THE IMPACT OF THE UNITED STATES QUANTITATIVE TIGHTENING POLICY ON MACROECONOMIC PERFORMANCE IN ASIAN COUNTRIES

Anna Yulianita[1], Siti Rohima[2], Yunisvita[3]

[1,2,3] Department of Economic Development, Sriwijaya University, Indonesia

Abstract

This study will analyze the Impact of the United States Quantitative Tightening Policy in terms of Inflation, Interest Rates, Unemployment and Exchange Rate Depreciation on countries in Asia. The data used is in the form of secondary time series data for the period 1998 to 2021. The data used were obtained from the World Bank and the International Monetary Fund (IMF). The analysis technique in this study uses the granger causality method. The results showed that US inflation has no relation to unemployment in Asia Pacific countries. The Fed's interest rate has a relationship with inflation rates in Asia Pacific countries and vice versa. The Fed's interest rate has a relationship with the unemployment rate in Asia Pacific countries and vice versa. Rising United States interest rates can have a negative impact on unemployment rates in Asia Pacific countries, especially if they are highly dependent on foreign capital or have strong economic ties to the United States. In anticipation of the impact of QT by, increasing regional cooperation in the face of financial volatility, adopting efficient monetary policies, as well as increasing economic diversification and investment in education and workforce training. In addition, it is necessary to evaluate U.S. policies to assist Asia-Pacific countries in maintaining their economic stability and minimizing risks that may arise from unexpected external changes.
Keyword: Inflation, Quantitative Tightening Policy, Unemployment, Interest Rates
**JEL:** E24, E31, E43, E43

Introduction

The world economy will now experience the worst Global Recession in the last 150 years which is the impact of the Corona Virus crisis (World Economic Forum, 2020). Related to this, there are 5,404,512 positive confirmed cases and 343.514 Globally reported deaths are related to COVID-19 and more than half of them occur in advanced economic groups with the highest cases of death (World Health Organization, 2020). This sentiment caused macroeconomic stability to experience a significant shock due to the crisis. Correia et al (2020) estimates that the pandemic limited manufacturing activity by about 20 percent. Meanwhile Barro &; Weng (2020) estimates of a negative impact on GDP of about 6-8 percent overall. The biggest negative impact occurred in advanced economic groups where some of these countries experienced a fairly severe spread of the COVID-19 outbreak and carried out lockdown measures that impacted global economic growth projected at minus 6.1 percent in 2020 (International Monetary Fund, 2020).

Based on the scenario International Monetary Fund (IMF) (2020), in the second quarter of 2020 the economic situation experienced the lowest growth due to the uncertainty of the economic situation in that period, but along with efforts to prevent the transmission of a more rapid and massive outbreak, with various policies consistently this condition will be controlled and stabilized in the third quarter of 2020. Advanced economies are more likely to recover quickly with a relatively stronger health situation from various aspects of capacity, such as more advanced health care and facilities as well as ease of international liquidity (in some cases

based on exchange rates and foreign exchange reserves) and relatively easy borrowing costs. This will be key in combating the health crisis and supported by higher recovery financing.

Figure 1. Quarterly World GDP
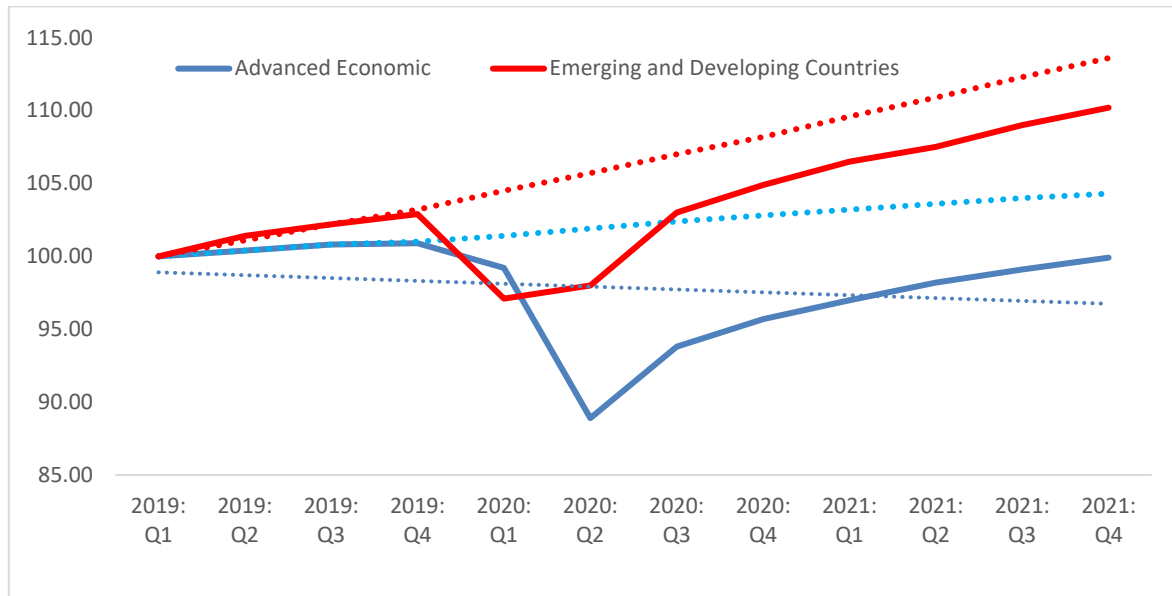
Source: International Monetary Fund, (2020)

In line with Mckibbin et al., (2020), in its scenario shows that the Pandemic significantly affects the global economy in the short term. The effects of the pandemic are determined by the high cost of recovery, but this could have been avoided by greater investment in public health systems in all countries but was ineffective in less developed countries where access to health is still low and population densities are high. Contrast with (Ozili, 2020) which considers that most countries are under pressure in responding to the Corona virus outbreak. As a result, many countries make policy decisions that are too early to have far-reaching negative impacts on the economy and plunge into recession.

Policy patterns in each country differ depending on financing conditions in this crisis. The strength of each country's competitiveness is the key to sooner or later economic recovery. Thus, macroeconomic stability which includes GDP, inflation, international trade, productivity and investment needs to be considered as a source of financing for economic recovery and an indicator of global competitiveness (Rusu &; Roman, 2018). Consistent with this, the strength of global competitiveness in terms of inclusive growth, innovation and Research and Development (R&D) of this group is stronger in the face of short-term crises (World Economic Forum, 2020b).

Macroeconomic policy depends on the persistence of a country in overcoming this pandemic, several studies discuss economic policies, especially macroeconomics. The COVID-19 pandemic has responded negatively to macroeconomic conditions Ludvigson et al., (2020) found that there were shocks in several sectors, namely industry and services. This response creates a representational of the New Keynesian model that considers the Pandemic variable as a negative shock to growth rates in productivity as well as technological change and traps stagnation as an Endogenous Model (Fornaro &; Wolf, 2020). The impact of various policies related to Covid 19 (Veronica et al., 2020) considers that fiscal stimulus is less effective because there is no Keynesian multiplier effect due to the closure of various economic

sectors, while from the monetary side, as long as it is not hindered by the lower limit of zero, it can have an enlarged effect so as to prevent corporate losses, but many countries carry out monetary policy through interest rate increases such as the United States which increases interest rates until September 2022 by 3.25 percent.

Performance Global and regional macroeconomics have faced significant downward pressure throughout 2019 and 2020. The emergence of the Covid-19 pandemic, escalating trade tensions and an already slowing global economy have paved the way for the world's worst economic performance since the greatest economic crisis, with the value of global international trade expected to fall by 14.5 percent in 2020. Despite facing a sharp decline in merchandise trade, Asia Pacific is expected to perform better than the rest of the world during 2020, with the latest estimates showing lower declines in export and import values of 9.7 percent and 10.3 percent respectively. As a result, the region's lead in global merchandise trade is expected to rise to 2020 highs of 41.8 percent, world exports and 38.2 percent, global imports are expected from Asia Pacific to increase from 39.9 percent and 36.9 percent in 2019 (United Nations ESCAP, 2021). Macroeconomic performance will not be evenly distributed across regions. Especially China, which as a developing country has been hit hardest by the current pandemic, causing supply chain disruptions, causing their exports and imports to fall by 15.8 percent and 17.1 percent, respectively. This will have a more severe crisis impact on countries in the Asia-Pacific region, compared to poorer trade performance in developing countries due to their weak ability to implement fiscal and monetary measures to curb inflation due to supply chain disruptions in China.

Currently the Asia-Pacific region, South Asia experienced the worst overall trade contraction (down 21.6 percent and 21.4 percent in exports and imports, respectively). Statistically, the declining macroeconomic performance can be seen by sector, namely the fuel trading sector and mining products experienced the highest decline. This is due to the continued consumer need for products with necessity while there is a significant decrease in demand for inputs which has an impact on increasing unemployment (United Nations ESCAP, 2021). International trade relations and economic growth are evidenced by several studies including studies Fatima et al., (2020) Proving that economic openness has a positive and significant effect on economic growth. In line with this, the study Islam (2019) Finding that exports and imports are determinants of economic growth where every increase in net exports will increase overall economic growth. The differences in many literature studies related to the relationship of exchange rates to economic growth include: Morina et al., (2020) which recommends policymakers should adopt different policies to keep the exchange rate stable to boost economic growth. The results of this study are in line with research Ybrayev (2021) Recommending macroeconomic policies that target stable and competitive real exchange rates can be beneficial for the progress of the sector, increasing price competitiveness for manufactured goods and and the service sector so that it will have positive implications for economic growth.

This study observes the impact of the global economic crisis after the COVID-19 pandemic and the United States' QT policy on macroeconomic performance in Asian countries has a significant impact. The research is expected to provide insight into how the global economic crisis is affecting diverse Asian countries. In addition, this research can help policymakers to design more effective mitigation strategies. This research fills a knowledge gap in the economic literature by uncovering the transmission mechanisms of the United States' QT policy to Asian financial markets and economies. This research creates an update in global and regional economic research by analysing the situation that is highly relevant and has a major impact today, thus providing a better view of future world and regional economic developments, and helping policymakers face complex post-COVID-19 economic challenges.

This study is divided into several parts, section 2 discusses research methods, part 3 discusses the general description and movement of variables, model estimation and data processing stages, and economic analysis based on the results of model estimates associated with previous theories and literature.

Research Method

The scope of this study is to analyze the relationship between the impact of US monetary policy in the form of the Fed's policy in controlling inflation on macroeconomic performance in Asian countries, coherent data during the period 1998 to 2021. The data used in this study is time series data which is a type of secondary data. The data used is obtained from various legal institutions or legally recognized, namely from the worldbank. In addition, data is also obtained through literature studies from several literature in the form of textbooks, journals, theses, dissertations and other sources related to the problems discussed. The analytical technique in research is quantitative with the Granger Causality method. Granger causality is a concept in econometric analysis used to measure whether one time variable can be used in forecasting or predicting changes in another time variable.

The equation model in this study is as follows:

Model of Estimation of unemployment with inflation

$$IF_t = a_i + \sum_{1i} \beta\, IF_{t-1} + \sum_{1i} IF\, UN_{t-1} + \varepsilon_{1t} \tag{1}$$

$$UN_t = a_{2i} + \sum_{2i} \beta\, IF_{t-1} + \sum_{2i} IF\, UN_{t-1} + \varepsilon_{2t} \tag{2}$$

Interest Rate Estimation Model with inflation

$$SB_t = a_i + \sum_{1i} \beta\, IF_{t-1} + \sum_{1i} IF\, SB_{t-1} + \varepsilon_{1t} \tag{3}$$

$$SB_t = a_{2i} + \sum_{2i} \beta\, IF_{t-1} + \sum_{2i} IF\, SB_{t-1} + \varepsilon_{2t} \tag{4}$$

Interest rate estimation model with unemployment

$$SB_t = a_i + \sum_{1i} \beta\, SB_{t-1} + \sum_{1i} SB\, UN_{t-1} + \varepsilon_{1t} \tag{5}$$

$$SB_t = a_{2i} + \sum_{2i} \beta\, SB_{t-1} + \sum_{2i} UN\, SB_{t-1} + \varepsilon_{2t} \tag{6}$$

Description: $UN_{(t-1)}$: Unemployment, $SB_{(t-1)}$: Interest Rate, $Inf_{(t-1)}$: Inflation, i: total lag

Table 1. Variable Operational Definition

| Variable	Variable Operational Definition
Unemployment	Unemployment is the percentage of the disturbing population in Asia Pacific during the period 1998-2021
Interest	Interest Rate is the reference value of interest in Asia Pacific countries during the period 1998 to 2021 measured in percent units
Inflation	Inflation is the inflation rate in Asia Pacific countries from 1998 to 2021 measured in percent

RESEARCH METHODS
Overview

The Quantitative Tightening (QT) policy implemented by the US has a significant impact on Asia Pacific countries. One of the main impacts is changes in currency exchange rates (Caballero et al., 2017). As the Federal Reserve reduces its purchases of long-term assets and increases interest rates, the U.S. dollar tends to strengthen, thus weakening the currencies of Asia-Pacific countries relative to the dollar (Wang & Chueh, 2013). This disrupted their exports, making their goods more expensive for the international market and profitable for imports. In addition, the impact of QT policy has an impact on regional financial stability, increases financial market volatility, and results in fluctuations in capital flows that can affect the economies of Asia Pacific countries. For countries with vulnerable financial sectors and high debt, the risks associated with this policy can be greater.

Asia Pacific countries have strong and flexible fiscal policies and diversified economies can better cope with the impact of QT policies (Jha et al., 2014). They can respond wisely through internal policies including interest rate setting, financial market regulation, as well as fiscal stimulus measures to maintain their economic stability. Each country in the region will feel the impact differently depending on their level of dependence on the US, their economic profile, or their readiness to deal with global market volatility that may arise due to US QT policies.

When QT policy is implemented in the United States, the macroeconomic conditions of the country are usually characterized by several characteristics. The Federal Reserve tends to raise its benchmark interest rate as well as reduce purchases of long-term assets, such as government bonds and mortgages, in an effort to reduce the amount of money circulating in the market. This resulted in an increase in lending rates, consequently slowing economic growth and affecting sectors such as housing and investment. QT policy can also affect both stock and bond markets with the potential to increase uncertainty and volatility (Fang et al., 2017). Employment and inflation conditions are also a concern, because the Fed strives to maintain price stability and achieve the inflation target while implementing QT policy. Thus, US macroeconomic conditions during QT policy are often characterized by changes in interest rates, investments, as well as overall levels of economic activity, which can have a major impact on the global economy. In detail, you can see the historical data of interest rate indicators in the USA for 1954-2022 on a monthly basis.

Figure 2. Federal Funds Effective Rate 1954-2022
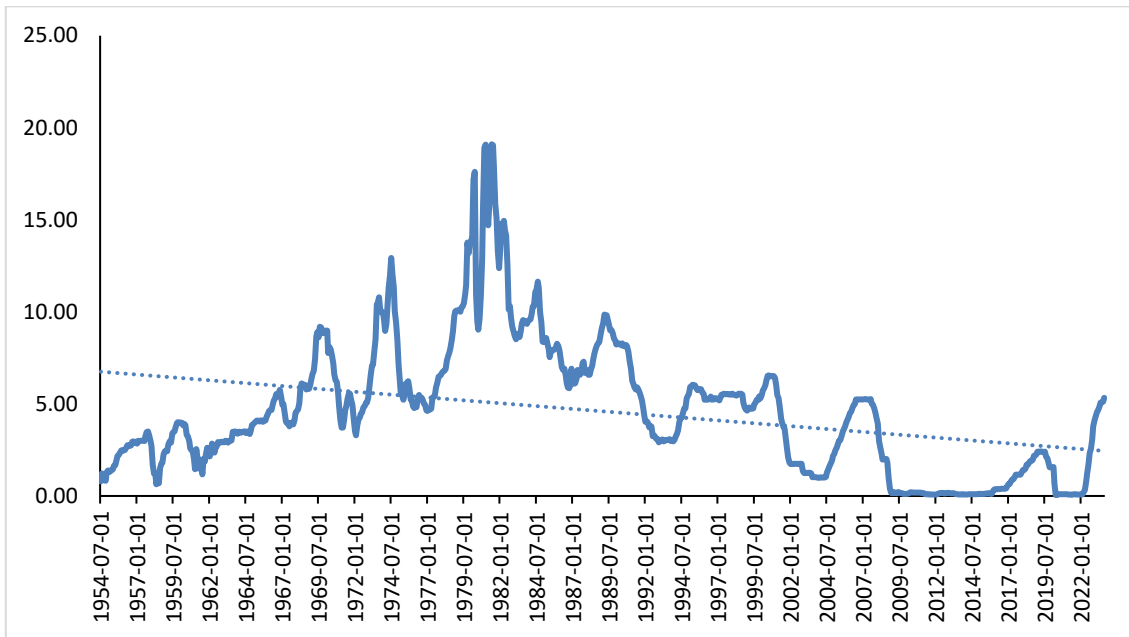
Source: Board of Governors of the Federal Reserve System (US), 2023.

Based on Figure 2, the interest rate of the United States during the period 1954-2022 has fluctuated for decades. Fed interest rates were lowest in the early 1950s, with several increases and decreases over the following years. In the 1970s, there was a significant increase in interest rates, especially during the oil crisis of the 1970s. The highest peak occurred in the early 1980s, with interest rates reaching very high levels of almost 20 percent. The specific action taken by the Federal Reserve in 1982 to raise interest rates was part of a broader strategy to reduce inflation.

Thereafter, interest rates tended to decline gradually during the 1980s and 1990s. Then, there were some fluctuations in the early 2000s, with interest rates reaching low levels in the early 2000s. In 2008, there was a global financial crisis that led to a drastic drop in interest rates. Furthermore, the Federal Reserve and the US government took steps to stabilize the economy, including lowering interest rates to near zero in 2008-2009.

During the period January 2021 to August 2023, there was a significant upward trend in interest rates. At the beginning of 2021, interest rates were at low levels, ranging from 0.06 to 0.10. However, around March 2022, there was a drastic change, with interest rates starting to rise rapidly. This increase continued into August 2022, with the rate rising from 0.10 percent to over 2.33. This indicates the presence of tight monetary policy as well as other factors that cause interest rate increases.

After August 2022, interest rates remain significantly increased, reaching more than 5 percent in August 2023. This increase indicates major changes in economic policy, inflation, and other factors affecting interest rates. During this period, not only increases occur, but also show fluctuations in interest rates. These changes can affect various aspects of the economy, such as investments, loans, and individual and business financial decisions. This reflects the decades-long history of fluctuations in US interest rates and their role in dealing with economic challenges such as inflation, energy crises, financial crises, and others. Interest rates are an

important monetary policy tool used by monetary authorities to control inflation and stimulate economic growth.

In the period from 2015 to 2019, the United States experienced a relatively stable and moderate inflation rate, with the highest rate reaching 2.44 percent in 2018. This rate of inflation is generally considered healthy for emerging economies, leaving room for the Federal Reserve to keep its interest rate policy relatively stable. During this period, the Fed's monetary policy tools are likely to be focused on supporting economic growth and bringing inflation down to around 2 percent.

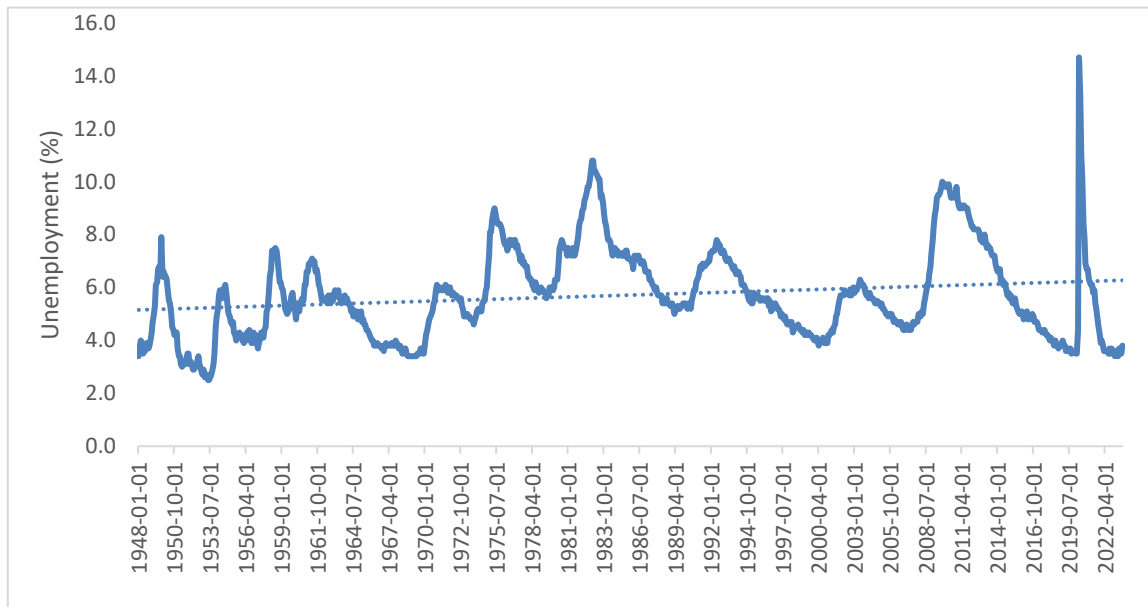Figure 3. Inflation Rate in the United States 1960-2022
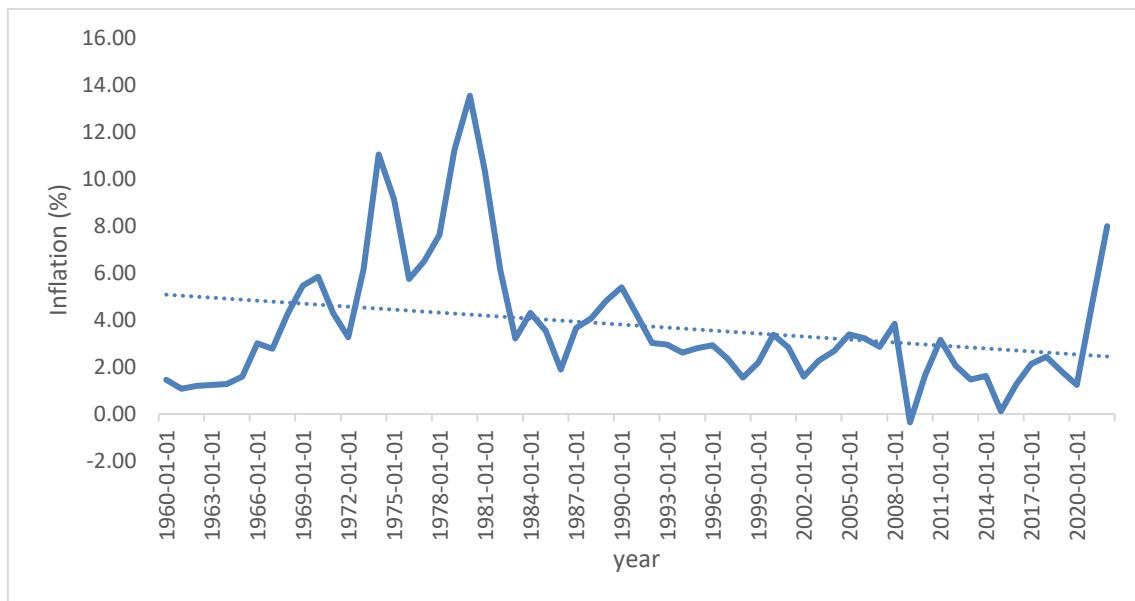
Source : Board of Governors of the Federal Reserve System (US), 2023

The annual inflation rate in the United States from 1960 to 2022 is shown in Figure 3. At first, from the 1960s to the early 1970s, inflation seemed relatively stable, but it began to rise dramatically in the mid-1970s. This era is known as stagflation, where high inflation and unemployment rates occur together. This surge in inflation peaked in the early 1980s, with inflation of over 13 percent in the 1980s. The year 2008 marked the global financial crisis, which was followed by a decline in inflation and even deflation in 2009 of minus 0.36 percent. The Fed responded with a policy of very low interest rates as well as quantitative easing in stimulating the economy. As a result, inflation began to recover but remained moderate over the next few years.

After the peak in the early 1980s, there was a period of declining inflation, which continued to more moderate and stable levels during the 1990s and early 2000s. Over the past two decades, monetary policy from the Federal Reserve has been quite successful in keeping inflation within the target range, which is generally considered to be around 2 percent. This relatively stable inflation rate allows for a more predictable interest rate policy and overall economic stability. However, the situation changed drastically in 2020, marked by the emergence of the COVID-19 pandemic. Inflation fell to a level of 1.23 percent, reflecting slowing economic activity and easing price pressures. The Fed tends to keep interest rates low in stimulating the economy, which means suspending inflation-prevention policies. In 2021 and 2022 there was a significant increase in inflation with inflation rates soaring to 4.7 percent and 8 percent respectively.

The decision in raising interest rates is not taken easily. Raising interest rates risks slowing the pace of economic growth and affecting the job market. In addition, it can increase the burden of loans for consumers and businesses. Therefore, the Fed needs to consider the trade-off between controlling inflation and maintaining healthy economic growth. The ideal strategy for the Fed is a cautious approach in raising interest rates, while monitoring other economic indicators. This allows the central bank to respond quickly if inflation does not abate or if the economy shows significant signs of slowdown. Flexibility in monetary policy is key

in monitoring this uncertain economic environment.

Figure 4. Unemployment Rate in the United States 1948-2022

Source : Board of Governors of the Federal Reserve System (US), 2023

As we enter the 21st century, the world is changing rapidly. The dot-com bubble burst in the early 2000s, and the terrorist attacks on September 11, 2001 added to the uncertainty. Alan Greenspan, who headed the Fed at the time, responded by cutting interest rates. Lowering interest rates was a successful decision in an effort to lower unemployment but also triggered a housing bubble. Then the global financial crisis occurred in 2008, launching a series of expansionary monetary policies, including quantitative easing, to save the economy. Unemployment is rising but the Fed's policies are helping prevent a more severe recession.

In the 2010s, the economy began to recover. Janet Yellen and then Jerome Powell began the process of normalizing monetary policy, by gradually raising interest rates. The unemployment rate continues to decline, but the Fed must be careful not to stoke inflation. Then, the COVID-19 pandemic came causing job losses and causing the unemployment rate to soar. The Fed, now under Powell's control, acted quickly. Interest rates were cut drastically and quantitative easing was implemented to stabilize the economy. Within months, the unemployment rate began to improve, although the road to a full recovery was still long.

Model Estimation and Testing Results
Unit Root Panel Test

Unit root test or stationary test is the initial stage before estimating the time series model. Unit root tests are performed with the Augmented Dickey Fuller (ADF) test using a real

level of five percent. Data stationary can be seen from individual values as well as as overall (Common).

Table 1. Common Unit Root Test

Variable	Level		First Difference		Second Difference	
	T-Statistics	Probability	T-Statistics	Probability	T-Statistics	Probability
IF	0.69983	1.0000	87.0634	0.0000	136.452	0.0000
UN	281.769	0.0000	325.440	0.0000	154.383	0.0000
SB	40.0311	0.0021	117.792	0.0000	137.458	0.0000

Source: Processed Data (2023)

In Table 1, ADF tests that have been conducted at the level level show that the Inflation variabe is not stationary at the level with a probability greater than the real level of 5 percent or equal (1,000 > 0.05). While in the first difference and second difference tests all variables are declared significant so that it can be stated that IF, UN and SB are stationary at that level. Further analysis of individual Unit Root Test testing is described in Table 2.

Table 2. Individual Unit Root Test

Crossection	Individual Unit Root Test								
	IF (Level, First, Second)			UN (Level, First, Second)			SB (Level, First, Second)		
1	0.9605	0.0049	0.0003	0.9989	0.7660	0.0010	0.3656	0.1499	0.0113
2	0.9737	0.0151	0.0020	0.0000	0.0000	0.0000	0.6115	0.0017	0.0012
3	0.9930	0.0194	0.0009	0.1398	0.0297	0.0023	0.0014	0.0001	0.0002
4	0.9489	0.0031	0.0003	0.4835	0.0118	0.0050	0.1809	0.0000	0.0000
5	0.9739	0.0066	0.0002	0.2608	0.9134	0.6370	0.3375	0.0221	0.0231
6	0.9508	0.0051	0.0006	0.1415	0.0085	0.0002	0.0228	0.0006	0.0001
7	0.9790	0.0492	0.0017	0.1763	0.0104	0.0027	0.0186	0.0030	0.0016
8	0.8885	0.0026	0.0003	0.2343	0.0002	0.0000	0.3312	0.0002	0.0000
9	0.9931	0.0065	0.0002	0.9931	0.0065	0.0002	0.7471	0.0058	0.0052

Source : Processed Data (2023)

Based on Table 2, individually the nine crossection data show that at the level level inferred as a whole on the variable IF shows a value greater than the level of significance

Cointegration Test

Cointegration tests are carried out to determine the long-term relationship between variables. Variables that are not stationary in the long run are likely to be cointegrated. The relationship between mutual influences can be seen from the cointegration between variables that occur. The requirement for the cointegration process is that all variables must be stationary to the same degree.

Table 3. Common Cointegration Test

Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	350.6	0.0000	318.1	0.0000
At most 1	54.37	0.0000	40.33	0.0019

At most 2	34.18	0.0120	34.18	0.0120

Source: Processed Data (2023)

Based on Table 3, all variables have a probability smaller than 0.05. This means that all variables have a long-term linear relationship. Further testing is carried out cointegration testing between variables at the individual level which can be seen in Table 4.

Table 4. Individual Cointegration Test

Cross Section	Trace Test		Max-Eign Test	
	Statistics	Prob.***	Statistics	Prob.**
Hypothesis of no cointegration				
1	39.2934	0.0171	21.9186	0.0564
2	117.0592	0.0000	96.4620	0.0000
3	61.8067	0.0000	31.4079	0.0020
4	49.5533	0.0008	31.6491	0.0019
5	31.8760	0.1092	14.1981	0.4440
6	46.5014	0.0020	26.2922	0.0131
7	49.3440	0.0008	26.1557	0.0138
8	23.5712	0.4906	12.5651	0.5993
9	40.7028	0.0115	19.2857	0.1251
Hypothesis of at most 1 cointegration relationship				
1	17.3747	0.1191	10.7848	0.2682
2	20.5972	0.0450	11.5985	0.2105
3	30.3988	0.0014	22.5066	0.0039
4	17.9042	0.1022	12.5793	0.1548
5	17.6779	0.1092	11.6993	0.2041
6	20.2091	0.0508	14.6071	0.0787
7	23.1883	0.0192	16.9028	0.0346
8	11.0060	0.5415	7.6961	0.5843
9	21.4171	0.0345	12.5392	0.1568
Hypothesis of at most 2 cointegration relationship				
1	6.5899	0.1498	6.5899	0.1498
2	8.9988	0.0537	8.9988	0.0537
3	7.8922	0.0867	7.8922	0.0867
4	5.3249	0.2497	5.3249	0.2497
5	5.9786	0.1924	5.9786	0.1924
6	5.6021	0.2238	5.6021	0.2238
7	6.2855	0.1698	6.2855	0.1698
8	3.3099	0.5244	3.3099	0.5244
9	8.8779	0.0567	8.8779	0.0567

Source: Processed Data (2023)

Based on Table 4, the results of cointegration testing between individuals show results that vary between individuals which proves the difference in long-term relationships between variables at the individual level. Based on the hypothesis of the absence of cointegration explains that most results at the individual level accept the hypothesis but there are several individual probability values smaller than 0.05, namely the 2nd individual, 3rd individual, 4th individual, 6th individual and 7th individual which proves that there is no cointegration between variables in individuals.

Optimum Lag Test

The final procedure is to determine how long the lag (optimal lag) is in the model causality. Table 5 shows the optimal Lag test results showing that the determination of lag length uses the estimated Lag Exlusion Test. Table 5 shows the data to be used in estimating Granger's causality is lag one and lag two for 3 variables. The statistical results show the same estimate between lag 1 and two. Thus, further testing was carried out, using Lag Leng Criteria. Determination of Optimum Lag in a VAR Panel system is important. The determination of optimum lag using lag leng criteria is based on the values of Akaike Information Criteria (AIC), Final Prediction Error (FPE), Hannan-Quinn Information Criterion (HQ), and Schwarz Information Criterion (SC)with detailed results that can be seen in Table 5.

Table 5. Lag Leng Criteria Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-6946.096	NA	6.85e+29	77.21218	77.26540	77.23376
1	-6209.435	1440.583*	2.11e+26*	69.12705*	69.33992*	69.21336*

Source : Processed Data (Processed, 2021)

The amount of lag chosen in this study is the lag that produces the smallest value seen from the most (*) signs. Based on Table 6, it can be seen that the most signs (*) in the Causality model are lag 1. This indicates that the optimal lag in the model according to the sign (*) is most in lag one.

Granger Causality Test

Granger causality testing in panel data describes two approaches: the Individual overall coefficient approach (crossection). The initial stages of initial testing are described based on individual testing which are described in detail in Table 6.

Table 6. Individual Coefficient Test

Null Hypothesis:	z-Statistic	Prob.	Information
IF does not Granger Cause UN	0.21403	0.1209	No Causality
UN does not Granger Cause IF	2.08001	0.1102	Relationship
SB does not Granger Cause IF	2.28999	0.0510	Causality
SB does not Granger Cause IF			Relationship
	3.08538	0.0010	Two-Way
SB does not Granger Cause UN	2.34087	0.0262	No Causality
SB does not Granger Cause UN	2.54945	0.0023	Relationship

Source : Processed Data, 2023

Based on Table 6, showing that the z-static Probability value is greater than the significance level of α (0.1209 and 0.1102 > 0.05) thus, the Null Hypothesis is accepted. Therefore it can be concluded that individually American inflation is not able to affect the unemployment rate in Asia Pacific countries and also for vice versa the unemployment of the United States is not able to affect the inflation rate in Asia Pacific countries.

While the Causality test between interest rates and inflation, individually shows a relationship between two seen from the z-Statistical Probability value of the model is smaller

than the level of significance of α (0.0510 and 0.0010 < 0.05) thus the Null Hypothesis is rejected which can be concluded that individually the interest rate of the United States affects the inflation rate in Asia Pacific countries and vice versa United States inflation affects interest rate policy in Asian countries Pacific

The last individual model test also showed a direction in line with that indicated by z-Statistic probability values smaller than the significance level at α level (10 percent) (0.026 and 0.0023 < 0.05) thus the Null Hypothesis was rejected. That is, American interest rates are able to affect the unemployment rate in Asia Pacific countries and vice versa unemployment in America affects unemployment in Asia Pacific.

Economic Analysis
The Relationship Between United States Inflation and Unemployment in Asia Pacific

Given the view that inflation in the United States may not have a significant impact on unemployment rates in Asia-Pacific countries, the link between inflation and unemployment tends to be stronger domestically than between countries (Pham &; Sala, 2022; Blanchflower et al., 2014). This indicates that the inflation rate in the United States does not directly affect the unemployment rate in Asia Pacific due to the indirectness of international markets (Lin et al., 2023). Countries in Asia Pacific have diverse monetary policies as well as different inflation rates, which can result in mixed responses to changes in inflation rates in the United States (Kisswani &; Nusair, 2014). In addition, domestic economic factors and international trade can play a significant role in determining the unemployment rate (Auboin &; Ruta, 2013). In a global framework full of uncertainty, such as the global financial crisis or changes in international trade policy, the impact on unemployment rates in Asia Pacific may be greater than the impact of changes in inflation in the United States.

The effects of inflation and unemployment tend to be stronger domestically than between countries. The Phillips theory first proposed by A.W. Phillips in 1958 focuses on the strong relationship between inflation and unemployment at the national level (Bhattarai, 2016). Although the theory has been empirically tested and expanded, the core concepts of the theory conclude that there is a domestically observable trade-off relationship between the inflation rate and the unemployment rate (Orji et al., 2015). However, the inflation rate in the United States may not have the same direct impact on the unemployment rate in Asia Pacific countries due to market indirectness and other factors.

Asia Pacific countries have a variety of monetary policies, and each country has a different inflation rate. These diverse monetary policies can lead to different responses to changes in the inflation rate in the United States (Reifschneider et al., 2015). In addition, Asia Pacific countries can have control over factors in their economies that can offset the effects of inflation from outside. Global economic uncertainty, including global events such as the financial crisis or changes in international trade policy, has a greater impact on unemployment rates in Asia-Pacific countries than changes in inflation rates in the United States (Rashid et al., 2017).

The Relationship Between United States Interest Rates and Inflation in Asia Pacific

According to economic theory, rising interest rates in the United States tend to reduce investment and consumption at home as borrowing costs become higher (Lusardi &; Scheresberg, 2013). If Asia-Pacific countries have strong economic ties to the United States and have dollar-denominated loans, rising interest rates could result in higher interest expenses

and reduced economic activity (Gertler &; Karadi, 2015). This could potentially slow economic growth and reduce demand, which in turn could affect the inflation rate.

Rising interest rates in the United States can strengthen the value of the US dollar (Caballero et al., 2017). Rising interest rates can affect the exchange rates of Asia Pacific countries as well as have an impact on import and export prices (Thuy & Thuy, 2019). Changes in currency exchange rates can have a direct impact on the inflation rate (Forbes et al., 2018). Asian countries have a fairly high level of dependence on international trade (Lenzen et al., 2013). Several countries responded to rising interest rates in the United States with tight monetary policies in an effort to maintain the stability of their currencies (Cukierman, 2013). This could result in reduced economic growth and lower inflation. However, such policy reactions vary between Asia Pacific countries. In addition to monetary policy, factors such as fiscal and structural policy can also influence how Asia Pacific countries respond to changes in interest rates in the United States (Mauro et al., 2015). Fiscal measures, such as government spending, changes in taxes, and structural reforms can play a role in stabilizing the economy and controlling inflation. Global factors including uncertainty over international trade, the global financial crisis, or changes in U.S. foreign policy also affect how Asia-Pacific countries respond to changes in interest rates. Such uncertainty can have a significant effect on inflation rates and economic growth.

The Relationship Between United States Interest Rates and Unemployment in Asia Pacific

Rising interest rates in the United States can reduce the level of corporate investment and economic growth in Asia Pacific countries (Summers, 2016). Higher interest rates can make borrowing more expensive, hamper investment projects, as well as reduce business activities (Dell'Ariccia et al., 2014). This has a negative impact on the rate of job creation and results in an increase in unemployment (Hall, 2013). Rising interest rates in the United States tend to strengthen the value of the US dollar (Engel, 2016). Thus, reducing the export competitiveness of Asia Pacific countries as their goods become more expensive for foreign customers. A decrease in export demand can disrupt economic activity and decrease production, which can have an impact on the unemployment rate.

The reaction of governments and central banks of Asia Pacific countries to the increase in US interest rates is very important to study. If these countries follow suit by raising domestic interest rates in maintaining the stability of their currencies, this could amplify the negative effects on investment and unemployment. Conversely, when they choose to keep interest rates low to stimulate growth, this results in higher inflation. The level of dependence of Asia Pacific countries on foreign capital as well as foreign direct investment plays a significant role. If countries in the Asia Pacific are highly dependent on foreign capital that is sensitive to global interest rates, then changes in US interest rates have a direct impact on economic growth and unemployment (Shaukat et al., 2019). Global factors such as uncertainty in international trade and turmoil in global financial markets amplify the impact of changes in US interest rates on the unemployment rate in Asia Pacific.

Conclusions and Recommendations

The estimates show that US inflation has no relation to unemployment in Asia Pacific countries. The absence of this relationship is due to the indirectness of international markets and national economic policies. The interest rate of the United States has a relationship with the inflation rate in Asia Pacific countries and vice versa. Rising U.S. interest rates can have a direct effect on inflation in Asia Pacific countries, primarily through changes in currency

exchange rates and borrowing costs. The estimation results show that US interest rates have a relationship with unemployment rates in Asia Pacific countries and vice versa. Rising U.S. interest rates have a negative impact on unemployment rates in Asia-Pacific countries, especially if they are highly dependent on foreign capital or have strong economic ties to the United States.

The conclusion of the research on the impact of US Quantitative Tightening (QT) policy on macroeconomic performance in Asia Pacific countries is that these countries need to take various actions to manage risks that may arise due to changes in US monetary policy. While there is no significant link between U.S. inflation and unemployment in Asia Pacific, rising U.S. interest rates can have a direct effect on both inflation and unemployment in the region. Therefore, it is advisable to anticipate the impact of QT by increasing regional cooperation, helping to deal with financial volatility, adopting efficient monetary policies, and increasing economic diversification and investment in education and workforce training. In addition, evaluating the impact of U.S. policies will assist Asia-Pacific countries in maintaining their economic stability and minimizing risks that may arise from unexpected external changes. With these measures, Asia Pacific countries can better manage the impact of U.S. QT and maintain balanced macroeconomic performance amid global economic uncertainty.

References

Auboin, M., & Ruta, M. (2013). The relationship between exchange rates and international trade: A literature review. *World Trade Review*, *12*(3), 577–605. https://doi.org/10.1017/S1474745613000025

Barro, R. J., &; Weng, J. (2020). The Coronavirus and the Great Influenza Pandemic: Lessons from the "Spanish Flu" for the Coronavirus's Potential Effects on Mortality and Economic Activity. *NBER Working Paper Series*, 25.

Bhattarai, K. (2016). Unemployment-inflation trade-offs in OECD countries. *Economic Modelling*, *58*, 93–103. https://doi.org/10.1016/j.econmod.2016.05.007

Blanchflower, D. G., Bell, D. N. F., Montagnoli, A., &; Moro, M. (2014). The Happiness Trade-Off between Unemployment and Inflation. *Journal of Money, Credit and Banking*, *46*(S2), 117–141. https://doi.org/10.1111/jmcb.12154

Caballero, R. J., Farhi, E., &; Gourinchas, P. O. (2017). The safe assets shortage conundrum. *Journal of Economic Perspectives*, *31*(3), 29–46. https://doi.org/10.1257/jep.31.3.29

Correia, S., Luck, S., &; Verner, E. (2020). Pandemics Depress the Economy, Public Health Interventions Do Not: Evidence from the 1918 Flu. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3561560

Cukierman, A. (2013). Monetary policy and institutions before, during, and after the global financial crisis. *Journal of Financial Stability*, *9*(3), 373–384. https://doi.org/10.1016/j.jfs.2013.02.002

Dell'Ariccia, G., Laeven, L., & Marquez, R. (2014). Real interest rates, leverage, and bank risk-taking. *Journal of Economic Theory*, *149*(1), 65–99. https://doi.org/10.1016/j.jet.2013.06.002

Engel, C. (2016). Exchange rates, interest rates, and the risk premium. *American Economic Review*, *106*(2), 436–474. https://doi.org/10.1257/aer.20121365

Fang, L., Yu, H., &; Li, L. (2017). The effect of economic policy uncertainty on the long-term correlation between U.S. stock and bond markets. *Economic Modelling*, *66*(January), 139–145. https://doi.org/10.1016/j.econmod.2017.06.007

Fatima, S., Chen, B., Ramzan, M., &; Abbas, Q. (2020). The Nexus Between Trade Openness and GDP Growth: Analyzing the Role of Human Capital Accumulation. *SAGE Open*, *10*(4). https://doi.org/10.1177/2158244020967377

Forbes, K., Hjortsoe, I., &; Nenova, T. (2018). The shocks matter: Improving our estimates of exchange rate pass-through. *Journal of International Economics*, *114*, 255–275. https://doi.org/10.1016/j.jinteco.2018.07.005

Fornaro, L., &; Wolf, M. (2020). Covid-19 Coronavirus and Macroeconomic Policy. In *Barcelona GSE Working Paper Series* (No. 1168; Issue March).

Gertler, M., & Karadi, P. (2015). Monetary Policy Surprises, Credit Costs,and Economic Activity. *American Economic Journal: Macroeconomics*, *7*(1), 44–76. https://doi.org/10.1257/mac.20130329

Hall, R. E. (2013). High Discounts and High Unemployment. *American Economic Review*, *107*(June), 1–33. https://doi.org/10.1257/aer.20141297

IMF. (2020). *World Economic Outlook* (Issue May).

Islam, M. R. (2019). Economic Growth Rates and Exports of Bangladesh: The Bengal Tiger? *South Asia Research*, *39*(3), 285–303. https://doi.org/10.1177/0262728019861760

Jha, S., Mallick, S. K., Park, D., &; Quising, P. F. (2014). Effectiveness of countercyclical fiscal policy: Evidence from developing Asia. *Journal of Macroeconomics*, *40*, 82–98. https://doi.org/10.1016/j.jmacro.2014.02.006

Kisswani, K. M., &; Nusair, S. A. (2014). Nonlinear convergence in Asian interest and inflation rates: Evidence from Asian countries. *Economic Change and Restructuring*, *47*(3), 155–186. https://doi.org/10.1007/s10644-013-9146-7

Lenzen, M., Moran, D., Bhaduri, A., Kanemoto, K., Bekchanov, M., Geschke, A., & Foran, B. (2013). International trade of scarce water. *Ecological Economics*, *94*, 78–85. https://doi.org/10.1016/j.ecolecon.2013.06.018

Lin, W. T., Chen, Y. H., & Jhang, S. S. (Sherwin). (2023). The effects of unemployment and inflation rates on the business value of information technology and economic performance: The partial adjustment valuation approaches. *Asia Pacific Management Review*, *xxxx*. https://doi.org/10.1016/j.apmrv.2022.12.005

Ludvigson, S. C., Ma, S., &; Ng, S. (2020). Covid19 and the Macroeconomic Effects of Costly Disasters. In *NBER Working Paper Series* (No. 26987; Vol. 53, Issue 9). https://doi.org/10.1017/CBO9781107415324.004

Lusardi, A., &; Scheresberg, C. de B. (2013). Financial literacy and high-cost borrowing in the united states. In *National Bureau of Economic Research*. https://www.nber.org/papers/w18969

Mauro, P., Romeu, R., Binder, A., & Zaman, A. (2015). A modern history of fiscal prudence and profligacy. *Journal of Monetary Economics, 76, 55–70. https://doi.org/10.1016/j.jmoneco.2015.07.003*

Mckibbin, W., Fernando, R., Lee, J.-W., &; Sidorenko, A. (2020). *The Global Macroeconomic Impacts of COVID-19: Seven Scenarios *. March*, 1–43.

Morina, F., Hysa, E., Ergün, U., Panait, M., &; Voica, M. C. (2020). The Effect of Exchange Rate Volatility on Economic Growth: Case of the CEE Countries. *Journal of Risk and Financial Management*, *13*(8). https://doi.org/10.3390/jrfm13080177

Orji, A., Orji, O. . I. A., & Okafor, J. C. (2015). Inflation And Unemployment Nexus In Nigeria: Another Test of the Phillips Curve. *Asian Economic and Financial Review*, *5*(5), 766–778. https://doi.org/10.18488/journal.aefr/2015.5.5/102.5.766.778

Ozili, P. K. (2020). *Spillover of COVID-19 : impact on the Global Economy*. *March*. https://doi.org/10.2139/ssrn.3562570

Pham, B. T., &; Sala, H. (2022). Cross-country connectedness in inflation and unemployment: measurement and macroeconomic consequences. *Empirical Economics*, *62*(3), 1123–1146. https://doi.org/10.1007/s00181-021-02052-0

Rashid, M., Looi, X. H., &; Wong, S. J. (2017). Political stability and FDI in the most competitive Asia Pacific countries. *Journal of Financial Economic Policy*, *9*(2), 140–155.

https://doi.org/10.1108/JFEP-03-2016-0022

Reifschneider, D., Wascher, W., & Wilcox, D. (2015). Aggregate supply in the United States: Recent developments and implications for the conduct of monetary policy. *IMF Economic Review*, *63*(1), 71–109. https://doi.org/10.1057/imfer.2015.1

Rusu, V. D., &; Roman, A. (2018). An empirical analysis of factors affecting competitiveness of C.E.E. countries. *Economic Research-Ekonomska Istrazivanja* , *31*(1), 2044–2059. https://doi.org/10.1080/1331677X.2018.1480969

Shaukat, B., Zhu, Q., &; Khan, M. I. (2019). Real interest rate and economic growth: A statistical exploration for transitory economies. In *Physica A: Statistical Mechanics and its Applications* (Vol. 534). Elsevier B.V. https://doi.org/10.1016/j.physa.2019.122193

Summers, L. H. (2016). Us Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound. In *The Best of Business Economics* (pp. 421–435). Palgrave Macmillan. https://doi.org/10.1007/978-1-137-57251-6_38

Thuy, V. N. T., & Thuy, D. T. T. (2019). The Impact of Exchange Rate Volatility on Exports in Vietnam: A Bounds Testing Approach. *Journal of Risk and Financial Management*, *12*(1), 6. https://doi.org/10.3390/jrfm12010006

United Nations ESCAP. (2021). Trade in Goods Outlook in Asia and the Pacific 2020/2021. In *Trade, Investment and Innovation Division*.

Veronica, Guerrieri; Guido, Lorenzoni; Ludwig, Straub; Iván, W. (2020). Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages? In *NBER Working Paper Series* (Vol. 8, Issue 9). https://doi.org/10.1017/CBO9781107415324.004

Wang, Y. S., & Chueh, Y. L. (2013). Dynamic transmission effects between the interest rate, the US dollar, and gold and crude oil prices. *Economic Modelling*, *30*(1), 792–798. https://doi.org/10.1016/j.econmod.2012.09.052

World Economic Forum. (2020a). *Emerging Priorities and Principles for Managing the Global Economic Impact of COVID-19*. April.

World Economic Forum. (2020b). *The Europe 2020 Competitiveness Report : Building a More Competitive Europe*.

World Health Organization. (2020). Coronavirus disease 2019 Situation Report *(Vol. 2019, April Issue). https://doi.org/10.1001/jama.2020.2633*

Ybrayev, Z. (2021). Real exchange rate management and economic growth: export performance in Kazakhstan, 2009–2019. *International Review of Applied Economics*, *35*(1), 64–90. https://doi.org/10.1080/02692171.2020.1836135