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**INFLATION DYNAMICS IN WESTERN COUNTRIES: ANALYSIS OF EFFECTS OF COVID 19
AND THE RUSSIAN UKRAINE WAR.**

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DEDICATIONS

With great love and appreciations, I dedicate this achievement to myself for pushing through challenges. To my parents, Jumatatu Kilusu Shamunge and Janeth Naweriyai and my siblings whose unconditional love and support made it possible.

Ruth Matighi

With full of love, I dedicate this work to my late dad, my loving mum Rosemary, my twin, my siblings, extended family, teachers, friends and my co-author for believing in my dreams. In addition, special dedications to the family of Hon. Genesio Mugo, Mr. John Muchiri, Mr. Mutero Ndi-Wa, the late Mr. Stephen Nyaga and Canon Emeritus Difatha Nyaga for their immeasurable support.

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LIST OF ABBREVIATIONS

CPI- Consumer Price Index

HICP-Harmonized Index of Consumer Prices

USA-United States of America

EA-Euro Area

SVAR-Structural Vector Auto Regression Model

CEC-Central European Countries

ECB-European Central Bank

GDP-Gross Domestic Product

PEPP-Pandemic Emergency Purchase Program

FED-Federal Reserve

SGP-Stability and Growth Pact

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GENERAL INTRODUCTION

"Inflation is not only useless for economic growth. As long as it exists, it is the enemy of economic growth" Henry Hazlitt

The dynamics of inflation can be described and characterized by a significant pass-through of external shocks and changes in inflation expectations on prices, with a certain degree of persistence of inflation. The 2020 pandemic marked the beginning of a "hurricane of inflation," amid extreme economic volatility and geopolitical instability not seen in decades. Indeed, global inflation persists and has risen sharply in 2022. Following the declaration of the COVID-19 pandemic by the World Health Organization on March 11, 2020, many advanced economies have experienced price increases. An intense debate has erupted on how to explain the post-COVID inflation episode (Ball et al., 2022, Celasun et al., 2022, Cerrato and Gitti, 2022, Harding et al., 2023, Shapiro, 2022).

Pandemic-related business closures have caused disruptions in the supply chain and the Russian invasion of Ukraine has been an existential economic shock for Western countries that has affected energy, raw material and food prices. This has created extreme uncertainty and, as a result, volatile expectations about the economic outlook for various countries. This conflict has caused a major shock to commodity markets, disrupting global patterns of trade, production, and consumption in a way that is expected to keep prices high for years to come (Valentina Stoevska, 2022).

In addition, some economists argue that fiscal and monetary policies have been inflationary (Bordo and Levy, 2022, Labonte and Weinstock, 2022) and that labor market resilience is the consequence of a decline in labor force participation (Labonte and Weinstock, 2021).

The inflation rate in March 2022 was more than twice the rate of 3.7% recorded in March 2021. This 5.5 percentage point increase in the CPI between March 2021 and March 2022 was the largest increase over a 12-month period since the series began in January 2019.

In most developing countries, inflation rates, which are generally higher and more volatile than in developed countries, have also risen sharply to double digits. Indeed, from May to September 2022, inflation is above 5% in 88.9% of low-income countries, 91.1% of lower-middle-income countries, and 96% of upper-middle-income countries (World Bank, 2022).

According to Bernanke and Blanchard's analysis, they argue that energy price shocks were the main cause of the high inflation rates from late 2021 to mid-2022, which tend to decline in the second half of the year during this period. The combined effects of increased demand for durable goods and shortages caused by supply chain disruptions were the main source of inflation in the second quarter of 2021.

There is a vast theoretical and empirical literature that has identified many determinants explaining inflation fluctuations and trends. Indeed, inflation can be caused by many factors related to supply or demand in the short, medium or long term. In the long run, it is widely recognized that inflation is essentially a monetary phenomenon caused by excessive money supply/creation (Friedman, 1956). In the short run, it is established that changes in price levels are influenced by determinants such as changes in global supply and demand, changes in commodity prices, technological change, exchange rate fluctuations, and climate shocks (Kinda, 2011).

Various research and analysis has been done and there is an argument that despite the war against COVID-19 and Russia in Ukraine, there are many factors that may have contributed to the rise in inflation in Western countries between 2020 and 2024. Despite the severe negative consequences of the COVID-19 crisis and the Russia-Ukraine crisis, we see that some Western countries have recovered very quickly by stabilizing their inflation rates, while others are lagging behind. This has created a big difference in inflation rate margins and the inflationary effects of these crises have differed from country to country, although they have suffered the same crises related to COVID-19 and the Russia-Ukraine war. This perplexity leads us to a central inquiry that constitutes the fundamental essence of our research:

Does the dynamics of post-crisis inflation in Western countries follow the theoretical pattern described by the literature?

We assume that:

H1: The rise in energy prices caused by the Russian-Ukrainian war, and the recovery of post-Covid-19 economic activity has led to an increase in inflation.

H2: The economic stimulus policies launched by the governments of Western countries have encouraged inflation.

Our secondary questions are;

How did the Covid-19 pandemic affect inflation rates in Western countries, and what were the underlining drivers of these changes?

How did monetary policies responses to the pandemic impact inflation in Western countries?

Our methodology is based on literature review, descriptive analysis and econometric analysis in order to carry out this study and to verify all the hypotheses that have been proposed.

The first part consists of identifying the main theoretical concepts related to our study. The second part constitutes our empirical study. Indeed, we will make an estimate that consists of applying a generalized moment model for a dynamic panel on a sample of Western countries. The study covers the period of the 2020-2024 analysis (in quarterly data) which corresponds to the context of our study.

This work is/will be divided into 3 chapters: Chapter 01 will focus on the concepts of inflation, the different theories that explain inflation and the literature review of empirical studies during the pre- and post-Covid era in Western countries. Chapter 02 will focus on graphical representation and descriptive analyses and the last chapter will focus on empirical analyses of the inflation dynamics of different Western countries.

CHAPTER 01: THEORITICAL FRAMEWORKS OF INFLATION

Introduction

Inflation is one of the most widespread economic phenomena, it is at the same time simple to observe, delicate to measure and difficult to explain. Inflation has varied causes and consequences that are sometimes harmful and sometimes beneficial.

In this chapter we will present the theoretical aspects of inflation. We will begin by defining what inflation is, the different theories explaining inflation and some literature reviews done in inflation.

I. Concept of inflation

I.1 Definition of Inflation

In economics, inflation is defined a sustained increase in the general price level of goods and services in an economy over a period of time. It is measured as an annual percentage increase. When the general price level rises, each unit of currency buys fewer goods and services. This implies that inflation reflects a reduction in the purchasing power per unit of money. Inflation can also be thought of as the devaluation of money.

Different definitions of inflations have been given by different Economists some of which are as follows:

1. In the words of Peterson, “The word inflation in the broadest possible sense refers to any increase in the general price-level which is sustained and non-seasonal in character.” (Peterson, 1974)
2. According to Coulborn inflation can be defined as, “too much money chasing too few goods.”
3. According to Samuleson-Nordhaus, “Inflation is a rise in the general level of prices. Inflation is typically a broad measure, such as the overall increase in the cost of living in a country. Inflation is generally defined as the continued increase in the average prices of goods and services in a given region (Aaron O'Neill, 2025)

4. As per Johnson, “Inflation is an increase in the quantity of money faster than real national output is expanding”. (Johnson's, 1972)
5. Keynes has presented his view that true inflation is the one in which the elasticity of supply of output is zero in response to increase in supply of money.
6. G. Ackley defined inflation as ‘a persistent and appreciable rise in the general level or average of prices. (Ackley, 1961, p. 421) , (YVES, 2007).
7. It is a global imbalance which results in a general increase in prices. Inflation involves all parts and all mechanisms of the economy (production, income, prices) (Joël JALLADEAU, 1998)

While measuring inflation, we take into account a large number of goods and services used by the people of a country and then calculate average increase in the prices of those goods and services over a period of time. A small rise in prices or a sudden rise in prices is not inflation since they may reflect the short-term workings of the market.

II. Theories of inflation

II.1 The quantity theory of money: Inflation is determined by the money supply.

The quantity theory of money views inflation as primarily a “monetary” occurrence whereby the influence of the amount of money in the economy takes precedence over all other factors like income levels, demand for goods, and frequency of spending. Dramatic increases in the money supply can cause a notable shift in prices. If the money supply doubles, according to the theory, price levels are expected also to double. Inflation, therefore, is first and foremost a monetary matter. (M. Friedman, 1976)

Milton Friedman argues that control of money supply is significant in stabilizing long term prices. To achieve this price stability, it is necessary to increase the money supply at a rate matching economic expansion. (Milton, 1969)

Economists criticise that consumer demand and wages drive economic activities and not just money supply. Increasing money supply alone may not boost demand of consumption without actual economic growth. (BEZBAKH, 2006)

II.2 The demand-pull theory: The cost of goods and services rises when demand is greater than the available supply.

John Maynard Keynes's theory of economics, claims that aggregate demand influences output and inflation. Keynes believed that increasing aggregate demand and expenditure is key to boosting economic growth from a point of recession. According to Keynes's theory, the government needs to spend money in order to get money flowing in the economy. This has usually taken the form of government infrastructure projects to boost employment. Newly generated income can boost demand for consumer goods, which can increase spending and consumption.

Keynes believed that investments and consumption are impacted by interest rates. Lower interest rates encourage spending and investment while higher rates interest encouraging savings over consumption. (Bremond, 1984). Increased aggregate demand can surpass supply, causing prices to rise. This approach allows governments to influence the economy through fiscal policy. (Keynes, 1936)

II.3. The cost-push theory

The cost-push theory concerns the impact of production costs. It assumes the prices of goods are determined primarily by their manufacturing costs. When manufacturers have to pay more for materials, they sometimes transfer the extra costs to consumers by raising the price of produced goods.

The rise in consumer prices can also be associated with a rise in wages, sometimes causing a "price-wage spiral. "This price wage spiral occurs when rising consumer prices leads to higher wage demands, which in turn drive up prices further. The price-wage spiral tends to proceed more rapidly at higher and not lower levels of economic activity. (Phillips, 1958, p. 283)This creates a cycle of inflation where prices increases and wage hikes feed into each other.

II.4. The structural theory: Inflation is caused by “structural” weakness in a country’s capacity to produce goods or maintain an adequate flow of supply.

This theory claims that it’s much easier for employers to increase wages than reduce them, as workers will strongly fight the latter. If business productivity decreases, companies are more likely to lay off workers than to decrease worker pay across the board. But if wages continue to boost demand amid low production of supply, the resulting inflation erodes real wages. Wages may be “nominally” the same, but their purchasing power declines, resulting in what’s essentially a wage cut.

Structural theory of inflation may concern countries, where under productivity and trade imbalances cause inflation, as imports outpace exports leading to currency devaluations and higher domestic prices. Inadequate infrastructure, capital and human resources contribute to under productivity and inflationary pressures.

III. Revue of the literature of empirical studies

Inflation dynamics during and after the Covid-19 have been examined by empirical studies in pursuit to identify the key drivers of inflation and its effects in the economy.

Research carried out in France by analysing variables in understanding causes and effects of inflation shows that France inflation rate increased from 2.1 % in 2021 to reach 5.9% in 2022 and 5.7% in 2023. It was noted that several factors played a role in this increase such as the labour market tensions, supply chain disruptions and energy price shocks. Energy price shocks have direct and indirect effect on inflation as energy is a key factor for many goods and services. Furthermore, an increase in the price of energy can lead to higher wages, triggering a price wage loop. (Pierre Aldama, 2022)

In order to isolate the factors that led to the origin of, Bernanke and Blanchard (2023) proposed a semi-structural econometric model initially applied to American case and they found out that commodity price shocks and supply chain disruptions drove US inflation while labour markets tightening wasn’t a main factor until 2023. The ongoing inflationary pressures were as a result of the persistence in higher wages.

This study highlights complex factor driving inflation post pandemic, providing insights into inflations impact on economies and informing strategies to minimize its effects and promote economic stability. To develop effective policies, the research underscores the importance of understanding inflation's causes.

A study applied to France by the use of the Bernanke and Blanchard (2023) model with quarterly data from 1990 to 2023 found out that energy price shocks in 2021 and food price shocks in 2022 drove inflation. Due to the low indexation and anchored inflation expectations, supply chain shocks had a weak effect and no price wage spiral occurred. Sustained inflation could be caused by persistent labour market tensions. Another study by Ehsan Ebrahimi and al found that lockdowns affected supply and demand, that led to short term price inflation for certain goods. Some of the factors that contributed to inflation included: price gouging labour shortages and reliance on imported goods. Countries that are dependent on migrant workers experienced price increase and supply disruptions. The duration and generosity of unemployment benefits could be noted to have an impact on the severity of supply disruptions. To developing countries with and emerging market economies were vulnerable to imported inflation and exchange rate pass - through. These studies outlined the complex drivers of inflation during the pandemic as energy, food price shocks, labour market dynamics and supply chains disruptions played significant roles in driving inflation. The findings had implications for economic policy and inflation management and effective policy responses require understanding of these complex factors.

Due to fear of supply disruptions, countries may experience a hoarding equilibrium in international trade. This can lead to prices spikes for essential goods like food and medical supplies. Measures such as international coordination, temporary price controls, and targeted transfers can help to address this matter. Tapping into emergency stocks and reducing taxes on essentials can also prevent speculative price bubbles. The COVID 19 pandemic and Russian invasion of Ukraine contributed to high inflation. Energy price shocks and supply bottlenecks played important roles. A negative terms of trade shock affected the euro area due to soaring energy prices. Coordinated policies can help minimize these effects. (Pierre Aldama, 20), (Alina Bobasu, 2023)

Economic downtown can be triggered by high inflation especially when driven by foreign shocks. (Bernanke, 1997)

Some measures by the basis of direct transfers and tax relief were implemented in support for households, firms and to contain price increases by the government in the Euro Area (Freier, 2023). Empirical research by Primiceri et al. found that post Covid-19 inflation was largely driven by demand shocks. A dynamic multivariate statistical model showed demand forces drove inflation in the US and the EA. Initially, both economies suffered from negative supply and demand shocks which worsened the economic conditions. As conditions recovered, aggregate demand rebounded rapidly outpacing supply and generating inflation. This demand-driven inflation signified that aggregate demand growth exceeded supply. The findings were key as they showed the significance of understanding inflation drivers for effective policy responses. (Primiceri, 2024).

A study by Natálie Dvořáková (2024) used a Bayesian SVAR model to examine inflation variations in Central European countries(CEC). The model identified six shocks contributing to inflation: domestic demand, domestic supply, monetary policies, exchange rates, foreign supply and foreign demand. The analysis found that both supply and demand side shocks mattered, depending on the country and period. This finding aligns with previous research on the US and EA, which also highlighted the importance of both supply and demand factors. studies by Shapiro (2022), Kabaca and Tuzcuoglu (2023) and Eickmeier and Hofmann (2022) support this conclusion. The research suggests that understanding the drivers of inflation is crucial for effective policy responses, particularly in small open economies. the findings have implications for monetary policy and economic stability in CEC.

Natálie Dvořáková (2024) study found that foreign shocks played a significant role in driving inflation in the CEC. Both demand and supply shocks including post Covid-19 consumption and global value chain disruptions contributed to inflation. The findings align with the existing literature on the topic by Ascari et al., 2023; Eickmeier et Hofmann, 2022; Gonçalves et Koester, 2022). Foreign shocks only caused dynamic inflation Binici et al. (2022) and were not the only driver, as domestic factors, particularly supply side shocks also played a considerable role. Domestic factors explained most of the differences in inflation rates among countries. Exchange rate depreciation particularly contributed to inflation in Hungary Cohn-Bech et al. (2023). Monetary policy shocks played a minor role explaining that central banks did not resort to further tightening which could have dampened inflation.

The study shows that both foreign and domestic factors are crucial for effective policy responses and the findings have implications for monetary policy and economic stability. The role of global events such as the Russia-Ukraine war was significant as well as the domestic supply side factors which greatly contributed to inflation differences. In help of understanding these complex factors effective policy responses are required.

Conclusion

Inflation in an economy, is a sustained increase in general price level of goods and services over time. It results in a decrease in the purchasing power of money. Inflation can be caused by both foreign and domestic factors, which include; increased consumer spending, supply chain disruptions, changes in money supply, increased demand and changes in exchange rates. The Covid 19 and Russia-Ukraine war were very significant factors that led to rise in inflation globally. Understanding causes of inflation, can be crucial for developing effective strategies to manage it and maintain economic stability.

CHAPITRE 02: EVOLUTION OF INFLATION IN THE WESTERN COUNTRIES: DESCRIPTIVE ANALYSES.

Introduction

In response to the outbreak of Covid-19 and the Russia Ukraine war the inflation dynamics have undergone significant transformations over the past years. The US and the EA being the largest economies affected in the world, have shown to have responded to the outbreak by implementing substantial stimulus measures to avert this deep recession.

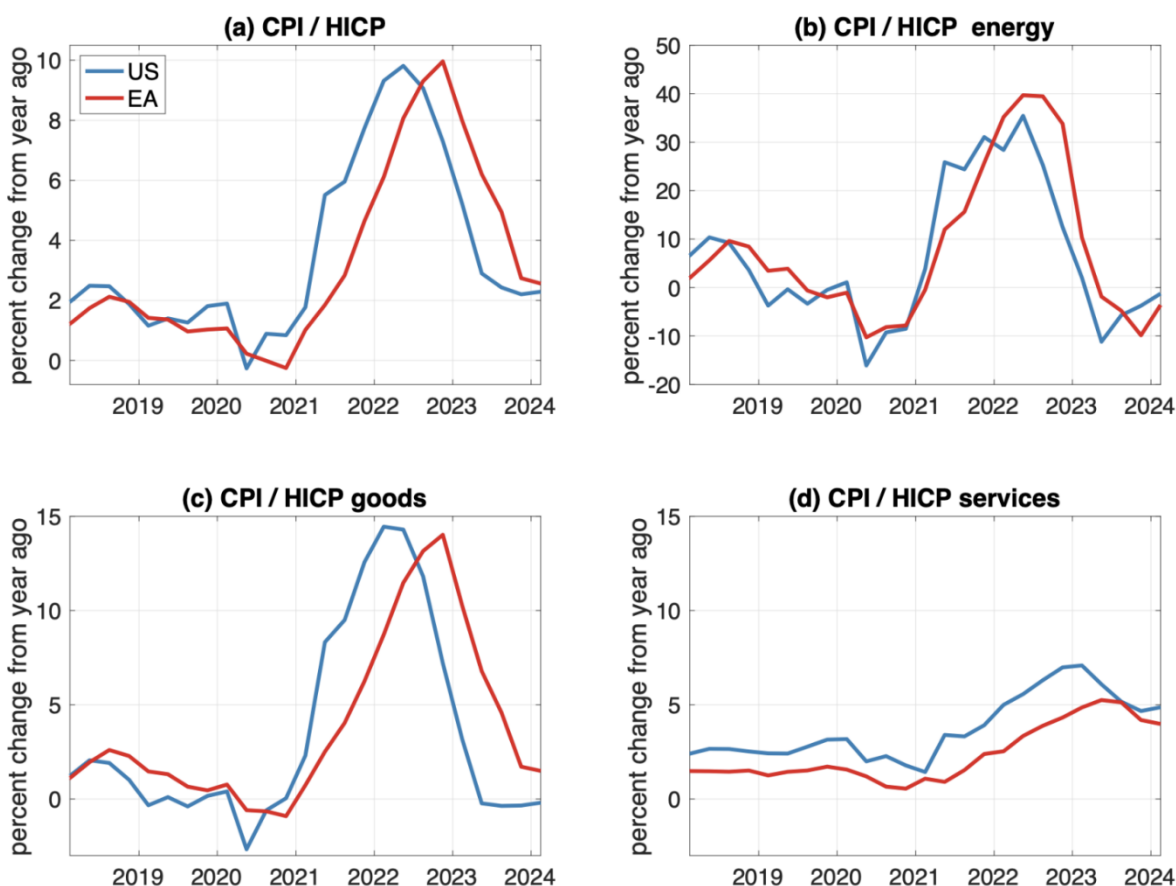
In this chapter we will show and discuss the evolution of inflation and its determinants in the western countries particularly Europe and the United States of America.

I. Evolution of determinants of Inflation

Both the US and the EA have recently experienced an episode of significantly high inflation. The sharp rise in prices since 2021 has been linked to supply chain disruptions and increasing energy costs. The inflation surge in both economies was mainly driven by unexpectedly strong demand forces, including the accommodative policies of the Federal Reserve and the European Central Bank (ECB).

In comparison, the Covid-19 recession was more severe in the euro area than in the US, and the recovery slower. Nonetheless, in the two regions, the behaviour of inflation and many of its components was remarkably similar.

Figure 1 Inflation in the US and the euro area, based on several price indexes



Sources: Data from Eurostat, the European Central Bank, and the Bureau of Labour Statistics; accessed via Haver Analytics; computations by authors.

Since the start of 2021, headline inflation has increased sharply in the euro area and in the United States. In the United States an earlier and stronger increase had been recorded whereas headline inflation has been higher in the euro area since 2022. Inflation in the euro area Harmonised Index of Consumer Prices (HICP) stayed at around 10 % at the end of 2022, while inflation in the US Consumer Price Index (CPI) peaked in mid-2022 at around 9.8%.

The key drivers of the higher headline inflation recorded in the euro area were energy and food price inflation. In November energy inflation alone accounted for 38% of headline inflation in the euro area – but only for 14% in the United States.

The key reason for higher energy inflation in the euro area is the much higher natural gas prices resulting from the important role Russian gas had played for the euro area before Russia's war against Ukraine and the knock-on effects on electricity prices. HICP inflation excluding food and energy stood at 5.0% in November in the euro area. This was still lower than inflation in the US CPI excluding food and energy (core inflation), which stood at 6.0% in the same month. However, in November, the HICP excluding food and energy moved sideways at a high level, whereas the US CPI excluding food and energy declined slightly.

A stronger consumption-driven recovery has been a key driver in the United States as the differences between underlying inflation developments in the two economies.

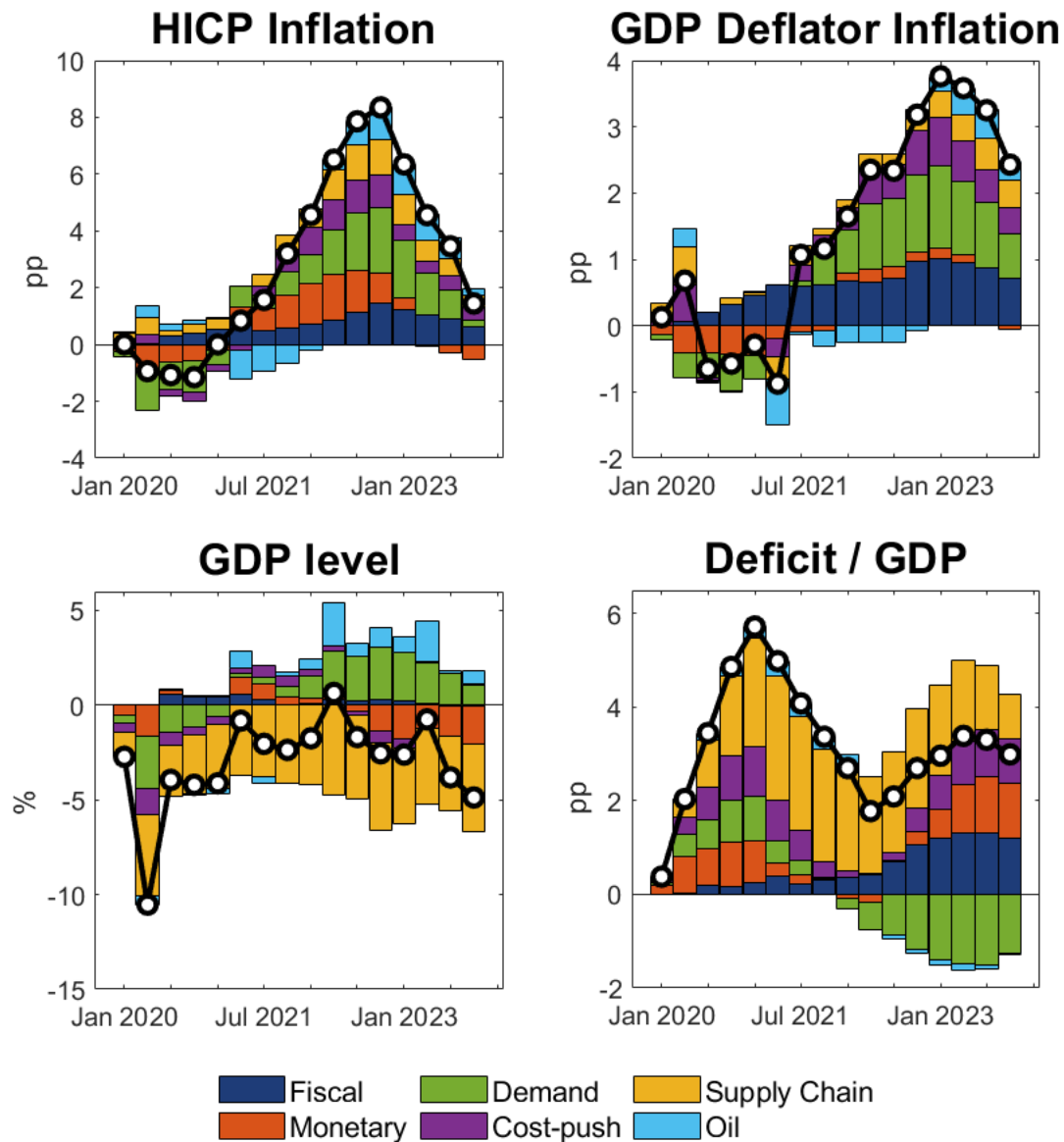
Fiscal policy design and terms-of-trade dynamics are the two factors which largely explained the discrepancies in consumption growth between the two economies. First, a very fast and strong recovery in goods consumption in the United States was spurred by general and relatively large household income support during the pandemic, including stimulus checks and enhanced unemployment benefits. In the euro area, government support was more targeted towards those most exposed to the pandemic, either through job retention schemes or through compensation of income losses.

Second, in the spring of 2021 energy prices rose, which was significantly exacerbated a year later by the war in Ukraine, resulted in a terms-of-trade shock which hit the euro area far harder than the United States, as the euro area was heavily dependent on gas imports from Russia.

The evolution of economic activity in both economies were negatively affected by the adverse supply shocks, especially in the euro area. But the contribution of these supply shocks to inflation has been somewhat limited. Instead, inflation seems to have been driven for the most part by unexpectedly strong demand forces. This is true not only in the US, but also in the euro area.

The evolution of the determinants of inflation is divided into three sub periods: low inflation (2020-2021), soaring inflation (2021 – 2022), and disinflation (2023).

Figure 2 Historical decomposition of GDP and inflation dynamics of the Euro Area.



Source: De Nederlandsche Bank working paper 2023 on cumulative contribution of shocks after 2019: IV to selected macroeconomic indicators (initial conditions and pre COVID shocks are filtered out).

Low inflation: 2020 -2021 This period is characterized by the Covid-19 pandemic and the subsequent reopening of the economy. The pandemic involved a combination of adverse demand and supply shocks with a prominent role for global supply shocks and demand shocks. These shocks initially had a strong negative effect on GDP, resulting in a large and negative impact in 2020. However, the GDP almost fully reverted back due to the quick rebound of economic activity upon the reopening of the economy. The effects of the adverse demand shocks dominated those of the supply shocks. The pandemic shock on inflation was negatively and had a great effect on both HICP and GDP deflator. Again, as the economy rapidly recovered from the pandemic, positive demand shocks pulled inflation back up.

During this low inflation period, Fiscal policy shocks had a relatively modest role in the dynamics of Euro Area HICP inflation and a relatively larger one for the GDP deflator inflation. In the Euro Area unlike in the US, the fiscal packages were rapidly implemented, making fiscal shocks the primary driver of the inflation take-off in 2020-2021 (Mori, 2024).

The historical decomposition of GDP and inflation dynamics shows a relatively larger impact of fiscal policy on the GDP deflator inflation than on HICP one, as fiscal policy affects relatively more domestic prices. Fiscal policy shocks point to a slightly expansionary fiscal stance. Most of the increase in the primary deficit ratio was due to the endogenous response of the primary deficit to the non-fiscal-policy shocks that were hitting the economy. These shocks pushed the primary deficit ratio steeply upward, reaching a peak of 6.6% in 2021. In annual terms, 2020 exhibited a sharp change in the Euro Area fiscal stance, with a primary surplus ratio of 1.1% in 2019 turning into a primary deficit ratio of 5.5%. Although the dynamics of GDP partly drive these figures, they also reflect discretionary fiscal policy changes as governments implemented a series of measures to support the economy.

Despite a very expansionary monetary policy stance and the launch of the substantial pandemic emergency purchase program (PEPP), monetary policy was still too tight initially as the nominal interest rate was constrained by the effective lower bound.

Soaring inflation: 2021 - 2022. In the second half of 2021, inflation started to surge rapidly reaching a peak of more than 10% in October 2022. The surge in inflation is due to a combination of positive demand and adverse supply shocks. This is with the former having had a more prominent impact on inflation than the latter.

Global supply shocks are found to be the main drivers of GDP and constrained output from adjusting to changes in aggregate demand while demand shocks were the dominant drivers of inflation dynamics during this period.

Improved aggregate demand conditions generated inflation, because the supply-side of the Euro Area economy remained restricted, mainly due to severe global supply chain disruptions.

Fiscal policy became increasingly loose during the soaring inflation period, and gained growing importance as a driver of Euro Area inflation through its stimulative effect on aggregate demand. Fiscal policy shocks indeed contributed to one-fifth of the HICP inflation peak in 2022, and more than one fourth of GDP deflator. In terms of actual data, the primary deficit ratio improved during this period and gradually fell from 5.4% in 2021 to 2% in 2022. However, the cyclically adjusted primary deficit improved by less, falling from 3.5% in 2021 to only 2.8% in 2022, which points to a much more limited change in the expansionary fiscal stance compared to what is implied by the primary deficit ratio. The monetary policy is interpreted as too loose at the beginning of the inflation surge, as it expected a stronger reaction to the abrupt rise in inflation. Due to the high rise of economic uncertainty, worsened by the potentially recessionary effects of the Russian invasion of Ukraine, and financial stability concerns, likely convinced the ECB to act cautiously during this period.

Disinflation: 2023. The positive contributions from all shocks to HICP inflation dynamics, with the exception of fiscal policy shocks, characterized the 2023 rapid disinflation process. The past demand shocks still affected GDP, GDP deflator inflation and the primary deficit ratio while contributions from positive demand shocks to HICP inflation gradually vanished.

Global and domestic supply shocks became less important drivers of inflation, but remained important for the dynamics of GDP and the primary deficit. Fiscal policy shocks did not contribute much to the disinflation process although it continued to exert upward inflationary pressures in 2023, even if marginally decreasing. This result can be explained by the highly persistent effects of fiscal shocks on inflation as well as on the primary deficit. Finally, the strong monetary policy response to inflation after the summer of 2022 had the expected effects on both inflation and GDP, such that the contribution of monetary policy to inflation turned negative in the second part of 2023.

II. Anti-inflationary policies adopted post Covid-19 and the Russia Ukraine war.

II.1 Responses from central banks to inflation in the US and Euro area.

Aggressive monetary easing and expansive fiscal stimulus were the initial responses adopted by the central banks and the governments.

In March 2020 the European Central Bank ECB adopted the pandemic Emergency Purchase Program (PEPP) and retained negative interest rates. At the same time the US Federal Reserve (FED) rapidly reduced interest rates to zero (0% to 0.25%) and increased its asset purchase program to support financial markets.

To help in stabilizing the economy the ECB expanded the PEPP by adding €600 billion more by June 2020. Having adopted these measures, they greatly helped and were so crucial in preventing deeper economic recessions and supporting households and businesses during the lockdowns. Contrary to initial assumptions made, it became evident that inflationary pressures rose and were not be transitory.

In believe that high inflation would be temporary and that would lower as supply chains normalized and economies fully reopened, Central banks, particularly in the United States and Europe, were slow to adjust their monetary policies. This belief, as Baltensperger (2023) notes, was based on the pre-pandemic experience of low inflation, which had endured for many years despite various economic shocks. Throughout 2021, the ECB maintained its accommodative attitude, whereas the FED supported its asset purchase at a rate of \$80 billion for treasury securities and \$40 billion for mortgage-backed securities per month.

In November 2021, the ECB president reassured that temporary supply constraints were most likely the cause of inflation. The COVID-19 era differed significantly from the preceding decade and the combination of all these disruptions, in supply chains, consumer demand, labour market, and expansive fiscal policies created a continuing inflationary environment that required a more robust policy response. In response to this, Central banks began to shift their policies from accommodation to tightening. In March 2022, the FED embarked its first interest rate raise of 25 basis points, followed by several aggressive increases, including hikes of 50 and 75 basis points that year, as inflation in the US exceeded 8%.

The ECB, which also had been slow to react, began rising rates in July 2022 with a 50 basis points rise, ending years of negative interest rates which later hiked to 75 basis points boost in September 2022.

The sharp rise in interest rates intended to reduce inflation by cooling demand. It was associated with significant consequences for economic growth, financial markets and the housing sector. The housing market, which had been characterized by low interest rates during the pandemic, began to cool rapidly while higher borrowing costs led to a slowdown in consumer spending and business investment.

II.2 Fiscal policies in the Euro Area and the US

The Euro Area assigned a limited role for fiscal policy in relation to the post-Covid-19 inflation surge. This narrative points out's role of fiscal policy being one of the main differences between the drivers of inflation in the Euro Area and the US.

The fiscal policy shocks generated increasing inflationary pressures over time in the Euro Area. In December 2020 the European Commission adopted a new economic recovery package to help the EU member states to recover from the Covid-19 pandemic. It was characterized by disbursements of loans and grants, financed partly by EU bonds. The disbursements were deployed gradually over time, in conditional instalments on whether projects could meet certain milestones. The European Commission, for the first time in 2020, allowed governments to use the severe economic downturn clause introduced in 2011 in the Stability and Growth Pact (SGP). This clause provides additional flexibility to the quantitative adjustment requirements and allowed governments to avoid costly pro-cyclical fiscal consolidations in pursuit for counter cyclical fiscal policies. This escape clause would help member states cope with the economic fallout and budgetary impact of the pandemic since it was meant to be a purely temporary and to be an emergency measure. The Commission decided to extend the possibility of applying the escape clause due to uncertainties surrounding economic conditions. (Guido Ascari D. B., 2024)

During and after the pandemic, the rise in government spending seems to have been more persistent than implied.

The fiscal policy response in the Euro Area to the pandemic crisis has been large and very persistent the fiscal stance has been expansionary and gradually increasing, well-beyond what the temporary support measures would suggest, likely supported by a prolonged suspension of the fiscal rules.

The US government reacted promptly to the pandemic shock with massive fiscal measures, such as the American Rescue Plan Act in 2021 (Guido Ascari D. B., 2024). In the midst of the enormous economic challenges related to the Covid-19, the federal government began its fiscal response to the pandemic. Within a year of the COVID-19 pandemic beginning in the U.S., the federal government implemented unprecedented fiscal stimulus amounting to nearly 25% of 2020 GDP. This massive response far exceeded the federal fiscal response to previous recessions. The federal fiscal stimulus came in three waves, including a 11.5% of GDP Wave 1 in March and April 2020, 4.2% of GDP Wave 2 in December 2020, and 8.9% of GDP Wave 3 in March 2021. This federal funding supported state and local government budgets both directly and indirectly.

State and local governments directly received federal funds to respond to the public health emergency and support economic activity. Federal fiscal stimulus also provided considerable funding to firms and households, which indirectly supported state and local government budgets by supporting income and consumption. As incomes and spending grew, so did tax revenue. In short, fiscal stimulus propped up the flailing U.S. economy in March and April 2020, when layoffs spiked due to shutdowns. However, the fiscal stimulus also contributed to economic challenges such as goods shortages, inflation, and long-term debt.

II.3 Energy subsidies

Many countries responded by using various forms of energy subsidies, often targeted mainly to households, to help curb inflation as well as cushion the effects on households purchasing power. (Arregui et al.,2022; Sgaravatti et al.,2023)

Energy subsidies are viewed by many policymakers as helpful in the fight against inflation on the grounds that they are likely to limit both first and second round effects, including by reducing pass-through to wages.

Fossil fuel subsidies more than doubled in 2022 in the Eurozone through the introduction of RepowerEU, as a consequence of the response to the energy crisis following the Russian invasion of Ukraine. The RepowerEU aimed to accelerate the transition to green energy and increase energy independence. Although the objective of shielding vulnerable households from rampant energy costs was necessary to prevent an increase in energy poverty in the short term, several reports have evidenced that those subsidies were by and large poorly targeted and failed to support transformative investments benefiting energy-poor households. Both the EU and its Member States have been subsidizing the production and consumption of the very same fossil energy sources that triggered the energy crisis in the first place. (Vardakoulias, 2024)

II.4 Price controls

Government imposed wholesale and price limits to keep energy prices low. Price controls were implemented on the wholesale market of electricity prices which were strongly influenced by the prices of natural gas. (Jakob Feveile, 2022).

The gas and electricity price brakes made an important contribution to providing economic relief to households and small businesses and reducing uncertainty. European Union and the US, imposed price caps on Russian petroleum products in 2023 limiting prices of certain products like jet fuel, petroleum and diesel.

Conclusion

The surge of global inflation trends has been impacted by the Covid-19 pandemic and the geopolitical tensions particularly the Ukraine war. The great increase in inflationary pressures have been brought about by the rising energy prices, shifts in monetary and fiscal policies and supply chain disruptions. These factors have led to a surge in inflation rates globally, affecting the cost of living and economic stability. To mitigate the effects of inflation on businesses and households, various measures have been implemented by the central bank and the government by adjusting interest rates.

The Eurozone, North America and other countries have adopted distinct anti-inflationary strategies, by increasing interest rates to reduce demand and curb inflation implemented by their Central Banks. Moreover, governments have reviewed their fiscal policies, reduced stimulus packages and implementing targeted support measures to alleviate the burden on households and businesses.

To lessen the impact of high energy prices, some countries have introduced price caps, subsidies and tax relief that have greatly helped in managing the prices of energy at this period. Furthermore, Europe and the US came up with initiatives like the Europe's Green Deal Industrial Plan and the US Inflation Reduction Act which aimed at accelerating the transition to clean energy, reducing reliance on fossil fuels and potentially lowering energy costs.

CHAPTER 3: METHODOLOGY AND ECONOMETRIC ANALYSIS

Introduction

This chapter concentrates on the steps and the techniques used in the study, it describes the source of data and the models chosen for practical analysis, the period taken and different variables used. It goes ahead to discuss the results obtained and suggestions in accordance to the findings.

I. Panel data model analysis

I.1. Presentation of variables

In this study we employ panel data analysis which is generally suitable for empirical study with datasets containing both time series and cross sectional observations at the same time. It helps improve the estimation efficiency and analysis. This study of data captures within entity and between entity variation enabling to identify both time varying and time invariant factors affecting inflation which allows to control and examine dynamic relationships by observing changes over time.

Our analysis of study focus on western countries. In this case we chose 9 countries of the 27 western countries including; Belgium, Canada, France, Germany, Italy, Netherlands, Spain, United Kingdom and United States of America covering the COVID 19 period and the Russia – Ukraine war 2020-2024.

Our data was acquired from The Organisation for Economic Cooperation and Development(OECD) after close consultation with World Bank and International Monetary Fund's sources.

The GMM model developed by Bond and Arellano (1991) improved by Blundell and Bond helps in doing our econometrics analysis. This method allows us to treat data simultaneously the dynamics of the dependent variables, independent variables and the special effects unobservable for each countries.

The model dynamic to estimate is formulated as follows:

$$INF=f(IRS, EXCH, PGDP, CPIE, P^O)$$

$$INF=a_0+a_1 IRS + a_2 EXCH+a_3 PGDP+a_4 CPIE+a_5 P^O+ \varepsilon_t$$

INF represents the global inflation acquired from data from The Organisation for Economic Cooperation and Development on the period 2020-2024, 2015 is the base year. Inflation helps us to compare the economic performance of different countries or regions over time in conjunction with other indicators is often used to provide a complete picture of a country's economic and social status.

IRS represents the short-term interest rate. Interest rate helps in shaping inflation expectations whereby higher interest rates can signal a commitment to control inflation. Lower interest rates can stimulate economic growth and shape consumer and business behaviour.

EXCH represents the exchange rate in their national currency per US dollar. Exchange rates influence trading balances which can in turn impact inflation through domestic goods and services.

PGDP represents the gross domestic product in volume in USD at a constant exchange rate between the period 2020 and 2024. It provides an overall picture of price changes in the economy and facilitating international comparisons accounting for differences in economic structure, Price levels and often used by Central Bank in setting monetary policies to balance economic growth and inflation control.

CPIE represents consumer price index of energy. We used CPI on energy due unavailability of data of some countries and years. As energy is component of overall inflation as energy prices can significantly impact household budgets and production costs. And also energy prices changes can affect inflation expectations and may call for Central Bank for monetary policies measures.

P^O represents the global production of industries in these countries. It is significant in calculating inflation dynamics where it may directly affect supply and demand. Increased production can meet demand reducing upward pressure on prices while supply shortages can drive inflation.

ε_t represents the residual indicators that may have affected inflation rates between 2020-2024.

I.2 Empirical strategy

Our study follows several stationarity tests on each variable which include; testing for unit root by Levin, Lin & Chu t^* (LLC), Im, Pesaran and Shin W-Stat(IPS), ADF-Fisher Chi-Square(ADF-F), PP-Fisher Chi-Square(PP-F), Hadri Z-Stat.

To the non-stationary variables, they undergo Pedroni Cointegration test which includes studying their panel V statistic, panel rho statistic, panel PP statistic, panel ADF statistic and their group rho statistic, group PP-statistic and finally group ADF statistic.

The coefficient of the variables in the model are estimated by GMM Model.

II. Estimation and economics tests

Table 1 Results of the stationarity test in level

	LLC	IPS	ADF-F	PP-F	Hadri-Z Stat
INF	-2.04823 (0.0203)**	1.85079 (0.9679)	5.93989 (0.9964)	1.92124 (1.0000)	8.40294 (0.0000)
IRS	-4.43679 (0.0000)*	-1.46021 (0.0721)	22.5142 (0.2100)	2.82498 (1.0000)	6.93652 (0.0000)
EXCH	-2.02176 (0.0216)**	-1.67994 (0.0465)**	22.2555 (0.1351)	9.92578 (0.8705)	2.18160 (0.0146)
PGDP	-20.3310 (0.0000)*	-17.5444 (0.0000)*	215.997 (0.0000)*	14.6871 (0.6833)	8.31233 (0.0000)
CPIE	-3.46461 (0.0003)*	-1.42491 (0.0771)	22.6001 (0.2064)	9.08318 (0.9578)	4.40601 (0.0000)
P ⁰	-1.52119 (0.06410)	-2.16902 (0.0150)**	30.5147 (0.0327)**	54.5459 (0.0000)*	2.02941 (0.0212)

Source: Prepared by Eviews 13,2025.

() Indicates the P-Value associated with the parameter

*Indicates that the parameter is significant at 1%level

**Indicates rejection of the non-stationarity hypothesis at the 5% level

The test of stationarity applied show that the variables PGDP and P^0 are stationary in level. However, the variables INF, IRS, EXCH and CPIE have unit root.

Table 2 Results of the first difference stationarity test.

	LLC	IPS	ADF-F	PP-F	Hadri-Z Stat
D(INF)	2.89511 (0.0019)*	-2.17591 (0.0148)**	29.2915 (0.0449)**	44.9645 (0.0004)*	-0.28293 (0.6114)
D(IRS)	-4.99963 (0.0000)*	/	42.3505 (0.0010)*	39.1083 (0.0028)*	-0.05381 (0.5215)
D(EXCH)	-6.57764 (0.0000)*	-4.64781 (0.0000)*	50.5490 (0.0000)*	37.5196 (0.0018)*	-0.93627 0.8254
D(CPIE)	-2.01042 (0.0222)**	-2.43186 (0.0075)*	32.2055 (0.0208)**	65.3788 (0.0000)*	0.08188 (0.4674)

Source: Prepared by Eviews 13,2025.

() Indicates the P-Value associated with the parameter

*Indicates that the parameter is significant at 1%level

**Indicates rejection of the non-stationarity hypothesis at the 5% level

The test of stationarity applied show that the variables INF, IRS, EXCH and CPIE are stationary in first difference stationarity test level.

Table 3 Pedroni Cointegration test

Alternative hypothesis :common AR coefs.(within dimension)					
				Weighted	
		<u>Statistic</u>	<u>Prob.</u>	<u>Statistic</u>	<u>Prob.</u>
Panel v-statistic		0.277201	0.3908	0.186098	0.4262
Panel rho-statistic		1.320350	0.9066	1.273537	0.8986
Panel PP-statistic		0.359816	0.6405	0.176442	0.5700
Panel ADF-statistic		4.211160	1.0000	3.758862	0.9999
Alternative hypothesis :individual AR coefs.(between dimension)					
		<u>Statistic</u>	<u>Prob.</u>		
Group rho-statistic		2.460740	0.9931		
Group PP-statistic		1.055419	0.8544		
Group ADF-statistic		5.027339	1.0000		

Source: Prepared by Eviews 13,2025.

The Pedroni cointegration test shows that all the four parameters (INF, IRS, EXCH and CPIE) panel v statistic, panel rho statistic, panel PP statistic, panel ADF statistic, GROUP rho statistic, group PP statistic and group ADF statistic accept the null hypothesis of non cointegration of parameters.

Table 4 Estimation of results

	GMM/Dynamic Panel
IRS	2.845811 [21.11672] (0.0000)*
P ⁰	-0.028071 [-1.537480] (0.1260)
PGDP	1.35E-13 [3.307585] (0.0011)*
EXCH	-1.126709 [-0.672185] (0.5024)
CPIE	0.114813 [11.47928] (0.0000)*

Source: Prepared by Eviews 13,2025.

$R^2=0.877950$

Adjusted $R^2=0.874443$

[] mentions the T-statistic associated with the parameter

() mentions the P -value associated with the parameter

*Indicates that the parameter is significant at 1% level

Basing on the values R^2 and adjusted R^2 , the model dispose a good quality of adjustment.

Table 5 Normality test

	Value
Skewness	-0.006433
Kurtosis	2.901483
Jacque-Berra	0.074034
Probability	0.963660

Source: Prepared by Eviews 13,2025.

The residues asymmetric distribution are shifted to the right

The residues are centrally and normal distributed

The residues follow the normal law

III. Interpretation of results

The estimations shows that interest rates has a significant effect on inflation during the Covid-19 and the Russian-Ukraine war. During this period, Central banks lowered interest rates to enhance economic growth which in turn increased the money supply in the economy potentially driving inflation up. Due to the reopening of the economies and the surge of demand, inflation rose globally. Over time, the Central banks have been aiming to reduce demand by fixing higher interest rates making borrowing expensive and thereby decreasing consumer spending which in turn curbs inflation.

The estimations shows that exchange rates affects inflation negatively. Between 2020-2024 we note it was non-significant. Explanation to this result is that despite the exchange rates fluctuations affecting import prices it never had a significant effect on the surge of inflation. When countries experience significant exchange rates fluctuations and the currency is depreciating in value it makes imports more expensive leading to higher prices for consumers and businesses.

According to results obtained, they indicate that gross domestic product affected positively and significantly the surge of inflation. During the covid-19 pandemic stimulus shift to remote work and digitalization led to growth in various sectors. Monetary policies and government stimulus packages helped in stabilizing the economy hence affecting GDP growth.

The consumer price index of energy was significant and positively affected by inflation as results shows. On the onset of the pandemic and the Russian Ukraine war, energy demand rebounded coupled with supply-side constraints such as OPEC+ production cuts and low gas storage levels in Europe, drove price up. The Russian-Ukraine conflict exacerbated price volatility with European gas and oil prices rising over the period. Europe where gas and electricity play a crucial role, the surge of its prices led to significant inflationary pressures.

The estimations shows that industrial production had a negative effect and was non-significant on inflation during the Covid-19 and the Russian-Ukraine war. During this period, factories shut down and reduced capacity utilisation due to instability caused by war that led to decreased production levels. Lockdowns, quarantines, labor and absenteeism caused productions halts which led to shortages and reduced production capacity exacerbating supply chains issues.

Conclusion

In conclusion, Panel data analysis has been used to test the stationarity of variables at the first level. For the variables non stationary in the first level had to undergo the first difference stationarity test where results turned out to be stationary which allow us to give more accurate modelling and analysis A co-integration test was conducted to nonstationary variables at first level by undergoing the Pedroni test in which its found out that there is a long-run relationship between the variables. The model is estimated through the GMM panel dynamic method where the model is validated by various statistical values like the coefficient of adjustment the R^2 .

The results obtained shows that interest rates, gross domestic product, consumer price index of energy had a significant effect and a positive effect on inflation during the Covid-19 and the Russian-Ukraine war whereas, exchange rates and industrial production had a negative effect and was non-significant on inflation during this period.

GENERAL CONCLUSION.

Dynamics of inflation is a subject that will continue to be studied in depth of which understanding its dynamics will be very crucial for policymakers and central banks to make informed decisions to control inflation and maintain economic stability. The main objective of this study was to discover the key factors and determinants that may have been significant in the surge of inflation during the Covid-19 and the Russian-Ukraine war. The research aimed at understanding if the dynamics of post-crisis inflation in Western countries followed the theoretical pattern described by the literature.

Firstly, various empirical works on this subject had been earlier done in several countries particularly in the Euro area and the USA. Furthermore, an economic study was carried based on a sample of 9 countries considered as western countries, studying two countries from North America and the rest from Euro area. The period studied was between 2020-2024 which was characterized by the Covid-19 pandemic and the Russian-Ukraine war.

Based on the empirical and the theoretical approach, five variables; short-term interest rates, exchange rates, consumer price index of energy, production and global gross domestic product were used to explain inflation. A panel data analysis was preferred as it comprehensively analyzes the impact of the above variables and their significance by using the GMM panel dynamic for a more robust and valid results.

Three of the independent variables; short-term interest rates, consumer price index of energy and global gross domestic product were confirmed significant and to have impacted positively to the surge of inflation while; exchange rates and production were proved to be non-significant and to have negative effect on the rate of inflation to the Western countries studied.

The study confirms that the rise in energy prices was caused by the Russian-Ukrainian war, and the recovery of post-Covid-19 economic activity led to an increase in inflation and the economic stimulus policies launched by the governments of Western countries also had a positive impact in encouraging inflation.

Inflationary pressures have been proved to cause economic instability alongside geopolitical tensions and the pandemics. In the goal to curb this inflation surge we recommend that;

- ❖ Central banks to always aim at increasing interest rates to reduce borrowing, spending and aggregate demand.
- ❖ Central banks should adopt inflation targeting frameworks in making decisions concerning monetary policy.
- ❖ Central banks at the point of crisis should manage monetary supply by selling government securities in favor of the consumer capacity.
- ❖ The government should focus on reducing its spending which will help in decreasing aggregate demand and alleviate inflationary pressures.
- ❖ The government should as well focus on improving productivity by implementing policies like research, education and infrastructure.
- ❖ Communication between the government and the Central bank should be transparent and clear in implementing inflation goals and policy actions.

Limitations: due to differences in economic imbalances, it was difficult to have some data for some variables that were expressed in different units and frequency. Some countries like USA and Canada often use the Dollar as unit currency whereas the European countries expressed their data in Euro currency which renders it difficult to have data for some variables.

However, more studies have been done and special attention is required in studying factors relating to each country in order to find out the most suitable policies and strategies to adopt in carrying out research.

Inflation is a significant long-term subject that needs to be studied even in the years to come as various factors may significantly have an effect on it. There is great need for continuous research in finding out various determinants that may or will have contributed to its surge.

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ANNEXES

COUNTRY	CODE	QUATERLY	inflation	INTEREST	EXCHANGE RATE	GDP	CPI OF ENERGY	PRODUCTION
				-				
Belgium	1	2020-Q1	108.6627	0.405540909	0.907842688	4.85753E+11	117.0044	104.8854
				-				
Belgium	1	2020-Q2	108.5206	0.300666667	0.908271645	4.30434E+11	112.5552	100.7298
				-				
Belgium	1	2020-Q3	108.6891	0.471736119	0.855181146	4.81014E+11	105.6644	103.1682
				-				
Belgium	1	2020-Q4	108.5503	0.522694805	0.838870803	4.79057E+11	105.8908	94.17017
				-				
Belgium	1	2021-Q1	109.2441	0.542445652	0.829643908	4.87737E+11	109.6419	95.68129
				-				
Belgium	1	2021-Q2	110.0832	0.540384776	0.82966184	4.97136E+11	114.2232	103.4429
				-				
Belgium	1	2021-Q3	111.5367	0.545818182	0.848374697	5.08044E+11	123.6839	102.447
				-				
Belgium	1	2021-Q4	114.1597	0.566376561	0.874533127	5.11887E+11	147.9603	107.528
Belgium	1	2022-Q1	117.9621	-0.52902588	0.890736483	5.12486E+11	175.0557	99.18412
				-				
Belgium	1	2022-Q2	119.964	0.357616427	0.939237677	5.16058E+11	177.7803	104.0626
Belgium	1	2022-Q3	123.0032	0.480740605	0.993248951	5.17673E+11	189.4977	105.2975
Belgium	1	2022-Q4	126.8056	1.772123377	0.980306984	5.18929E+11	212.2269	107.8389
Belgium	1	2023-Q1	126.3464	2.631926285	0.932133756	5.21073E+11	167.4592	104.1985
Belgium	1	2023-Q2	125.9401	3.356432806	0.918537961	5.22808E+11	139.1977	109.8309
Belgium	1	2023-Q3	127.3474	3.777387164	0.919336211	5.248E+11	141.5034	107.942
Belgium	1	2023-Q4	127.8495	3.957455988	0.929333442	5.26633E+11	143.4884	106.843
Belgium	1	2024-Q1	129.7688	3.923614719	0.921314907	5.28115E+11	150.217	101.451
Belgium	1	2024-Q2	130.3403	3.923614719	0.92439	5.29806E+11	155.5681	105.8813
Belgium	1	2024-Q3	131.4041	3.673614719	0.92439	5.315E+11	154.47	104.4389
Belgium	1	2024-Q4	131.9227	3.423614719	0.92439	5.33007E+11	155.0323	101.8631
Canada	2	2020-Q1	108.1907	1.661108146	1.343964493	1.67664E+12	101.656	100.4626
Canada	2	2020-Q2	107.7166	0.378110269	1.386090332	1.49221E+12	91.77586	97.8047
Canada	2	2020-Q3	108.2697	0.263354942	1.331887248	1.62776E+12	100.0948	95.75237
Canada	2	2020-Q4	108.6647	0.239247016	1.302899507	1.65833E+12	100.4739	113.4831
Canada	2	2021-Q1	109.7445	0.187860659	1.266578923	1.68221E+12	107.5216	94.17108
Canada	2	2021-Q2	111.3247	0.183359803	1.228033838	1.67697E+12	115.5506	109.6139
Canada	2	2021-Q3	112.6679	0.212405722	1.259563636	1.70514E+12	120.2788	112.8102
Canada	2	2021-Q4	113.8004	0.25335604	1.259974572	1.7319E+12	124.9178	101.7464
Canada	2	2022-Q1	116.1443	0.651304656	1.266436525	1.74855E+12	134.4633	97.73223

Canada	2	2022-Q2	119.7261	1.791959914	1.276385931	1.76498E+12	154.1121	100.9455
Canada	2	2022-Q3	120.7269	3.401419383	1.306142703	1.77306E+12	144.7449	91.02454
Canada	2	2022-Q4	121.3853	4.387303298	1.357945599	1.76924E+12	140.552	103.5243
Canada	2	2023-Q1	122.1227	4.742762599	1.35204859	1.78067E+12	133.2367	100.4626
Canada	2	2023-Q2	123.9399	4.869803014	1.34306365	1.78349E+12	137.7419	97.93927
Canada	2	2023-Q3	125.1778	5.224764879	1.341085093	1.78124E+12	143.9197	101.7747
Canada	2	2023-Q4	125.2831	5.248504359	1.361170346	1.78565E+12	135.0432	102.0776
Canada	2	2024-Q1	125.5992	5.09921303	1.348527398	1.7926E+12	133.8166	99.45328
Canada	2	2024-Q2	127.3374	5.09921303	1.3598	1.79764E+12	141.9125	97.63647
Canada	2	2024-Q3	127.7324	4.84921303	1.3598	1.80393E+12	137.8534	100.9336
Canada	2	2024-Q4	127.6797	4.59921303	1.3598	1.81122E+12	133.2367	116.8811
-								
France	3	2020-Q1	104.5533	0.405540909	0.907842688	2.47806E+12	114.0313	140.3603
-								
France	3	2020-Q2	104.6867	0.300666667	0.908271645	2.15224E+12	105.0409	138.0222
-								
France	3	2020-Q3	104.9433	0.471736119	0.855181146	2.52953E+12	106.4225	146.1096
-								
France	3	2020-Q4	104.7333	0.522694805	0.838870803	2.51316E+12	107.1999	147.0678
-								
France	3	2021-Q1	105.33	0.542445652	0.829643908	2.51436E+12	112.8993	154.5036
-								
France	3	2021-Q2	106.1333	0.540384776	0.82966184	2.53613E+12	115.7452	155.1552
-								
France	3	2021-Q3	106.7533	0.545818182	0.848374697	2.61171E+12	120.4119	101.3415
-								
France	3	2021-Q4	107.58	0.566376561	0.874533127	2.6264E+12	128.8774	78.31229
France	3	2022-Q1	109.1833	-0.52902588	0.890736483	2.62309E+12	139.9077	92.34457
-								
France	3	2022-Q2	111.7467	0.357616427	0.939237677	2.6321E+12	150.0488	92.24868
France	3	2022-Q3	112.9967	0.480740605	0.993248951	2.64727E+12	148.6162	95.76474
France	3	2022-Q4	114.1067	1.772123377	0.980306984	2.64605E+12	152.0206	95.70081
France	3	2023-Q1	115.7233	2.631926285	0.932133756	2.64734E+12	156.1236	87.00655
France	3	2023-Q2	117.53	3.356432806	0.918537961	2.66401E+12	153.2057	95.66885
France	3	2023-Q3	118.2867	3.777387164	0.919336211	2.66371E+12	156.0718	124.4155
France	3	2023-Q4	118.35	3.957455988	0.929333442	2.6651E+12	158.8204	129.9348
France	3	2024-Q1	118.9567	3.923614719	0.921314907	2.67103E+12	161.094	130.2798
France	3	2024-Q2	120.1267	3.923614719	0.92439	2.67521E+12	160.177	132.5412
France	3	2024-Q3	120.3467	3.673614719	0.92439	2.68129E+12	158.5835	138.5588
France	3	2024-Q4	119.8533	3.423614719	0.92439	2.68935E+12	158.0573	107.1675
-								
Germany	4	2020-Q1	105.4987	0.405540909	0.907842688	3.54683E+12	103.0791	91.22583
-								
Germany	4	2020-Q2	105.8852	0.300666667	0.908271645	3.21984E+12	97.60607	87.93352

				-				
Germany	4	2020-Q3	105.1121	0.471736119	0.855181146	3.50688E+12	97.42937	87.54994
				-				
Germany	4	2020-Q4	105.2175	0.522694805	0.838870803	3.53441E+12	96.64359	87.42209
				-				
Germany	4	2021-Q1	107.0801	0.542445652	0.829643908	3.48942E+12	104.3657	87.39012
				-				
Germany	4	2021-Q2	108.2047	0.540384776	0.82966184	3.56731E+12	107.2349	87.83762
				-				
Germany	4	2021-Q3	109.1887	0.545818182	0.848374697	3.59114E+12	110.1172	91.32172
				-				
Germany	4	2021-Q4	110.1727	0.566376561	0.874533127	3.59148E+12	115.5816	109.4156
Germany	4	2022-Q1	112.211	-0.52902588	0.890736483	3.62749E+12	130.7549	94.01727
				-				
Germany	4	2022-Q2	115.409	0.357616427	0.939237677	3.62279E+12	143.4353	107.9472
Germany	4	2022-Q3	117.2715	0.480740605	0.993248951	3.63588E+12	144.7118	116.9164
Germany	4	2022-Q4	119.6261	1.772123377	0.980306984	3.62111E+12	150.3309	111.7968
Germany	4	2023-Q1	121.4535	2.631926285	0.932133756	3.62488E+12	151.3172	118.7816
Germany	4	2023-Q2	122.9646	3.356432806	0.918537961	3.62589E+12	150.7981	120.4088
Germany	4	2023-Q3	123.8432	3.777387164	0.919336211	3.62556E+12	152.23	118.861
Germany	4	2023-Q4	123.8784	3.957455988	0.929333442	3.61515E+12	148.3058	97.20313
Germany	4	2024-Q1	124.5109	3.923614719	0.921314907	3.61845E+12	147.3834	91.86511
Germany	4	2024-Q2	125.7761	3.923614719	0.92439	3.62514E+12	148.7268	91.28976
Germany	4	2024-Q3	126.2329	3.673614719	0.92439	3.63429E+12	144.9306	89.53172
Germany	4	2024-Q4	126.7249	3.423614719	0.92439	3.64391E+12	142.8601	84.86495
				-				
Italy	5	2020-Q1	102.8667	0.405540909	0.907842688	1.79476E+12	103.2487	102.0933
				-				
Italy	5	2020-Q2	102.9	0.300666667	0.908271645	1.58228E+12	93.13191	104.4955
				-				
Italy	5	2020-Q3	102.6667	0.471736119	0.855181146	1.8052E+12	92.49578	107.2409
				-				
Italy	5	2020-Q4	102.5	0.522694805	0.838870803	1.79484E+12	95.48305	105.8682
				-				
Italy	5	2021-Q1	103.4667	0.542445652	0.829643908	1.82239E+12	100.6163	98.14687
				-				
Italy	5	2021-Q2	104.1333	0.540384776	0.82966184	1.86988E+12	104.877	103.2258
				-				
Italy	5	2021-Q3	104.9	0.545818182	0.848374697	1.92281E+12	110.515	108.0645
				-				
Italy	5	2021-Q4	106.1333	0.566376561	0.874533127	1.93959E+12	122.487	103.973
Italy	5	2022-Q1	109.3333	-0.52902588	0.890736483	1.9424E+12	146.1526	99.71259
				-				
Italy	5	2022-Q2	111.3333	0.357616427	0.939237677	1.97036E+12	150.54	104.4463
Italy	5	2022-Q3	113.7	0.480740605	0.993248951	1.97711E+12	159.2978	95.14793

Italy	5	2022-Q4	118.6	1.772123377	0.980306984	1.97796E+12	205.4706	95.04649
Italy	5	2023-Q1	119.0667	2.631926285	0.932133756	1.98751E+12	184.933	102.5528
Italy	5	2023-Q2	119.5667	3.356432806	0.918537961	1.98257E+12	165.2922	104.0406
Italy	5	2023-Q3	120.0333	3.777387164	0.919336211	1.98725E+12	160.4447	96.73711
Italy	5	2023-Q4	119.7667	3.957455988	0.929333442	1.99054E+12	158.2715	109.721
Italy	5	2024-Q1	120.1667	3.923614719	0.921314907	1.99494E+12	154.5544	98.73204
Italy	5	2024-Q2	120.5333	3.923614719	0.92439	1.99776E+12	147.4174	105.6966
Italy	5	2024-Q3	121.2667	3.673614719	0.92439	2.00152E+12	150.3759	109.0597
Italy	5	2024-Q4	121.1667	3.423614719	0.92439	2.00628E+12	149.144	105.3191
			-					
Netherlands	6	2020-Q1	106.4867	0.405540909	0.907842688	8.33787E+11	108.27	140.4373
			-					
Netherlands	6	2020-Q2	107.3433	0.300666667	0.908271645	7.64195E+11	101.75	134.4534
			-					
Netherlands	6	2020-Q3	108.2333	0.471736119	0.855181146	8.12919E+11	102.4	131.5075
			-					
Netherlands	6	2020-Q4	107.9767	0.522694805	0.838870803	8.1809E+11	102.3733	141.7261
			-					
Netherlands	6	2021-Q1	108.3533	0.542445652	0.829643908	8.28053E+11	107.85	136.2486
			-					
Netherlands	6	2021-Q2	109.4967	0.540384776	0.82966184	8.53145E+11	112.25	125.8458
			-					
Netherlands	6	2021-Q3	110.5767	0.545818182	0.848374697	8.70733E+11	119.7333	127.8251
			-					
Netherlands	6	2021-Q4	113.12	0.566376561	0.874533127	8.76831E+11	146.55	99.19247
Netherlands	6	2022-Q1	116.42	-0.52902588	0.890736483	8.81366E+11	183.61	98.99058
			-					
Netherlands	6	2022-Q2	119.3033	0.357616427	0.939237677	8.96353E+11	190.7833	98.51952
Netherlands	6	2022-Q3	124.1367	0.480740605	0.993248951	8.98009E+11	228.1633	98.25034
Netherlands	6	2022-Q4	125.8467	1.772123377	0.980306984	9.03445E+11	227.07	110.2961
Netherlands	6	2023-Q1	124.1267	2.631926285	0.932133756	8.98989E+11	162.2433	95.99596
Netherlands	6	2023-Q2	126.0333	3.356432806	0.918537961	8.9575E+11	154.3367	113.0552
Netherlands	6	2023-Q3	127.33	3.777387164	0.919336211	8.93579E+11	159.25	114.9058
Netherlands	6	2023-Q4	126.86	3.957455988	0.929333442	8.96739E+11	156.92	111.2382
Netherlands	6	2024-Q1	127.88	3.923614719	0.921314907	8.98204E+11	163.41	109.253
Netherlands	6	2024-Q2	129.6733	3.923614719	0.92439	9.01133E+11	159.82	97.47645
Netherlands	6	2024-Q3	131.89	3.673614719	0.92439	9.04077E+11	154.1733	106.2921
Netherlands	6	2024-Q4	131.79	3.423614719	0.92439	9.07038E+11	156.08	117.1922
			-					
Spain	7	2020-Q1	103.7755	0.405540909	0.907842688	1.25753E+12	99.5369	112.0198
			-					
Spain	7	2020-Q2	103.9368	0.300666667	0.908271645	1.0357E+12	88.47779	122.8604
			-					
Spain	7	2020-Q3	103.4012	0.471736119	0.855181146	1.20394E+12	92.9313	109.3952

				-				
Spain	7	2020-Q4	104.2515	0.522694805	0.838870803	1.20684E+12	93.16109	109.2776
				-				
Spain	7	2021-Q1	104.3911	0.542445652	0.829643908	1.21165E+12	100.1329	108.9641
				-				
Spain	7	2021-Q2	106.5974	0.540384776	0.82966184	1.23701E+12	108.8056	109.6434
				-				
Spain	7	2021-Q3	106.9139	0.545818182	0.848374697	1.2657E+12	115.5363	109.6938
				-				
Spain	7	2021-Q4	110.3104	0.566376561	0.874533127	1.29087E+12	129.0771	117.6113
Spain	7	2022-Q1	112.597	-0.52902588	0.890736483	1.29423E+12	146.3431	115.8996
				-				
Spain	7	2022-Q2	116.2968	0.357616427	0.939237677	1.3264E+12	148.3176	109.167
Spain	7	2022-Q3	117.6688	0.480740605	0.993248951	1.33344E+12	154.2217	119.9696
Spain	7	2022-Q4	117.5796	1.772123377	0.980306984	1.33999E+12	131.2965	112.1719
Spain	7	2023-Q1	118.2873	2.631926285	0.932133756	1.34683E+12	124.4437	113.0468
Spain	7	2023-Q2	119.8445	3.356432806	0.918537961	1.35355E+12	118.3374	112.9707
Spain	7	2023-Q3	120.9846	3.777387164	0.919336211	1.35914E+12	123.2762	110.5363
Spain	7	2023-Q4	121.4211	3.957455988	0.929333442	1.36707E+12	119.511	106.6946
Spain	7	2024-Q1	121.9995	3.923614719	0.921314907	1.3717E+12	122.1843	104.5264
Spain	7	2024-Q2	123.9889	3.923614719	0.92439	1.37726E+12	125.8622	116.8125
Spain	7	2024-Q3	123.6021	3.673614719	0.92439	1.38297E+12	121.0201	109.8136
Spain	7	2024-Q4	124.2779	3.423614719	0.92439	1.38964E+12	121.4034	109.6866
United Kingdom	8	2020-Q1	108.5	0.673333333	0.782191327	3.08499E+12	111.1	123.3168
United Kingdom	8	2020-Q2	108.7	0.39	0.80561487	2.45804E+12	103.3	113.0088
United Kingdom	8	2020-Q3	109.1	0.076666667	0.773831762	2.87038E+12	105.3	120.2358
United Kingdom	8	2020-Q4	109.3	0.04	0.75723352	2.90933E+12	102	116.318
United Kingdom	8	2021-Q1	109.5	0.053333333	0.725370541	2.87953E+12	105.1	103.7864
United Kingdom	8	2021-Q2	110.9	0.083333333	0.715069502	3.09054E+12	112.8	103.7177
United Kingdom	8	2021-Q3	112	0.073333333	0.725775	3.14356E+12	115.4	104.0611
United Kingdom	8	2021-Q4	114.1	0.15	0.741663598	3.19134E+12	126.7	103.9238
United Kingdom	8	2022-Q1	115.5	0.776666667	0.745164205	3.20825E+12	130.9	100.1803
United Kingdom	8	2022-Q2	119.7	1.336666667	0.796414199	3.21103E+12	173.6	99.08131
United Kingdom	8	2022-Q3	121.8	2.326666667	0.850611039	3.20852E+12	176.5	95.09745

United Kingdom	8	2022-Q4	124.8	3.563333333	0.852691955	3.21185E+12	196.7	97.75511
United Kingdom	8	2023-Q1	125.9	4.183333333	0.823260381	3.21747E+12	191.3	98.05585
United Kingdom	8	2023-Q2	128.9	4.78	0.798993855	3.21775E+12	185.9	97.86298
United Kingdom	8	2023-Q3	129.5	5.513333333	0.790314707	3.21391E+12	169.1	98.30428
United Kingdom	8	2023-Q4	130.3	5.366666667	0.805516486	3.20389E+12	163.6	98.57233
United Kingdom	8	2024-Q1	130.8	5.323333333	0.788702629	3.21445E+12	164.7	96.16645
United Kingdom	8	2024-Q2	132.7	5.323333333	0.7928	3.22368E+12	155.6	80.45306
United Kingdom	8	2024-Q3	133.3	5.073333333	0.7928	3.23164E+12	146.3	97.45111
United Kingdom	8	2024-Q4	134.7	4.823333333	0.7928	3.23976E+12	150.1	98.65405
United States	9	2020-Q1	108.9604	1.53	1	2.01106E+13	102.0543	98.6802
United States	9	2020-Q2	108.372	0.663569464	1	1.85236E+13	92.01727	97.27132
United States	9	2020-Q3	109.5982	0.153333333	1	1.99609E+13	97.6284	98.07219
United States	9	2020-Q4	109.8502	0.15	1	2.01676E+13	96.82555	99.03651
United States	9	2021-Q1	111.029	0.116666667	1	2.04268E+13	105.8838	99.07573
United States	9	2021-Q2	113.6269	0.1	1	2.07373E+13	115.8195	99.24571
United States	9	2021-Q3	115.446	0.1	1	2.09061E+13	121.473	98.36312
United States	9	2021-Q4	117.1982	0.14	1	2.12609E+13	126.5578	102.6654
United States	9	2022-Q1	119.8744	0.443333333	1	2.1155E+13	135.7122	93.2273
United States	9	2022-Q2	123.4392	1.37	1	2.11252E+13	156.8526	96.05872
United States	9	2022-Q3	125.0621	2.823333333	1	2.12643E+13	152.3108	80.32858
United States	9	2022-Q4	125.5212	4.273333333	1	2.13994E+13	142.5849	95.46448
United States	9	2023-Q1	126.8328	4.753333333	1	2.15185E+13	138.8443	102.141
United States	9	2023-Q2	128.3451	5.133333333	1	2.16285E+13	139.5101	104.7278
United States	9	2023-Q3	129.4571	5.426666667	1	2.18867E+13	144.0612	108.2583
United States	9	2023-Q4	129.5924	5.396666667	1	2.20702E+13	137.0831	98.08617
United States	9	2024-Q1	130.9435	5.256666667	1	2.21956E+13	136.3403	99.69414
United States	9	2024-Q2	132.4507	5.26	1	2.22868E+13	135.5082	98.62463
United States	9	2024-Q3	132.8508	5	1	2.23771E+13	136.6691	97.90875
United States	9	2024-Q4	133.1497	4.7	1	2.24767E+13	136.1431	98.77499

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ABSTRACT

This study aims to investigate the determinants of inflation in Western countries specifically focusing on the impact of covid-19 pandemic and the Russian –Ukraine war. To do this an economic analysis is done on a panel of 9 western countries over the period of 2020-2024 with data in trimester. We use secondary data from Organization for Economic Cooperation and Development (OECD) and the chosen variables based on existing literature are; short-term interest rates, exchange rates, consumer prix index of energy, production and global gross domestic product which are the independent variables used to explain the dependent variable inflation. The variables undergo a stationarity test and the integration test before being estimated by the GMM panel dynamic model.

The results emphasize on the importance of lowering interest rates to reduce inflationary pressures which play a significant role stabilizing the economy in western countries. Consumer prix index of energy and gross domestic product also influenced positively and significantly the surge of inflation during the Covid-19 and the Russian-Ukraine war. Production and exchange rates were found to negatively affect inflation though non-significant during this period. In order to reduce inflationary pressures its recommended that the Central bank appreciate the national currency and to boost production to maintain economic stability.

Key words: Inflation, Cost of energy, western countries, GMM Panel

RESUME

Cette étude vise à étudier les déterminants de l'inflation dans les pays occidentaux, en se concentrant spécifiquement sur l'impact de la pandémie de covid-19 et de la guerre russo-ukrainienne. Pour ce faire une analyse économique est réalisée sur un panel de 9 pays occidentaux sur la période 2020-2024 avec des données en trimestre. Nous utilisons des données secondaires de l'Organisation de coopération et de développement économiques (OCDE) et les variables choisies sur la base de la littérature existante sont : Les taux d'intérêt à court terme, les taux de change, l'indice des prix à la consommation de l'énergie, de la production et du produit intérieur brut mondial sont les variables indépendantes utilisées pour expliquer la variable dépendante de l'inflation. Les variables subissent un test de stationnarité et un test de Co intégration avant d'être estimées par le modèle dynamique de panel GMM.

Les résultats soulignent l'importance d'abaisser les taux d'intérêt pour réduire les pressions inflationnistes qui jouent un rôle important dans la stabilisation de l'économie des pays occidentaux. L'indice des prix à la consommation de l'énergie et du produit intérieur brut a également influencé positivement et significativement la flambée de l'inflation pendant le Covid-19 et la guerre russo-ukrainienne. Il a été constaté que la production et les taux de change avaient un effet négatif sur l'inflation, bien que non significatif au cours de cette période. Afin de réduire les pressions inflationnistes, il est recommandé à la Banque centrale d'apprécier la monnaie nationale et de stimuler la production pour maintenir la stabilité économique.

Key words: Inflation, Coût d'énergie, Pays Occidentaux, GMM Panel