IPRPD
International Journal of Business & Management Studies
ISSN 2694-1430 (Print), 2694-1449 (Online)
Volume 06; Issue no 08: August, 2025
DOI: 10.56734/ijbms.v6n8a7

RISING INTEREST RATE EFFECTS ON THE ECONOMY, OPPORTUNITIES AND RISK

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Abstract

The research paper discusses the effects of rising interest rates on the economy and examines their effects on various sectors of the economy. It discusses loans as well as investments, the housing issue and its impact on spending according to the potential opportunities that may appear as a result of changing interest rates, while studying the rise in returns on savings as well as increasing the profitability of some industries with options. Better investment within interest changes in various sectors, as the study found the risks that could arise from rising interest rates and their change from rising borrowing costs as a result of changes in the interest rate and the possibility of financial instability with decreased investment and job opportunities, which led to a rise in mortgage rates and thus presented. The paper provides an extensive, comprehensive analysis of the macroeconomic impacts of high interest rates and their volatility, with an emphasis on the intended benefits and potential emerging challenges.

Keywords

Rising interest, Investment, Financial instability, Economy

1. Introduction

The research explores the consequences of high interest rates on government finances. Governments, both national and local, often carry large levels of debt. Increased interest rates can raise borrowing costs for governments, which may constrain fiscal policies and affect debt sustainability over the long term (Arellano & Bond, 2018). And analyzing the effects of rising interest rates on the overall economy is an important research topic that sheds light on the dynamics of the financial system and general economic performance (Bond & Van Reenen, 2017). This study aims to study the effects of changing interest rates on various sectors, including households, companies, financial markets, and governments. One of the main areas of investigation revolves around Understand how rising interest rates affect borrowing costs. As interest rates rise and when the cost of borrowing rises for households and businesses, they will discourage consumption and investment spending. This could have significant implications for economic growth, as these sectors are key drivers of aggregate demand (Caballero, 2022).

Also, high interest rates can affect the behavior of financial markets, as fluctuations in interest rates can affect asset prices, including stocks, bonds, and real estate. Understanding these dynamics is critical to understanding potential indirect impacts on wealth, investment portfolios, and overall financial stability (Bodne,2018).

Higher interest rates could impact housing markets, and as borrowing costs increase, housing affordability decreases and thus will lead to a slowdown in the housing sector, as this could have long-term impacts on construction activity, as well as employment and consumer sentiment, given the close relationship between the housing market and the broader economy (Arellano & Bond, 2018).

1.1 Understanding Interest Rates

Interest rates represent the cost of borrowing money or return on investment, a basic concept in the world of finance. Delving deeper into the basics of interest rates while exploring the mechanism for determining them and the different types of interest rates that exist is very important, as interest rates according to protocols are affected by a wide range of factors, including the dynamics of supply and demand and inflation, and sometimes they are linked to the policies of the central bank and market expectations, so they change. With these factors, interest rates can rise or fall and thus will affect borrowers and lenders alike (Robson, 2021).

There are two main types of interest rates: nominal interest rates and real interest rates (Belke, 2017). Nominal interest rates are the rates that are usually determined by banks and financial institutions, and therefore they will represent the actual interest paid or earned on a loan or investment, and in return they will take the real interest rates. Taking into account the effects of inflation, by subtracting the inflation rate, which reflects the real purchasing power of the money in question, from the nominal interest rate in order to arrive at the real interest rate (Caballero, 2022).

Another crucial basic concept related to interest rates is compounding. Compounding refers to the process of earning interest on both the initial principal amount and any accumulated interest. This compounding effect can significantly affect the growth of incremental investments or the cost of borrowing over time. Understanding compounding is important. This is crucial and essential for individuals looking to make informed financial decisions (Moons et al., 2020).

Market changes and market need are important in determining interest rates. When there is great urgency for production, interest rates tend to rise, and vice versa. When the wheel of production is reduced, interest rates will decrease, which is normal, and this relationship between supply and demand creates a delicate balance that affects interest fluctuations (Peters & Taylor, 2016). That inflation is another crucial factor that affects interest rates. The inflation factor over time refers to the increase in the general level of prices for goods and services, as lenders demand higher interest rates to compensate for the erosion of the value of money. When inflation is high, central banks will also play a decisive role in Interest rate management. Through their monetary policies, central banks can increase or decrease interest rates to control inflation or stimulate economic growth by addressing concerns related to financial stability (Gilchrist & Zakrajšek, 2017).

To mitigate risks, investors may demand higher interest rates according to their needs, and market expectations may also affect interest rates based on expectations of higher inflation or economic uncertainty (Little, 2018). Changes in government policies or volatile geopolitical events can directly trigger interest rate fluctuations. The market is rapidly and effectively reevaluating the economic landscape (Moons et al., 2020).

For fundamental investors, interest rates will greatly affect the valuation of their assets such as stocks, bonds, and real estate, as interest rates rise and thus the cost of borrowing increases (Caballero, 2022). This may reduce consumer spending and may negatively slow economic growth, and this in turn can directly and negatively affect corporate profits and stock prices, i.e. Lower interest rates can stimulate economic activity and boost asset prices (Lane & Rosewall, 2015).

Therefore, understanding interest rates is not only important for borrowers, but also very important for savers and investors. For savers, interest rates will directly affect the return on their savings, and high-interest rates can provide greater income than savings accounts, bonds, or other fixed-income investments, this is because low interest rates make it more difficult for savers to achieve large returns (Little, 2018).

In conclusion, interest rates are a vital element in the world of finance. It affects borrowing costs and actually affects investment returns and general economic activity. Therefore, it is very important to understand the basics of interest rates, including how they are determined and the different factors that affect them, because they are extremely important. For individuals and companies alike.

2. Types of Interest Rates

In the previous section, I explained the basics of interest rates and the factors that affect them, while here in this section you will study the different types of interest rates that exist and their basic importance in the financial landscape.

2.1 Prime Interest Rate

The prime interest rate, by definition, is the interest rate that the strongest commercial banks set for their most creditworthy customers, and therefore serves as a benchmark for many other interest rates, such as those related to consumer loans and credit cards, where the prime interest rate is affected by several factors, such as the funds interest rate. Federalism determined by the central bank. Hence the general economic situation (Lane & Rosewall, 2015). For example, in the United States as in Figure 1, key interest rates are set by the Federal Reserve, which is controlled by the country's central bank. The Federal Open Market Committee (FOMC), the main public policy-making body within the Federal Reserve, meets regularly to assess economic conditions in order to determine the appropriate stance for monetary policy, and is one of the main tools used by the Fed (Moons et al., 2020). Reserve with the aim of influencing the key interest rate, which are direct open market operations, through which the central bank buys or sells government securities in order to control the money supply in the economy (Hassett & Hubbard, 2012). The key interest rate has significant impacts on borrowing and lending activities within the overall economy (Ippolito et al., 2017) and this is evident when the key interest rate is low, which generally encourages borrowing and stimulates economic activity. That is, lower interest rates make it cheaper for businesses and individuals to borrow money, and thus will lead to increased investment and consumption. and comprehensive economic growth. Conversely, when the key interest rate is high, it tends to discourage borrowing and can have a calming effect on economic activity (Hassett & Hubbard, 2012). As shown in the figure.1

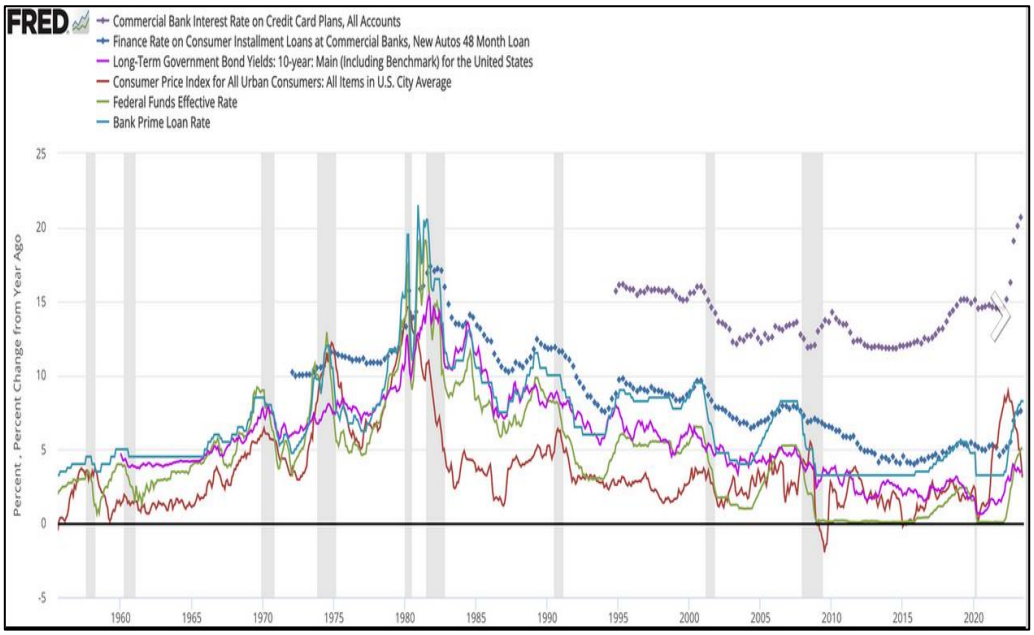

Figure 1: Prime interest rate in USA.

Source: United States Fed Funds Interest Rate, Federal Reserve

For example, in America, in 2023, key interest rates have seen several fluctuations throughout the year. The year began with an interest rate of 7.25% recorded on February 2, 2023. This rate was then raised to 8% on March 23, 2023, indicating a tightening of monetary policy by the Central Bank and its continuation. With this trend, the interest rate was raised, this time to 8.25%. It was recorded in the fourth month of 2023 (White, 2023). The goal was to increase to control inflationary pressures and enhance financial stability (Ippolito et al., 2017), as fluctuations and risks are shown according to the figure1.Then the Central Bank implemented another increase in interest rates, which raised the rate to 8.5% on July 27, 2023, and it is likely the move may have been influenced by concerns about rising inflation or the need to manage other macroeconomic factors as table 1.

Table 1: Main interest rates in America

Year	Range	Date	Rate
2021	3.25%	-	3.25%
2022	3.25% - 7.50%	17-Mar-22	3.50%
		5-May-22	4.00%
		16-Jun-22	4.75%
		28-Jul-22	5.50%
		22-Sep-22	6.25%
		3-Nov-22	7.00%
		15-Dec-22	7.50%
2023	7.50% -	2-Feb-23	7.75%
		23-Mar-23	8.00%
		4-May-23	8.25%
		27-Jul-23	8.50%

Source: United States Fed Funds Interest Rate, Federal Reserve

2.2 Fixed interest rate:

Fixed interest rates are pricing whose prices remain constant throughout the period of the loan or investment (White, 2023). Therefore, this indicates that borrowers and lenders will agree on the interest rate from the beginning and it will remain fixed throughout the extended period of the loan, regardless of changes in the interest market during that period, as it is characterized by Fixed interest rates provide stability and predictability as they allow borrowers to know exactly how much they will pay in interest over the life of the loan and thus will help them better determine their budgets and financial planning (Moons et al., 2020). Likewise, it allows lenders to provide more stable offers to borrowers and this will contribute to increased confidence and business dealings (Hu & Schiantarelli, 2018). Fixed interest rates are widely used in mortgages where the interest rate is set for a specific period of time, such as 15 years or 30 years, and will provide stable and predictive rates for borrowers who want to plan their loan repayments over the long term (Hassett & Hubbard, 2012).

2.3 Variable interest rate:

The variable interest rate can fluctuate according to many variables over time and is usually linked to a reference standard determined by governments. The interest rate that will be changed is determined by adding a certain percentage to this reference standard, for example: adding 2% above the base interest rate (Hu,2018). The variable interest rate adjusts according to the changes in the reference standard and the most closely related to it is the prime interest rate or the London Interbank Offered Rate (LIBOR) (Ippolito et al., 2017). There are usually variable interest rates on mortgages with adjustable rates and certain types (Bhutta & Hizmo, 2021). For business loans, borrowers should know that changes in variable interest rates affect their monthly payments, the total cost of borrowing, and, in Figure 2, changes in the number and volume of new loans based on and based on several different interest rate indices (Arellano & Bond, 2018). That is, a trend has been observed that the number of new loans decreases when interest rates rise and therefore increases when interest rates fall. This pattern fully reflects the influence of the natural and intended nature of conventional monetary policy (Hu,2018).

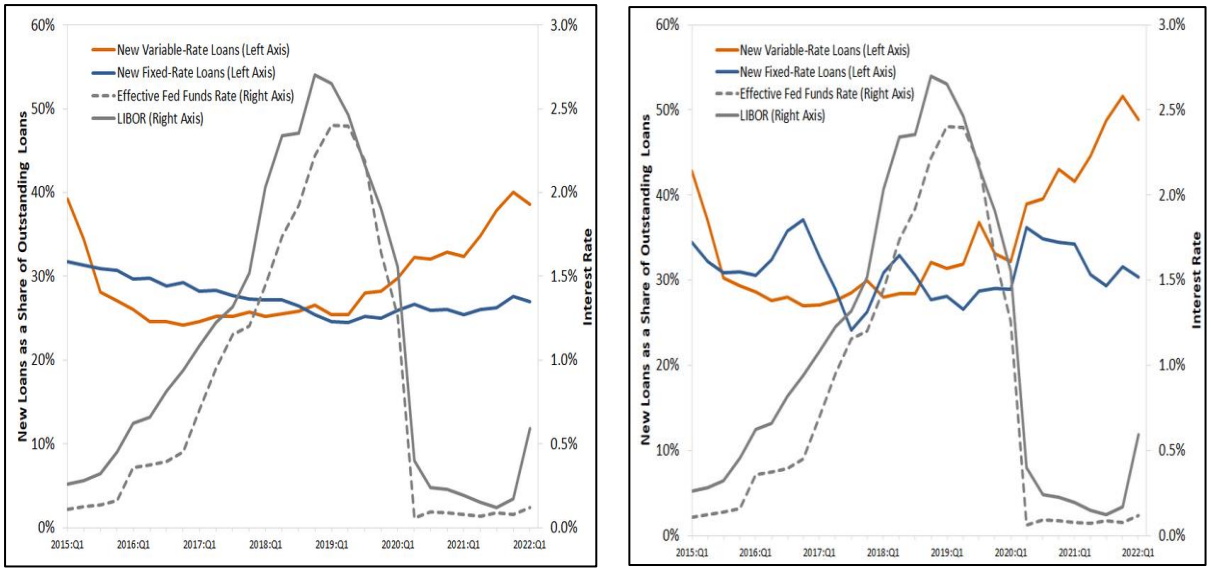

Figure 2: Change in the composition of loan value by type.

Data source: Eurostat.

For variable-rate loans, new loan shares and loan sizes respond more strongly to changes in benchmark interest rates. This happened after the Federal Reserve lowered its interest rates. It was noted that the federal funds rate went to almost zero (Bhutta & Hizmo, 2021). Shares of new loans will rise, especially loans with variable interest, meaning that the nature of loans with variable interest and the mechanism of their calculation and installments will be restored (Haygood et al., 2022). Also, when interest rates fall, it indicates a more attractive variable rate loan, which means increased demand for new loans (Bhutta & Hizmo, 2021). but the opposite happens when interest rates rise, because borrowing will become more expensive and less attractive, and this will reduce the number of new loans (Arellano & Bond, 2018).

2.4 Annual Percentage Rate (APR):

The APR is a key tool for borrowers to make basic, informed decisions about their finances. An example of this is the APR, the true cost of borrowing, i.e. additional fees or costs associated with the loan. This is because it does not include only the interest rate, so lenders will need to disclose the APR to borrowers. This will allow them to compare the total cost of different loan options (Bodner, 2018).

2.5 Effective interest rate:

The concept of the effective interest rate is crucial in economics because it provides a more accurate measure of the true cost or return of borrowing or investing as the effective interest rate takes into account not only the nominal interest rate but also compounding factors and any additional fees or costs associated with the transaction (Gerardi et al., 2020).

For borrowers, the effective interest rate reflects the actual apparent cost of borrowing during a specific period within the borrowing terms (Arellano & Bond, 2018). It takes into account the compounding effect, which means that interest is calculated not only on the initial principal amount but also on the accumulated interest from previous periods. This compounding effect can significantly affect A large amount over the total amount repaid by the borrower (Haygood et al., 2022). For savers and investors, on the other hand, the effective interest rate will help in understanding how their money grows over time and thus will take into account the true compounding effect, which means that the interest earned in one period becomes part of the principal for the next period and thus leads to exponential growth in the investment or savings account (Bodner, 2018).

Individuals can make more informed decisions about borrowing, investing, or saving by looking at the effective interest rate. It allows them to compare different financial products and evaluate the true costs or returns associated with each option. That is, the effective interest rate provides a more accurate representation of the economic impact of financial transactions, assuming that the state guarantees a $1,000 loan (Gerardi et al., 2020). According to the following conditions:

The effective interest rate is 5% with an additional $50 one-time fee when you take out the loan. Calculating the effectiveness of the interest, you must take into account the interest of the surcharge.

Include the following: Effective interest rate = (1 + local interest rate / number of payments) ^ number of reasons for payment – 1 :For this reason, interest is calculated, therefore there is one period per year (number of reasons to pay = 1). The study helps in calculating effective interest: $EFF = (1 + 0.05 / 1)$ ^ $1 - 1 = 0.05$ or 5% Therefore you must also add additional fees to the cost of the loan. In this case, the additional surcharge is $50. Help us calculate the cost of the loan as: Loan cost = borrowing cost + additional fees = $1,000 + 50 = $1,050 and Efficient use of interest and amortization of the interest you will pay on the loan. In this case, you would pay 5% interest on $1,050, which is $52.5. when you effectively use the interest, you can see that the cost of the loan is $52.5, not just the $50 in additional fees (Bond & Van Reenen, 2017).

2.6 Inflation rate:

The inflation rate is closely linked to interest rates, and therefore inflation will erode the purchasing power of money over time. This is explained when interest rates are lower than the inflation rate and thus will lead to savers facing a negative real return, meaning that the value of their savings does not keep pace with rising prices (Portilla, 2023).

The empirical analysis in this case is based on vector autoregressions (VARs) where the baseline VAR is estimated using monthly data and includes six variables: monthly headline inflation, nominal interest rate (SELIC), output gap, inflation expectations for the next 12 months, and percentage changes Monthly changes in commodity prices, monthly changes in commodity prices. Percentage changes in the real effective exchange rate and when examining the impact of interest rate changes on various measures of inflation, including headline inflation, non-regulated price inflation, regulated price inflation, service price inflation, tradable goods inflation, and non-tradable goods inflation where Cross-correlation analysis gives that higher inflation leads to higher interest rates, while higher interest rates lead to lower inflation, which is consistent with the traditional view (Gerardi et al., 2020). The results indicate that there is a positive, statistically significant relationship between previous levels of inflation and the interest rate, as well as a negative, statistically significant relationship between previous levels of the interest rate and inflation (Robson, 2021). These results are consistent with the standard understanding of how monetary policy affects inflation, because they show that an unexpected decline in official interest rates leads to higher inflation in the near term, with VaR supporting the traditional view, noting that the data indicate that the impact of the reduction Unpredictability in interest rates on inflation tends to occur over time and even with the magnitude of the effect varying depending on the sector of the economy, the peak of the effect is likely to occur about nine months after the shock (Bhutta & Hizmo, 2021).

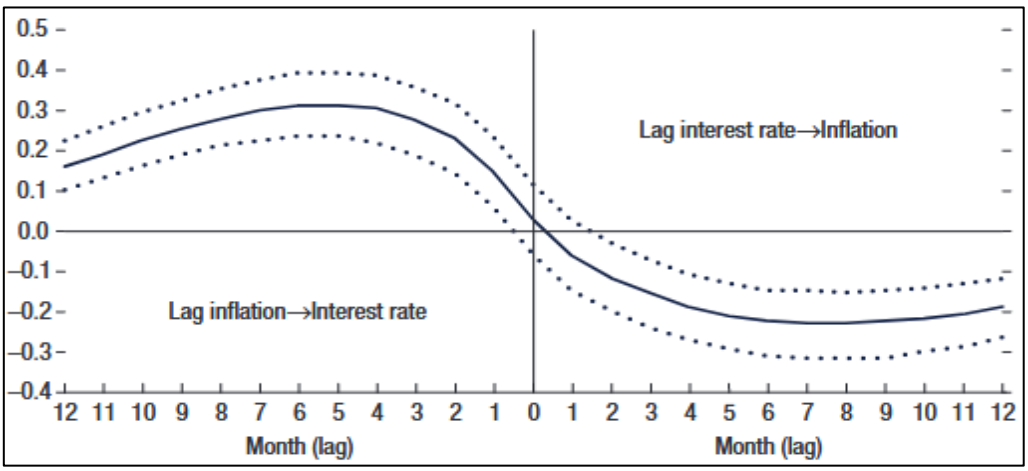

Figure 3: Relationship between the inflation rate and the level of interest rates set by central banks
Data source: Eurostat

In figure 3. the inflation rate is closely linked to interest rates, and therefore inflation will erode the purchasing power of money over time. This is explained when interest rates are lower than the inflation rate and thus will lead to savers facing a negative real return, meaning that the value of their savings does not keep pace with rising prices (Portilla, 2023). Correlation provides insight into how changes in inflation affect interest rates and vice versa when there is a positive correlation between headline inflation and interest rates (Gerardi et al., 2020). This means that as inflation increases central banks will respond by

raising interest rates to reduce inflationary pressures (Portilla, 2023). This is because higher interest rates can help slow spending and borrowing, which in turn can help reduce inflationary pressures (Gerardi et al., 2020) the fig (3) On the contrary, when there is a negative correlation between headline inflation and interest rates, this is an indication that as inflation decreases, central banks reduce interest rates to stimulate economic growth. Lower interest rates can encourage borrowing and spending and thus help boost economic activity and raise inflation (Little, 2018).

For the 20th to 80th percentiles, this indicates a range within the data distribution. He points out that the relationship between overall inflation and interest rates is analyzed for specific ranges of data between the 20th and 80th percentiles, and the relationship between overall inflation and interest rates can vary depending on various factors such as the state of the economy and monetary policy. Objectives and External Shocks This approach allows for a more focused examination of the relationship within a given range of data (Bhutta & Hizmo, 2021).

A central bank may choose to lower interest rates based on the belief that lower interest rates can stimulate economic growth by encouraging borrowing and spending, with lower interest rates potentially making them cheaper as well. For companies to borrow money for investment purposes. Which may lead to enhanced economic activity (White, 2023).

By lowering interest rates in the face of inflation, the Central Bank aims to create a more favorable borrowing environment, which can lead to increased consumer spending and investment and thus can help drive economic growth and perhaps mitigate the negative effects of inflation, noting that the decision to lower interest rates is in response Inflation is based on a careful assessment of multiple factors by central banks. They take into account economic indicators, market conditions and long-term goals before implementing any changes in interest rates (Portilla, 2023).

2.7 Risk premium:

Borrowers with low credit scores or companies in industries with high levels of risk may sometimes be exposed to higher interest rates due to the perceived probability of default (Bodner, 2018). From an economist's point of view it has been shown that according to the historical approach the risk premium can be beneficial because it takes into account Actual price fluctuations that occurred in the past, as find that the French economic situation since 1980 is a place There are many large fluctuations in interest rates, even if they are risk-free, so there was a significant rise in risk-free interest rates in France (Portilla, 2023). because it reached very high levels due to inflationary pressures and tight monetary policy in that period, and then interest rates began to gradually decline thanks to - the improvement of the economy and the adoption of more open monetary policies, as the data showed that the interest rate Risk-free can be more volatile than the current risk premium and this is partly due to economic and political factors that affect and respond to interest rates and inflation (White, 2023). If there are expectations that interest rates will rise in the future, this will therefore increase the current risk premium and If there are expectations that interest rates will fall in the future, this may cause the current risk premium to decrease (Robson, 2021).

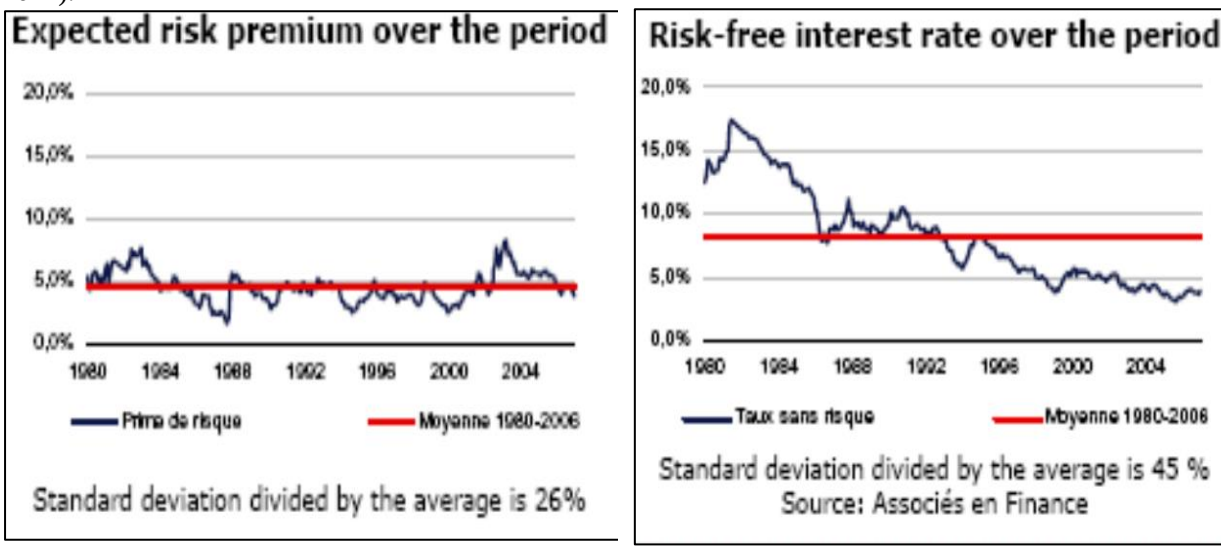

Figure 4: French economic situation since 1980 is in the risk premium.

Data source: Eurostat.

Whether it's choosing between a fixed or variable rate mortgage or comparing the APRs of different credit cards, understanding the different types of interest rates is crucial for individuals and businesses when making financial decisions. Understanding the nuances of interest rates helps borrowers secure favorable terms with lenders and price their products appropriately (Bodner, 2018).

The impact of rising interest rates on the economy

The basics of interest rates were explained previously, and this section will explain how rising interest rates affect the economy.

2.8 Borrowing cost:

The cost of borrowing for companies and individuals increases when interest rates rise, and this means that they will have to pay larger amounts as interest on the loans they obtain or when using credit (Little, 2018). Therefore, this increase in the cost of borrowing can negatively affect the economy in several ways, which are:

First, the higher cost of borrowing will reduce the demand for loans by individuals and businesses (Robson, 2021). Thus, when borrowing becomes more expensive, it will be more difficult for individuals to bear those additional costs. This can reduce personal consumption or their ability to invest in homes, cars, or businesses. Demand for consumer goods and services and for business investment declines (Chirinko, 2021).

Secondly, it can lead to an increase in unemployment rates and a slowdown in economic growth in general, as the economy can be affected by a slowdown in economic growth as a result of the high cost of borrowing, that is, when consumer consumption and commercial investment decrease, this will indicate that economic activity is slowing down, that is, companies will be affected by weak demand for Its products or services, making it less able to grow and employ more workers (Bodner, 2018) and this is when borrowing is expensive, investors may be reluctant to finance new projects or upgrade existing infrastructure and the increased cost of borrowing may be reflected in decreased investment in infrastructure and innovation (Robson, 2021). This can hinder economic development and technological improvements that could support future growth (Chirinko, 2021). Governments and central banks carefully follow these changes in interest rates and try to balance between stimulating economic growth, monitoring inflation, and stabilizing financial markets (Bodner, 2018). That is, the high cost of borrowing can lead to discouraging borrowing and slowing economic growth, and thus this reflects the relationship associated with the link between the cost of borrowing and economic activity (Dunne et al., 2019).

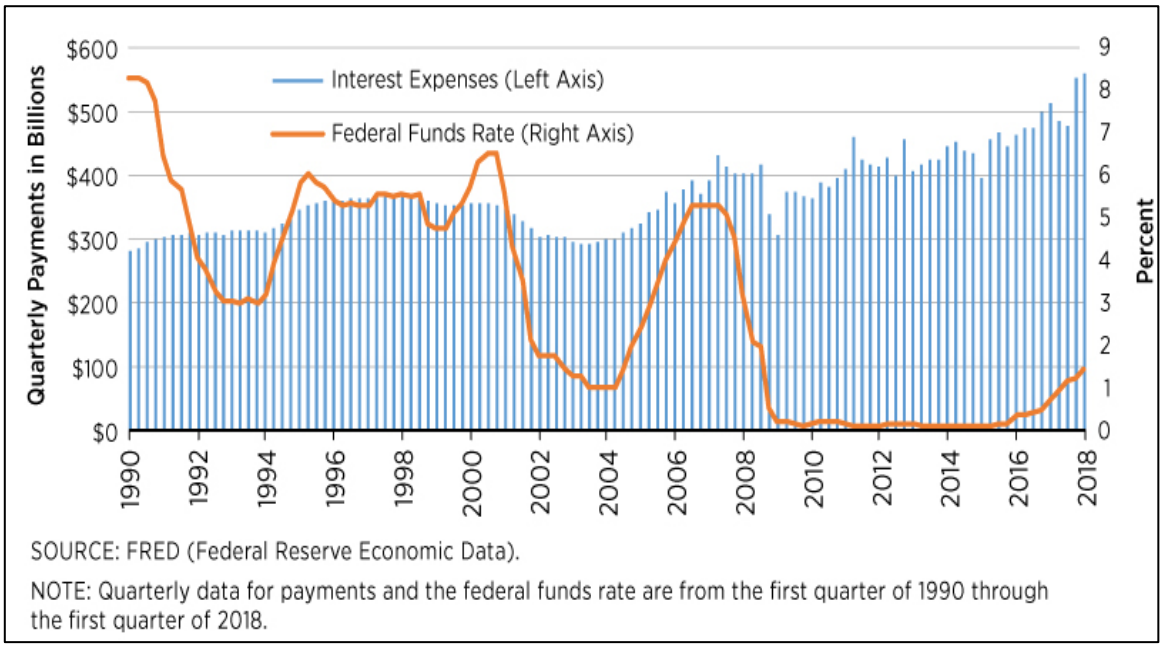

Figure 5: The relationship between the interest rate and the cost of borrowing.

The relationship between the interest rate and the cost of borrowing is not directly linear (Gerardi et al., 2020), but other factors may affect the cost of borrowing in addition to the interest rate, which are:

First, if debt is high interest payments will increase regardless of changes in the interest rate itself. Therefore, the total debt stock plays an important role in determining the cost of borrowing. For example, interest payments may increase due to increased government or personal debt, and thus will reflect an increase in the cost of borrowing. Borrowing in general (Robson, 2021).

Second, the maturity structure of the debt must be understood, which plays an important role in determining the cost of borrowing and thus the impact of the reserve base interest rate will be greater on the short-term interest rate (Chirinko, 2021).

Finally, the long-term interest rate is linked to many other factors in addition to the base interest rate (Gerardi et al., 2020). For example, expectations regarding inflation, economic growth, political stability, and global factors can affect the yield of long-term government bonds, so these changes in other factors can affect the cost of borrowing. The government directly (Kim & Ziobrowski, 2016). Therefore, the cost of borrowing is affected by multiple factors, including the interest rate, including the total debt stock, and the maturity structure of the debt (Enders, 2011).

2.9 Housing market:

Monetary decisions and economic policies of countries take into account any potential impacts on the housing market and real estate sector. Basically, any rise in the interest rate will also be accompanied by a rise in mortgage rates, so the cost of purchasing homes for individuals will rise, and thus this will lead to a decrease in demand for housing, Housing (Kim & Ziobrowski, 2016). This is explained by the fact that it becomes difficult for many people to bear the increasing costs of rising interest rates, so the housing market is among the sectors that are very sensitive to interest rate changes (Enders, 2011). The increasing rise in mortgage rates may also increase pressure on current homeowners, and therefore some people may find it difficult to pay the monthly installments due to increased interest costs, and this will lead to an increase in defaults and mortgage foreclosures (Arellano & Bond, 2018).

When there is any slowdown in the construction industry and a decrease in real estate prices, this will affect the economy in general, and thus the construction industry, which is an important source of jobs and economic growth (Kim & Ziobrowski, 2016). This will lead to a decrease in demand for housing, and thus real estate prices will decrease, and consequently It could happen. Negative impact on the labor market and investments (Chirinko, 2021).

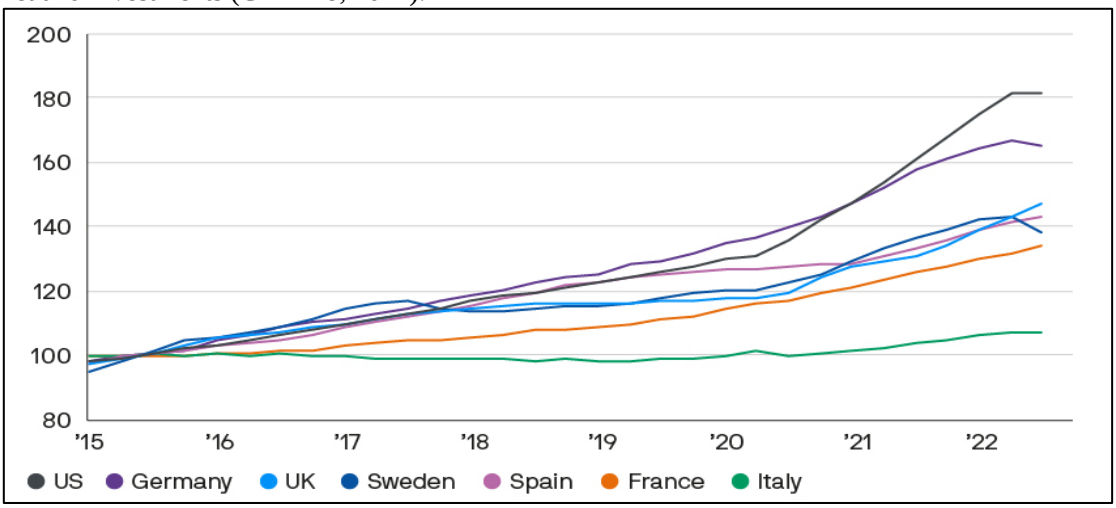

Figure 6: Mortgage Rates Rose.

Data source: Eurostat

Due to rising interest rates, mortgage rates have increased significantly. In the United States, mortgage rates have doubled, and the study compared them to their lowest levels after the spread of the Covid-19 pandemic (Kim & Ziobrowski, 2016). They have tripled in most European countries (Enders, 2011). The cost of purchasing homes has become unsustainable for many people as a result of the sharp rise in home prices over the past seven years with rising interest rates reducing the ability of individuals and people to purchase homes and properties to the lowest level since then. 2006 housing crisis (Hambur & Finlay, 2018). As shown in Figure 6, the real estate market saw a sharp decline in all transactions in

2022 as house prices fell. Pricing data in the second half of the year indicated a softening pricing environment in North America and Europe (Arellano & Bond, 2018). These changes show that the real estate market has witnessed major transformations as a result of the significant rise in interest rates and their fluctuations. The impact on the cost of purchase and people's ability to bear financial burdens and real estate debts led to a noticeable slowdown in market activity and a decline in house prices (Dunne et al., 2019).

When there is a need to analyze the impact of an increase in interest rates by 1 percentage point on the amounts of cash disbursement of housing and consumption stocks and how this affects the rate of economic growth (Hambur & Finlay, 2018), The study can be found according to the simulation in Table 2. percentage point increase in long-term interest rates is shown to lead to a 0.6 percentage point decrease in home equity funds in the following quarter. Consumption decreased by 0.18 percentage points over two quarters (Chirinko, 2021). Thus, the effect of increasing interest rates on the cash amounts of home equity, consumption will be negative, meaning that higher interest will reduce the cash amounts that the house can extract from the value of real estate assets, and thus consumption will be negatively affected and To analyze the effect of a one percentage point increase in interest rates on cash payments for housing and consumption where (Hambur & Finlay, 2018):

- ΔHEF: Percentage -point decline in home equity funds
- ΔC: decrease in consumption by one percentage -point
- ΔUSGDP: percentage-point decrease in the economic growth rate
- ΔIR: a one percentage point increase in interest rates

Therefore, the equation will be as follows:

$$\Delta HEF = \alpha * \Delta IR$$

Where α represents the coefficient or sensitivity of home equity funds to changes in interest rates (Chirinko, 2021). Given that a 1% increase in interest rates leads to a 0.6% decrease in home equity funds (ΔHEF) in the following quarter, the study will substitute these values into the equation:

$$0.6 = \alpha * 1$$
$$Solution\ for\ \alpha:$$
$$\alpha = 0.6/1$$
$$\alpha = 0.6$$

The coefficient α is therefore 0.6, indicating that for every 1 percentage point increase in interest rates, home equity funds will decrease by 0.6 percentage points and Likewise, the equation for the effect on consumption is (Dunne et al., 2019):

$$\Delta C = \beta * \Delta HEF$$

Where β represents the coefficient or sensitivity of consumption to changes in home equity funds and Given that a 0.6% decrease in home equity funds (ΔHEF) leads to a 0.18% decrease in consumption over two quarters (ΔC), The study substitutes these values into the equation (Enders, 2011):$0.18 = \beta * 0.6$

$$Solution\ for\ \beta:$$
$$\beta = 0.18/0.6$$
$$\beta = 0.3$$

Thus, the coefficient β is 0.3, indicating that consumption will decrease by 0.3 percentage points for every 0.6 percentage point decrease in home equity funds (Gerardi et al., 2020).

Table 2: Consumption and growth effects of a one percentage point increase in mortgage rates according to the simulation

Changes and impacts according to scenarios	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Change consumption relative to disposable income	95.0 to 93.20	95 .0to 93.20	95.0 to 93.20	95.0 to 93.20
Nominal income growth (percent)	5.1	3.50	5.0	3.50
Nominal consumption growth (percent)	3.0	1.50	3.0	1.50
Inflation	3.0	3.0	2.0	2.1
Real consumption growth (nominal consumption growth minus inflation)	0	-1.50	1.0	-0.50
Growth effect	0	-0.90	0.60	-0.33
Growth outside of consumption needed to achieve	7.50	9.80	6.00	8.35

2.10 Investing in business:

High interest rates can have a clear negative impact on business investment decisions because it will increase borrowing costs. It will also restrict economic growth and affect profitability (Gutiérrez & Philippon, 2016). Therefore, when borrowing costs rise, it will become very difficult for contracting companies and others to obtain an adequate share of financing (Gerardi et al., 2020). To implement new projects or expand their current operations, companies may find that they are unable to bear the high interest costs and thus will discourage their will to invest in new projects (Hambur & Finlay, 2018).

Also, when companies are affected by higher borrowing costs, this can lead to a decrease in capital expenditures, and thus companies will not be able to spend more money on purchasing a lot of new equipment or in order to expand the current facilities and operations that are currently operating, and this will hinder overall economic growth (Dunne et al., 2019). Therefore, it may decline business investment the pace and acceleration of economic growth will slow down completely as a result of these factors as shown in Figure 7; Thus, companies will be forced to increase the prices of their products or reduce other costs in order to compensate. Too many high interest costs and this hurts the competitive edge in the market (Gutiérrez & Philippon, 2016).

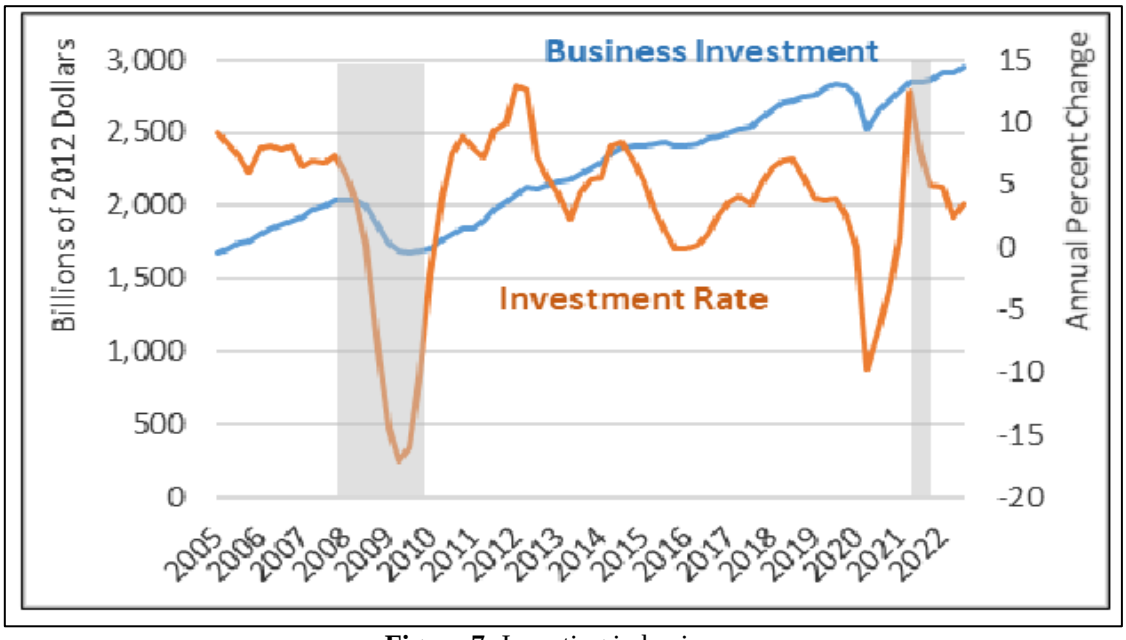

Figure 7: Investing in business.

Data source: Eurostat

2.11 Exchange prices

High interest rates potentially have two effects: a positive impact on the value of the local currency and a negative impact on foreign trade, as low interest rates can have a negative impact on the value of the local currency and a positive impact on foreign trade, as interest rates play a crucial role in determining exchange rates between currencies while Interest rates rise (Moons et al., 2020). In a particular country, that country becomes more attractive to foreign investors looking for higher returns on their investments (Dunne et al., 2019). The demand for the currency of the country in question increases, which leads to an increase in its value against other currencies (Gutiérrez & Philippon, 2016). When the value of the local currency rises, it will become cheaper for local citizens to purchase goods and services from abroad. Therefore, imports can increase, as companies and individuals can buy cheaper goods and services from abroad, but on the other hand, the reality of exporting can be negatively affected, making exports more expensive (Moons et al., 2020). As for foreign markets, they are less competitive and thus can lead to reduced exports and a negative impact on international trade (Dunne et al., 2019).

But on the other hand, when interest rates fall in a particular country, this country will become less attractive to foreign investors, and thus the demand for its currency will decrease, and thus this will lead to a decline in the value of the local currency against other currencies (Gerardi et al., 2020). Currencies, and when the value of the local currency declines, the competitiveness between exporting companies will increase and thus exports will become cheaper for foreign markets and more competitive externally, but imports will be affected, as purchasing goods, goods and services from abroad becomes more expensive for local consumers (Dunne et al., 2019). This study finds through Figure 8 that the data presented showed that interest rates in Poland, Hungary and Romania were higher than the reference value that was determined according to their relationship to their currency exchange rates (Gerardi et al., 2020). The highest long-term interest was in Romania compared to the reference value which at that time was 2.9%. Bulgaria, Croatia and Sweden recorded the lowest interest rates and thus the stability of their currency exchange rates, which were all less than 1%.

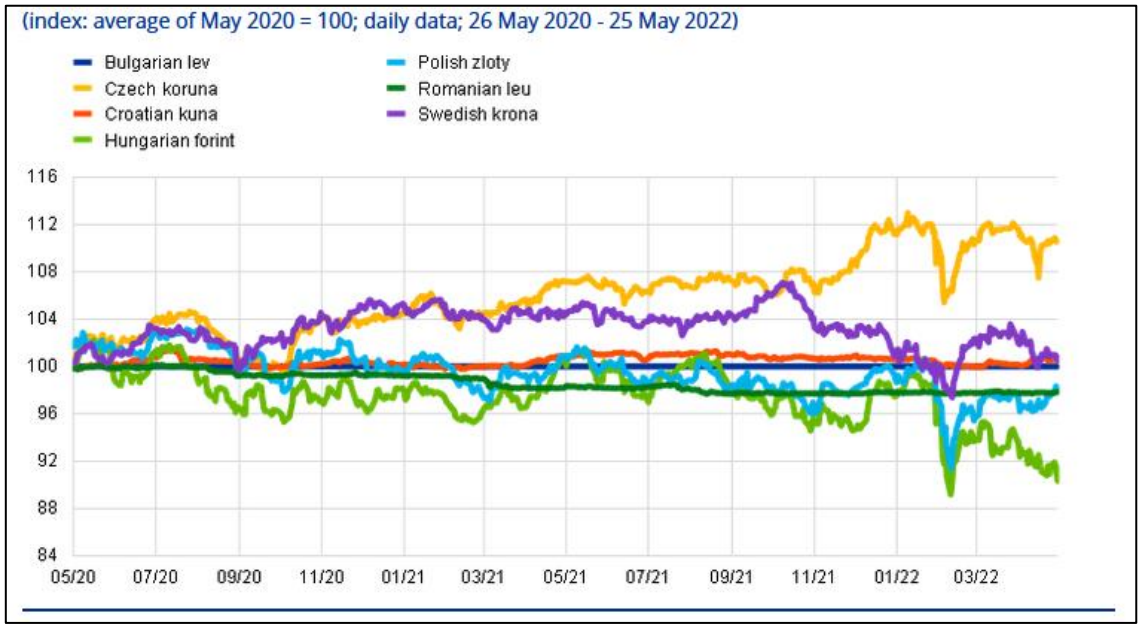

Figure 8: Exchange prices.

Data source: Eurostat

2.12 Consumer spending:

The decline in consumer spending has a significant and multifaceted impact on the economy, as any decrease in corporate revenues exacerbates financial problems, as consumer spending is considered an important factor in supporting stability and economic growth in many different economic sectors. When interest rates rise, borrowing will become more expensive, which means that consumer spending, the main underlying driver of economic growth, may decline (Chirinko, 2021).

Individuals and families may be less inclined to borrow and make large purchases, such as new homes or cars, if they incur additional debt (Gerardi et al., 2020).

Economic sectors are affected by a decline in consumer spending, the biggest example of which is the retail sector. Popular demand for many consumer products, such as clothing and electronics, may decline. Consequently, sales and profits for companies in this sector will decrease, which affects corporate profits and may lead to a decrease in employment opportunities (Chirinko, 2021).

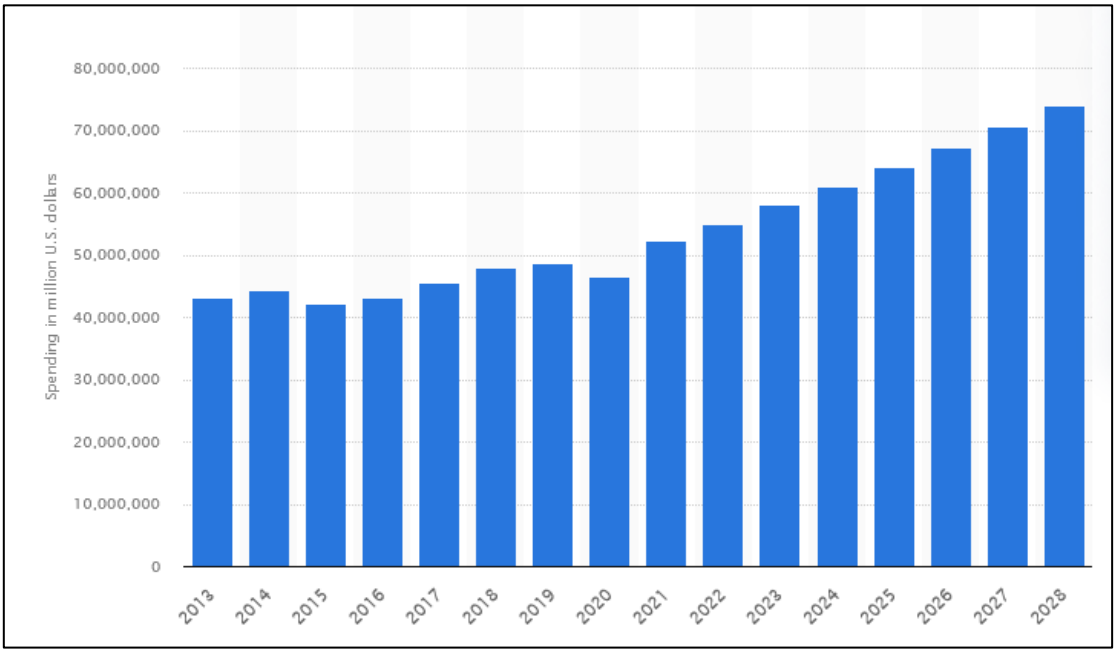

Figure 9: Total consumer spending worldwide from 2013 to 2028 (in million U.S. dollars).
Data source: Eurostat

3. The Impact Of Interest Rates On Holders Of Government Debt

Interest rates have a significant impact on both government debt holders and homeowners with mortgages, so fixed-rate mortgages have something to do with the rise.

3.1 Fixed Rate Mortgages

The effect of interest rates on government debt is related to investment returns and the general stability of financial markets, as holders of government debt who hold bonds or treasury bills are affected by changes in interest rates (Kim & Ziobrowski, 2016). If interest rates rise, the value of existing government debt will fall because investors can get higher returns elsewhere, and this will indicate that if they sell their holdings of government debt before maturity, they will therefore receive a lower financial return. What they paid initially, and vice versa. In this case, when interest rates fall, the value of government debt will rise, thus resulting in capital gains for its holders (Chirinko, 2021).

In the case of a fixed interest rate, homeowners have the advantage of knowing exactly how much they have to pay each month, and this will give more stability to their financial planning (Gerardi et al., 2020). This study says that homeowners with fixed-rate mortgages are less affected by changes in interest rates. This is because with a fixed-rate mortgage, the interest rate is fixed for the life of the loan, usually 15 or more up to 30 years. Therefore, any change in the interest rate will not be affected because the monthly mortgage payments of homeowners will not be affected (Dunne et al., 2019).

The extent of the impact on homeowners with ARMs depends on the specific terms and modifications to their mortgage contracts. Homeowners with adjustable-rate mortgages (ARMS) are more vulnerable to interest rate changes (Gerardi et al., 2020).

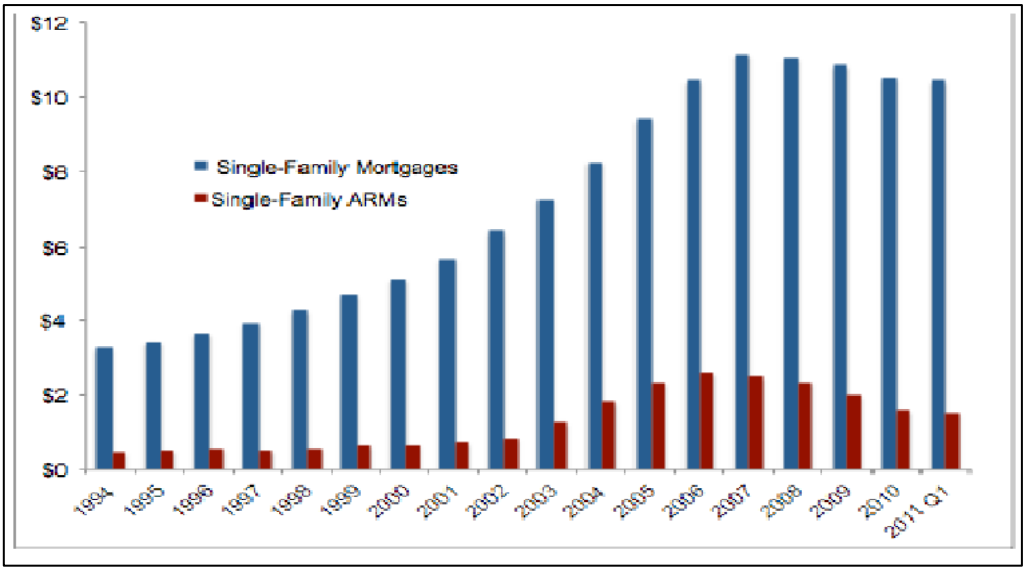

Figure 10: Single-family and premium ARM mortgages.
Source: Healey, T. J, & Dhungana, S. (2013). A World with Higher Interest Rates (M-RCBG Associate Working Paper Series, No. 22). Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School.pp.34

An adjustable-rate mortgage has a higher rate and interest rates can change periodically based on the index. If interest rates rise, homeowners' monthly mortgage payments will increase (Gerardi et al., 2020).

Then the pressure on those obtaining these loans will increase, and vice versa. It is also clearer that it is necessary to estimate the total amount of mortgage loans at adjustable interest rates. An example is the United States, where this can be done by analyzing statistics provided by the Federal Housing Finance Agency, which focuses on collecting data on family mortgages and specifically for individual properties (Bond & Van Reenen, 2017).

Figure 10 shows the trend for single-family adjustable-rate mortgages over time. During the mortgage boom, the number of ARMs increased significantly, but in recent years the number of ARMs has decreased (Arellano & Bond, 2018). This study notes that since the second quarter of 2012, the value of single-family mortgages has reached $1.48 trillion, or about 14% of the total single-family mortgages outstanding in the United States, as this indicates that a large percentage of homeowners have mortgages with outstanding interest rates to edit (Gilchrist & Zakrajšek, 2017). As for current interest rates relevant to the discussion, the national average mortgage contract rate offered by the Federal Housing Finance Agency (FHFA) is 3.44%. The 12-month LIBOR has fallen to around 1%, an important reference rate. This decrease is due to the stimulus policies implemented by central banks. And in the United States and Europe, as shown in Figure 11.

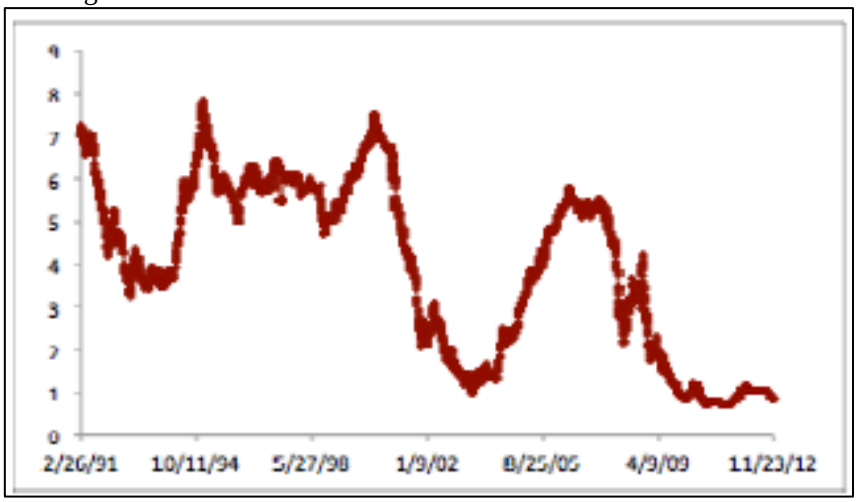

Figure 11: 12-month London interbank lending rate

Source: Healey, T. J, & Dhungana, S. (2013). A World with Higher Interest Rates (M-RCBG Associate Working Paper Series, No. 22). Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School.pp.35

The potential impact of higher interest rates on homeowners with adjustable-rate mortgages is clear and could pose financial challenges for them (Caballero, 2022). Higher payments may lead to increased delinquencies and foreclosures due to higher interest rates resulting in higher monthly mortgage payments for homeowners. homes, which affects both individual homeowners and the broader housing market and can affect holders of government debt. If interest rates rise, the value of outstanding government debt will decrease (Gilchrist & Zakrajšek, 2017).

Because margin rates remain unchanged when market interest rates rise, an increase in market interest rates will result in a proportional increase in total ARM interest rates (Bond & Van Reenen, 2017). The simplest example is that if market rates rise by 500 basis points (5 percentage points), interest payments to borrowers will increase by 5 percentage points (Caballero, 2022). Marketplace lenders may use different indexes and marginal rates in setting interest rates for their adjustable rate mortgages (ARMs). Case ARMs typically have index rates to which margin rates are added and given the assumption that current ARM rates average around 5%, they are low, but a 500-basis point increase in interest rates would nearly double the interest payments of the average mortgage borrower, which is a significant increase in interest payments and could push many homeowners into delinquency and defaulting on their mortgage payments (Little, 2018).

3.2 Owners Of Mortgage-Backed Securities

Rising interest rates are an indicator that institutions that hold mortgage-backed securities are being affected, because higher interest rates can affect the value of their assets and liabilities. Being able to differentiate between MBS based on adjustable rate mortgages (ARMS) and those based on fixed rate securities is important due to the lack of available data (Caballero, 2022).

Rising interest rates can have impacts on the value and performance of holdings of mortgage-backed securities (Gilchrist & Zakrajšek, 2017). Higher rates may cause the market value of mortgage-backed securities to decline. This will affect the total value of the institutions' assets, and will also increase the yields on newly issued mortgage bonds. This may affect the demand and pricing of existing mortgage securities in the secondary market (Enders, 2011).

This is demonstrated by the Federal Reserve which is one of the important players in the mortgage debt market, especially in the last five years. Before 2009, the Fed did not own any MBS. Their ownership has steadily increased and peaked at about $1.1 trillion in 2010. As of October 2012, the Federal Reserve owned about $800 billion of MBS (Gilchrist & Zakrajšek, 2017).

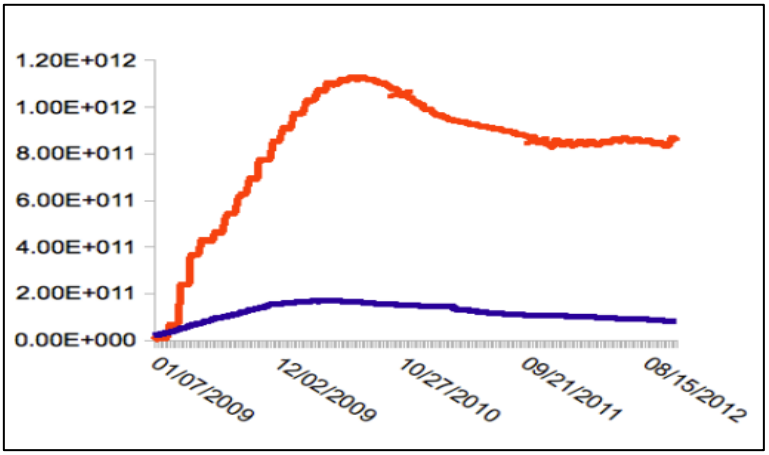

Figure 12: Federal Reserve MBS and Agency Debt Holdings

Source: Healey, T. J, & Dhungana, S. (2013). A World with Higher Interest Rates (M-RCBG Associate Working Paper Series, No. 22). Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School..pp.36

3.2.1 Effect of Rise in Rates for Mortgage Security Owners

The impact of rising interest rates is different for holders of fixed-rate mortgage-backed securities (MBS) and adjustable-rate mortgage-backed securities (ARMS) (Caballero, 2022).

- As for MBS backed by mortgages and ARMs, the impact of rising interest rates can be significant. This is because interest rates on ARMs will increase or decrease (Cockerell & Pennings, 2007). They are variable and are often linked to a base reference rate such as LIBOR. As interest rates rise, borrowers' mortgage payments will rise and this in turn can increase the risk of default on these mortgage loans. As default rates rise, the value of mortgage securities backed by asset management instruments will decline. This decline in value would reduce assets and potentially impact institutions holding such mortgage-backed securities, reflecting increased credit risk (Belke, 2017).
- As interest rates increase, the effect of higher interest rates on mortgage securities backed by fixed-rate mortgages is similar to the effect of government debt. Newly issued fixed-rate mortgages will carry higher interest rates, making them more attractive to investors than existing mortgage securities with lower yields (Cockerell & Pennings, 2007). This declines the demand for securities backed by existing securities may lead to a decline in their market value and thus a loss of valuation for the holders of these securities, including institutions (Caballero, 2022).

4. The Impact Of The Change On Defined Benefit Pension Plans

Rising interest rates can have a significant impact on the funding of defined benefit retirement plans. Defined pension plans are retirement plans where employers promise to provide employees with a specified benefit amount upon retirement. Funding these plans involves setting aside money and investing it to generate returns over time (Belke, 2017).

Defined benefit (DB) plans are retirement plans where the amount of benefits is determined based on the employee's salary and years of service. The percentage of benefits may increase with the length of service. The impact of interest rates on DB plans is significant because they contain liabilities and assets, which is one of the serious problems faced by DB plans. companies currently (Cockerell & Pennings, 2007). It is a lack of funding due to low interest rates. Previously, when interest rates were higher, plan liabilities were calculated based on those rates (Dunne et al., 2019), but despite prevailing interest rates being low, these plans struggle to generate and could The returns necessary to meet its obligations and the lack of funding when the total value of the retirement plan’s assets is insufficient to cover its obligations, The study finds that liabilities are future benefit payments owed to retirees, and low interest rates make it difficult for retirement plans to collect returns at the rates required to meet their obligations(Caballero, 2022). The greatest evidence of this was in In 2005, when it was estimated that the overall underfunding of all insured plans in the United States, this included $450 billion for single-employer plans, where a single company sponsors the plan, and $150 billion for multi-employer plans, where multiple employers participate in plan and find that these issues affect DB plans, not defined contribution (DC) plans (Cockerell & Pennings, 2007).

5. Impact On Social Security

Social Security relies on existing payroll taxes from the working population to fund benefit payments to retirees and he Old Age and Survivors' Insurance (OASI) Trust Fund provides benefits to retired workers, their families, and the families of deceased workers (Caballero, 2022). The Disability Insurance (DI) Trust Fund provides benefits to workers with disabilities and their families, and the majority of the money it disburses More than 98 percent of Social Security in 2011 was going to benefit payments, with about 67 percent going to retired workers, 15 percent to survivors, and 18 percent to the disabled and their families (Belke, 2017). Among these payments, trust fund income comes from payroll taxes and is invested in securities. Private financial securities and these securities guarantee both capital and interest and are supported by the federal government and the interest rate on these securities is determined through a formula that takes into account the level of the general interest rate in the United States. The rate can vary over time, such as decreasing to 2.41% in in 2011 and then decreasing to 1.6% in 2012 (Dunne et al., 2019).

The number of people receiving benefits is expected to increase significantly due to factors such as the retirement of the baby boom generation (Caballero, 2022). This demographic shift, along with

economic measures such as reducing taxes on Social Security payrolls, is putting pressure on the funds' financial resources, the study noted that between 2010 and 2011, total Social Security expenditures exceeded non-interest income for the first time. since 1983.

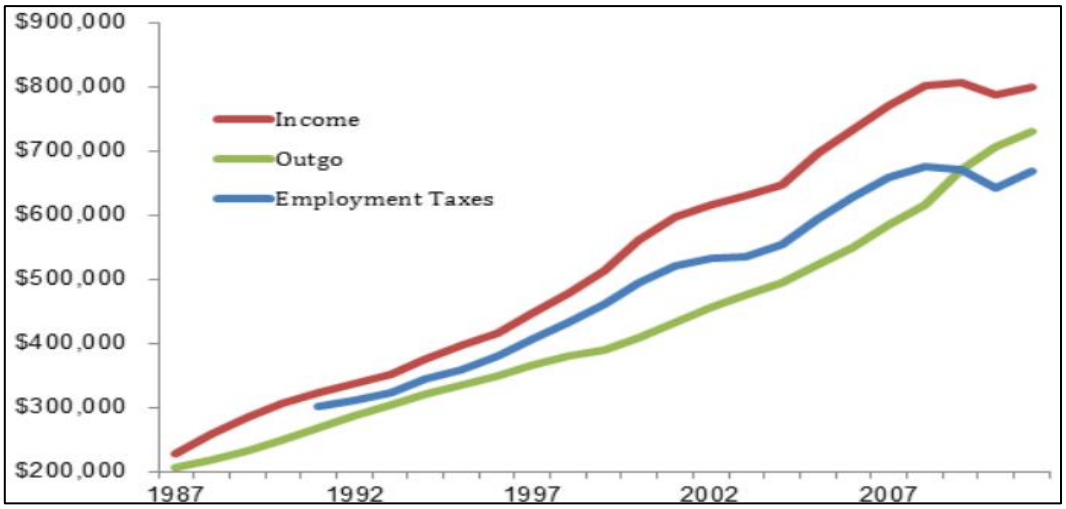

Figure 13: Income and Expenses of SSA

Source: Healey, T. J, and Dhungana, S. (2013). A World with Higher Interest Rates (M-RCBG Associate Working Paper Series, No. 22). Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School.pp.44

Increased benefits can contribute to increased pressure on the need to additionally tax benefits when interest rates rise and will include the total assets of social funds as well. A simulation model was created specifically for data for the years 2012-2032 provided by the Social Security Administration (SSA) (Robson, 2021).

The results clearly show, as shown in Figure 14, that income from investments will not decrease by 2032, but the rise disappears completely when comparing the net present value (NPV) of interest income between 2012 and 2032, as interest rates were raised, for investment investments and to take into account the significant increase in Prices A model has been created for an increase in interest rates of 500 basis points (5 points in the future) and it reveals a comparison of future indicators between current expectations and our expectations with the most important observed news (Cockerell & Pennings, 2007), which is better than depletion of assets until 2032, and the increase in interest rates that could have an impact is controlled. Positive on Social Security's financial vision which gives reasonable support to meet clients' future needs (Caballero, 2022).

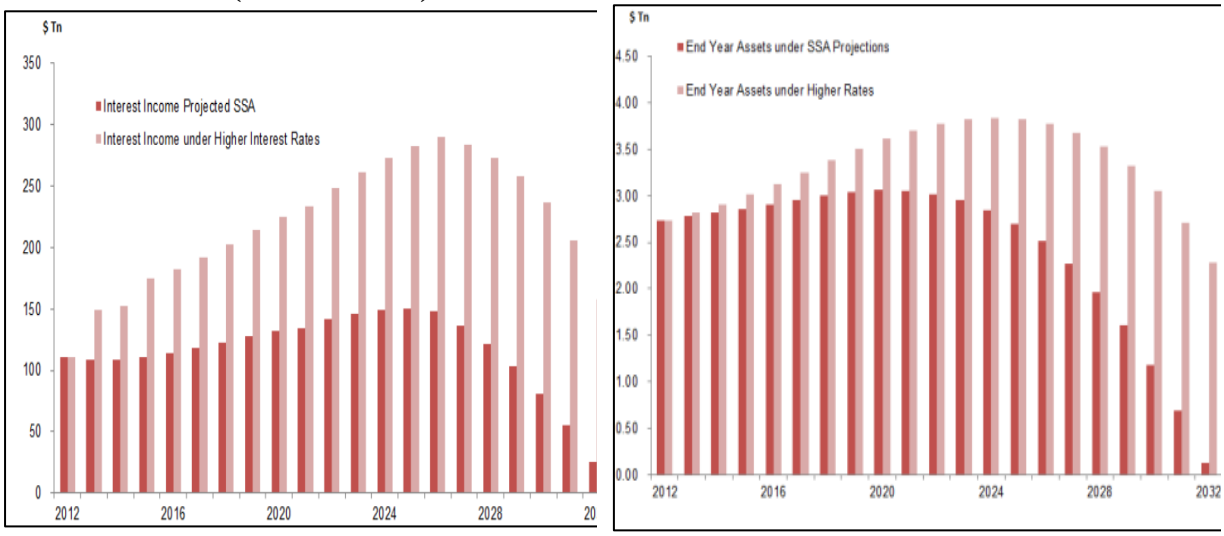

Figure 14: Interest Income- Fund Asset Simulation

Source: Healey, T. J, & Dhungana, S. (2013). A World with Higher Interest Rates (M-RCBG Associate Working Paper Series, No. 22). Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School.pp.44

6. Impact On Student Debt

High interest rates affect student debt by increasing borrowing costs for students and may lead to a higher rate of student loan delinquency (Robson, 2021). Since the relationship between the prime interest rate and student loan rates shows the impact of broader economic factors on the cost of borrowing for students for educational purposes, when interest rates rise this will lead to higher interest rates (Caballero, 2022). Borrowing costs for students who take out loans to finance their education and this can lead to an increase in the total amount of student debt owed by borrowers (Gilchrist & Zakrajšek, 2017). Higher interest rates will also impact the delinquency rate on student loans, and as the cost of borrowing rises, some borrowers may have difficulty repaying (Robson, 2021). Their loans are on time and this can lead to a high delinquency rate, which refers to the number of loans that are past due or have defaulted. It represents the relationship between the prime interest rate and the interest rate charged on student loans and the prime interest rate is considered a benchmark for interest rates (Belke, 2017) Interest in the Economy Changes in the prime interest rate can affect the rates offered on different types of loans as shown in Figure 15.

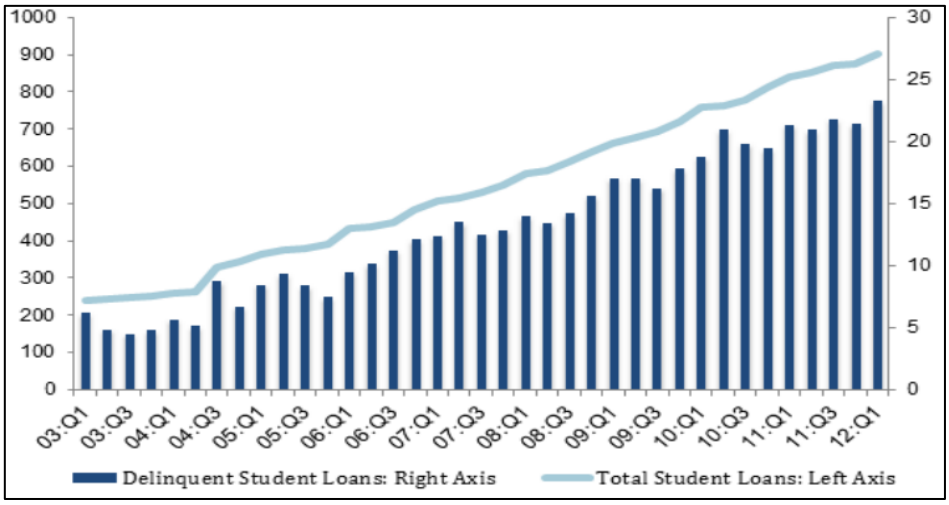

Figure 15: Student Debt Stock and Delinquent Loans Stock

Source: Healey, T. J, and Dhungana, S. (2013). A World with Higher Interest Rates (M-RCBG Associate Working Paper Series, No. 22). Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School.pp.46

7. Conclusion

Interest rates have a significant impact on the overall economy because they provide opportunities and pose multiple challenges. Hence, the individual and the company must have a clear understanding of the effects of these rates and how to deal with them effectively to achieve the best economic and financial results. The study showed that there are different types of interest rates, e.g. Prime interest rate, fixed interest rate, and variable interest rate. A clear understanding of each type and its importance in the financial scene is formed, as the study reached the conclusion that interest rates play a vital role in the economy because they affect borrowing costs and actually affect investment returns and general economic activity. Hence, the study confirmed that it is necessary to understand the basics of interest rates, including This includes how it is determined and the various factors that affect it.This is because it is extremely important for individuals and companies alike.

When it comes to high interest rates, there can be multiple opportunities and challenges. Higher interest rates can provide higher returns on savings, improve the profitability of some industries, and

\provide better investment options. High interest rates can lead to risks such as higher borrowing costs, financial instability, and decreased investment and employment.

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