constructions are essential to the understanding of abstract ideas, those ideas are only useful in that they correspond to human behavior, and if they do not we drift from science to fantasy. We could take this argument further into a criticism of demand curves themselves by pointing out that there is no such thing as cardinal preference, and that there is no such thing as revealed preference. However, this is not the focus of this paper. Our goal is to present a more complete picture of what the demand curve for a Giffen good would look like.

2 THE UPWARD SLOPING DEMAND CURVE

The simplest representation of a Giffen good is an upward sloping demand curve. Figure 1 presents an example of that curve. At point B supply equals demand, and in the absence of external shocks price and quantity will not change. At point A the quantity demanded is lower than supply, which will cause prices to fall. Since there is no logical stopping point for this effect, we will eventually arrive at a price of negative infinity. The same happens at quantity C, where for



similar reasons price will become infinite.

This model makes no sense, since fluctuation in demand from positive to negative infinity is incoherent. This supply and demand system, perhaps, is alright if we remain at point B.

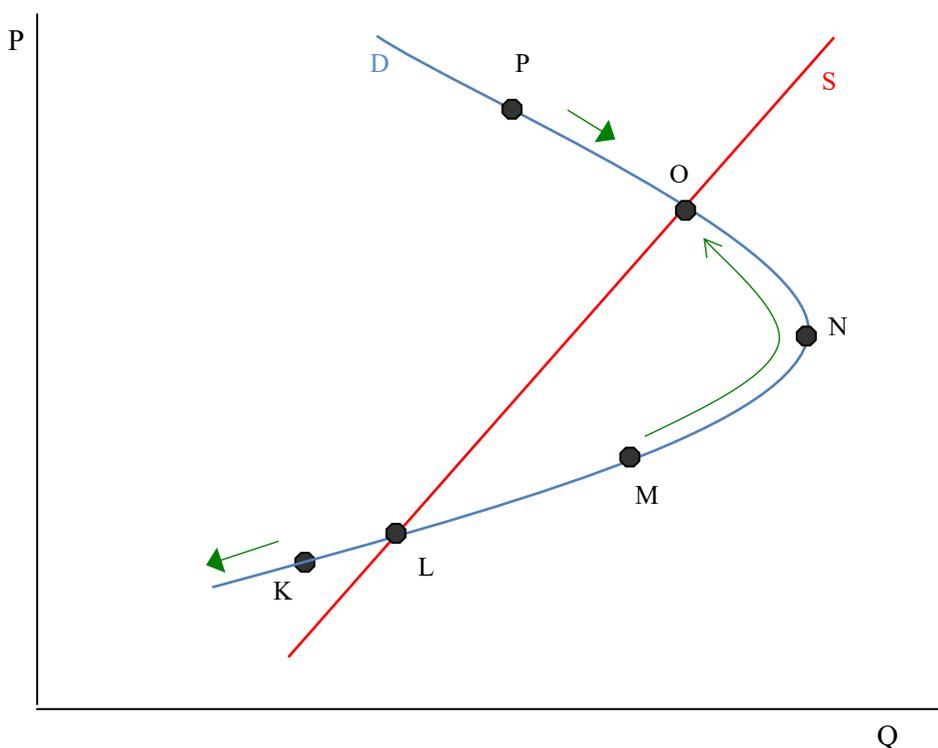
But it is radically unstable, since any change, even a slight one, will take us on a ride that will put the roller coaster to shame. There must be a better way to represent the demand for a Giffen good, one that includes limits for variation in demand.

If we take the supply curve to be less steep than the demand curve, the model appears to function. However, a demand model should make sense regardless of supply conditions. This demand model does not, as it implies that supply shocks are capable of causing infinite demand.

3 THE UPWARD SLOPING DEMAND CURVE AND BUDGET CONSTRAINT

An evident limit for how much of an inferior good can be bought as a reaction to a decrease in wealth is that after all other substitutes have been replaced by the inferior good in the consumer basket, it is impossible to acquire more of it within the budget. Figure II depicts an upward sloping demand curve that turns into a traditional downward sloping curve when price rises past point N.

Figure II



In Figure II we depict the demand curve for a good, which has Giffen characteristics (upward sloping) up until point N. Then, as price moves higher, the demand curve becomes normal (downward sloping). After this certain price and quantity, N, all the consumer's income will

be allocated to the Giffen Good and further increases in price will necessarily lead to a reduction in demanded quantity (points N to P and beyond). This means consumers would have upward sloping (for lower prices) and then backward bending (for higher price) demand curves.

At point K price is lower than the disequilibrium⁵ point (L) and demand is lower than supply. Therefore price will fall, again to minus infinity. This is not plausible because both supply and demand would fall to minus infinity, whatever that means. If we land at point L and nothing else changes, no shift in supply or demand, then the market will stay there; but this is problematic, because supply and demand curves are always and ever shifting.

At point M (as any other point between L and N), the demand curve is upward sloping and greater than supply, leading to increases in price, supply, and demand. At point N and above the slope of the curve changes because the price of the Giffen good has risen so much that it is now worthwhile for the individual to buy the normal good. The demand curve then starts to resemble the traditional format (downward sloping).

If the substitution effect never increases enough to offset the income effect, the normal good has to be a complement. In that case the curve slope will change when the individual allocates all of his income to the inferior good (yet another unrealistic scenario), and any increase in prices will necessarily cause a reduction in quantity.

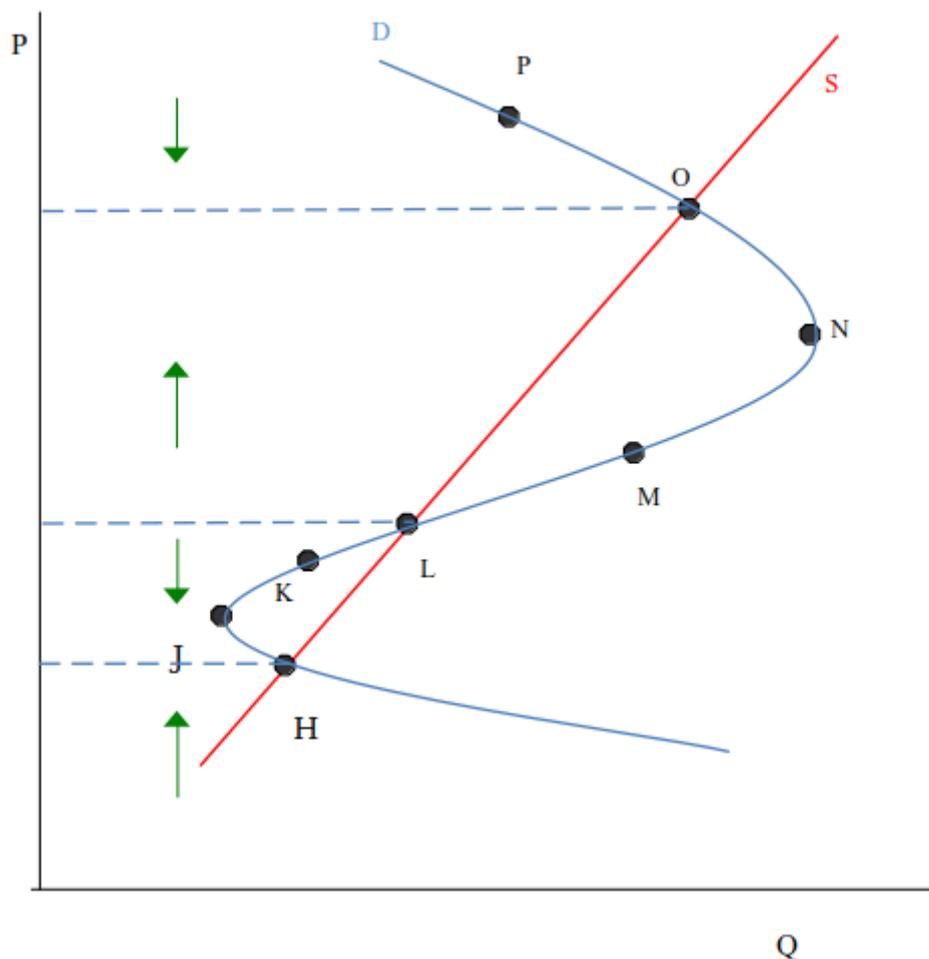
At any rate, as price continues to rise between N and O the quantity demanded will diminish, while the quantity supplied will increase, until an equilibrium is reached at point O. Notice that location at any point between L and O will lead to equilibrium point O. At point P this curve behaves like a traditional supply and demand model, and greater supply than demand will cause prices to fall. This will go on until an equilibrium tends once again to be reached at O.

4 THE Z CURVE

Finally, the Z curve takes into account that a good only acquires Giffen characteristics above a certain price. The consumer only reduces the quantity, as prices go down, in order to acquire superior goods (e.g., the substitution effect). Below a certain price level, however, the consumer reaches a point where the marginal utility of money spent on the Giffen good is higher than the money spent on the superior goods, because the Giffen good has become so cheap. In other words, at this threshold the price will become low enough so that the income effect will be greater than the substitution effect.

⁵ This is not a typographical error. Point L in figure II is equivalent to point B in figure I.

Figure III



In figure III, from point K and up the Z curve is identical to the curve in figure II. At point J (between H and K), however, the curve reaches the price threshold mentioned above. Below that point the demand curve becomes downward-sloped again, and along it quantity will increase as prices fall. Eventually prices will decrease until the equilibrium point H tends to be reached, where demand equals supply. Below that point demand will be greater than supply, causing prices to rise until an equilibrium is reached once again at H.⁶

CONCLUSION

The Z curve demonstrates that there can be no economically meaningful equilibrium in the case of a Giffen good. Therefore, any Giffen-like characteristics must be transitory⁷ and exist

⁶ According to our research, we are now the first to introduce the Z curve in the context of the Giffen good. However, Leibenstein (1968, p. 137; 1950, p. 204) beat us to the punch, although he used this Z model in a different context.

⁷ That is, in a demand curve which does not abstract from wealth changes as we move along it.

only during the disequilibrium caused by a shock. Quantity and prices will tend towards an equilibrium in one of the downward sloping segments of the curve, either below Giffen prices or above them.

REFERENCES

[BARNETT, William II; BLOCK, Walter E.](#) Mises never used demand curves; was he wrong? Ignorant? No: The Antimathematicality of Demand Curves. **Dialogue**, v. 1, March, p. 23-31, 2010. Available at: <<http://www.uni-svishtov.bg/dialog/title.asp?lang=en&title=101>>. <<http://www.uni-svishtov.bg/dialog/2010/1.10.WB.pdf>>. Accessed in: October 10, 2018

[BATTALIO, Raymond.; KAGEL, John; KOGUT, Carl.](#) Experimental Confirmation of the Existence of a Giffen Good. **The American Economic Review**, v. 81, n.4, September, p. 961-970, 1991. Available at: <http://www.jstor.org/stable/2006656?seq=1#page_scan_tab_contents>. Accessed in: October 10, 2018

[BLOCK, Walter E.; BARNETT, William II.](#) Giffen Goods, Backward Bending Supply Curves, Price Controls and Praxeology; or, Who's Afraid of the Big Bad Boogie Man of Giffen Goods and Backward Bending Supply Curves? Not Us. **Revista Procesos de Mercado**, v. IX, n. 1, Spring, p. 353-373, 2012.

[BLOCK, Walter; PHILBOIS, Gabriel.](#) Giffen Goods and Backward Bending Supply Curves of Labor. **Estudios Libertarios**, v.1, p.55-59, 2018. Available at: <<http://www.notaslibertarias.com/wp-content/uploads/2018/09/Article-8.pdf>>. Accessed in: October 10, 2018

[BLOCK, Walter; WYSOCKI, Igor.](#) A defense of Rothbard on the demand curve against Hudik's critique. Summer. **Acta Economica et Turistica**, Forthcoming, 2018.

[JENSEN, R.; MILLER, N. Miller.](#) **Giffen Goods**. Cambridge: Mimeo John F. Kennedy School of Government, Harvard University, 2001.

[KLEIN, Peter G.](#) **A note on Giffen goods**. Unpublished, s/d. Available at: <<http://web.missouri.edu/~kleinp/misc/giffen.pdf>>. <http://sites.baylor.edu/peter_klein/files/2016/06/giffen-t82d17.pdf>. Accessed in: October 10, 2018

[KLEIN, Peter G. SALERNO, Joseph T.](#) **Giffen's Paradox and the Law of Demand**. Unpublished, s/d. Available at: <<https://mises.org/library/giffen%E2%80%99s-paradox-and-law-demand>>. Accessed in:

[LEINBENTEIN, Harvey](#). Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand. **The Quarterly Journal of Economics**, May, p. 183-207, 1950. Available at: <https://www.jstor.org/stable/1882692?seq=22#page_scan_tab_contents>. Accessed in:

[LEINBENTEIN, Harvey](#). Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand. In: BREIT, William; HOCHMAN, Harold (eds.). **Readings in Microeconomics**, Holt, Rinehart and Winston, p. 123-150, 1968.

[LIPSEY, Richard G.](#); [ROSENBLUTH, Gideon](#). A Contribution to the New Theory of Demand: A Rehabilitation of the Giffen Good. **The Canadian Journal of Economics**, v.. 4, n. 2 May, p. 131-163, 1971.

[MCKENZIE, D.](#) **Are tortillas a Giffen good in Mexico?**. Economics Bulletin, 2002. Available at: <<http://www.accessecon.com/pubs/EB/2002/Volume15/EB-01O10003A.pdf>>. Accessed in:

[MISES, Ludwig von](#). **Human Action**. Scholars' Edition. Auburn: Mises Institute, [1949] 1998.

[MURPHY, Robert P.](#); [WUTSCHER, Robert](#); [BLOCK, Walter](#). Mathematics in Economics: An Austrian Methodological Critique. **Philosophical Investigations**, January, v. 33, n. 1, p. 44-66, 2010. Available at: <<http://www3.interscience.wiley.com/cgi-bin/fulltext/123209256/PDFSTART>; <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9205.2009.01397.x/full>>. Accessed in:

[ROTHBARD, Murray N.](#) **Man, Economy and State**. Auburn: Ludwig von Mises Institute, 2004 [1962].

[SPIEGEL, Uriel](#). The Case of a 'Giffen Good'. **The Journal of Economic Education**, v. 25, n. 2, p. 137-147, 1994.