A well-behaved utility function can generate Giffennian behavior

We present a specific utility function which generates Giffennian behavior. The derived demand function of each good is not only continuous in its price and income but also partly increasing in its price and decreasing in income. Moreover, we show that Giffennian behavior is compatible with arbitrary level of utility; thus the standard "margarine-butter paradigm" may not adequately explain Giffen's paradox.