The Dynamics of Nominal and Real interest rates in Purchasing Decisions

@dailylifeecon

The distinction between nominal and real interest rates plays a pivotal role in shaping individual financial decisions. This case study explores the theoretical underpinnings of these interest rates, how their interplay influences a buyer's decision-making process and why this matters for macroeconomic policy.

Nominal interest rates represent the explicit percentage return on an investment or the cost of borrowing, as stated by financial institutions. It directly drives the headline rate that individuals often encounter when considering financial products such as mortgages. Real interest rates provide a more nuanced perspective. They adjust the nominal interest rate to account for the effects of inflation. For this reason, real interest rates reflect the actual purchasing power of money by considering how inflation impacts the value of currency over time. The relationship is captured by the Fisher equation (which is approximated by equation 1):

$$r = i - \pi \qquad (1)$$

Where: r is the real interest rate; *i* is the nominal interest rate; and π represents the inflation rate.

Let's assume a buyer is contemplating a significant purchase and is considering financing options (reel). The buyer is attracted to a nominal interest rate (5%) offered by a financial institution, intending to save money and make the purchase in the future. However, a salesperson intervenes, highlighting the importance of considering real interest rates and factoring in inflation,[1] which, as pointed out by the car salesperson, is at 6%.

[1] Inflation is a macroeconomic phenomenon characterized by a sustained increase in the general price level of goods and services in an economy over time. It is typically measured as the percentage change in a price index, such as the Consumer Price Index (CPI) or the Producer Price Index (PPI). Inflation erodes the purchasing power of a unit of currency, leading to a reduction in the real value of money. Persistent inflation can have various economic implications, influencing interest rates, investment decisions, and overall economic stability.

The buyer, drawn by the nominal interest rate, contemplates saving money and delaying the purchase to capitalise on what appears to be a favourable financial arrangement. The nominal rate, while a crucial piece of information and the lever central banks such as the Bank of England use to steer the economy, may not provide a comprehensive understanding of the economic landscape. The salesperson intervenes, emphasising the need to consider real interest rates. Inflation erodes the actual value of money, meaning that a nominal interest rate might not translate into actual savings. The decision to delay the purchase is reconsidered, given the potential impact of inflation on the purchasing power of the saved funds.

In this case, we could use the Fisher equation to calculate the real interest rate that the investment portfolio will give the buyer. Solving for, r, the real interest rate, and substituting the values of nominal interest rate and inflation, we have the real interest of the financial institution offer is -1%:

$$r = i - \pi = 5 - 6 = -1\% \quad (2)$$

What does this imply? The person may be better off buying the car rather than investing due to the impact of inflation on the real purchasing power of money. The nominal interest rate of 5% may seem attractive at first glance, as it indicates the cost of borrowing money or the return on investment without adjusting for inflation. However, the critical factor here is the real interest rate, which considers the inflation rate. In this scenario, the inflation rate is 6%, meaning that the real interest rate is negative (-1%). When the real interest rate is negative, the purchasing power of money decreases over time. If the buyer decides to delay the purchase and save money with a nominal interest rate of 5%, they might think they are gaining, but in real terms, they are losing because inflation is eroding the value of their savings at a faster rate.

Let's consider an example: If the buyer decides to save £10,000 with a nominal interest rate of 5%, they will earn £500 in interest. However, with inflation at 6%, the real value of their savings would decrease by £600. In this case, even though they earned £500 in interest, the real purchasing power of their money would be £100 (around 1%) less than the initial amount due to the impact of inflation.

On the other hand, if the buyer chooses to finance the car purchase with the nominal interest rate of 5%, they would be paying interest. Still, the actual cost might be lower than the decrease in purchasing power caused by inflation. Therefore, the buyer might be better off making the car purchase rather than delaying and saving money, considering the negative real interest rate caused by inflation.

So why do we say the actual cost *might* be lower? In fact this would only be the case if the price for the car was expected to be 6% higher next year. Firstly, inflation in the overall economy reflects the average price increase, however the expected cost of the car would depend on the specific increases in car prices. In the reel, the car buyer makes the point that new car inflation is only 3.8%, and so he make the case that the real interest rate is $r = 5 - 3.8 = 1.2\%$ for cars. It looks at this point that the car buyer has lost the sale but he points out that 3.8% is not the expected new car price next year and in the car sellers (unbiased?) opinion car prices are going to increase by more. Is he right to do so? Whilst the inflation rate of 3.8% reflects the increase in new car prices since last year, what matters for the buyer's consumption decision, today's price increase from last year of the expected increase in prices? Remember he is considering either buying it today or next year. As a result, it as the later since his forecast of the price increase relative to the savings return that matters that drives the real interest rate here and changes in his decision to consume. Finally, the seller points out that the car is red with yellow stripes which secures the sale. This reflects that our preferences have a big role to play and that a lot of the time we will consume items despite real interest rates being positive, after all we would not expect the seller to sell no new cars. We also need to consider the type of good here. For example, with higher real interest rates, you would not delay your consumption of purchasing groceries or transportation to work, but at least some people may delay consumption of a house or a new car.

So long as some people in the economy directly alter their consumption following a change in real interest rates, then central banks have a lever through which they can affect the economy as a whole. In the example of the reel, if they cut interest rates, they would not change the mind of the car buyer as he was already buying the car anyway, but others may purchase cars. This increase in demand may indirectly help the car buyer too. The car dealership may hire a new worker, who with their extra

income also purchases more goods and services in the economy. Once we add up these effects to consider the economy as a whole we will tend to see higher GDP, lower unemployment which indirectly benefit the car buyer and many more people in the economy.