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Does Trade Openness Foster Unemployment? Evidence from D-8 OIC Countries

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Keywords

Trade Openness
Unemployment
Wages
Inflation

Abstract

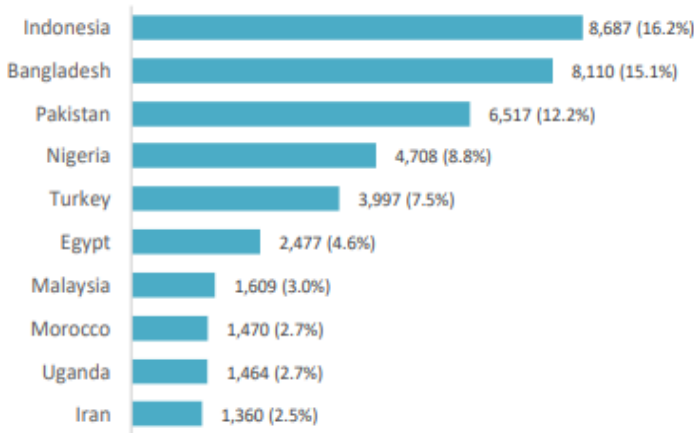
This study aims to analyse the effect of trade openness, wages, inflation, economic growth, and population toward unemployment in the D-8 Organization of Islamic Cooperation countries over the period, 1991 to 2020. The quantitative approach uses techniques analysis of panel data regression. The study result shows a significant simultaneous effect of trade openness, wages, inflation, economic growth, and population on unemployment of D-8 OIC member countries. While partially, trade openness has a significant positive effect on unemployment, wages, economic growth, and inflation have a significant negative relationship with unemployment. The population has a significant positive effect on unemployment. Overall, the result implies that each OIC member country should promote an effective and strategic plan to enhance the demand for labour and employment. Furthermore, professional courses and vocational training should be initiated to fulfil the growing demand for skilled labour.

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1. Introduction

With the pandemic unleashing destruction on work markets around the world, late gauges of the International Labor Organization (ILO) call attention to what, compared to the final quarter of 2019 where 8.8% of absolute working hours were lost in 2020, could be compared to the hours worked in one year by 255 million everyday specialists. As indicated by these evaluations, compared to 2019, complete business declined by 114 million in 2020 because of laborers becoming jobless (33 million) or exiting the workforce (81 million). In view of the Statistical, Economic, and Social Research and Training Center for Islamic Countries (SESRIC), the number of jobless in OIC nations expanded by upwards of 4 million to reach 49.3 million in 2020. Thus, the jobless rate skipped to 7.1% in that year, up 0.7% from 6.4% in 2019. The jobless rate expanded to a larger extent in both created and non-OIC emerging nations, and stayed higher in OIC nations.

Figure 1: Number of Jobs Lost Due to COVID-19 Pandemic in 2020 (FTE, thousands)



Source: SESRIC, 2021

From figure 1, three quarters of this loss occurred in ten populous OIC countries, namely Indonesia with total jobs lost being 16,2%, Bangladesh 15,1%, Pakistan 12,2%, Nigeria 8,8%, Turkey 7,5%, Egypt 4,6%, Malaysia 3%, Morocco 2,7%, Uganda 2,7% and Iran 2,5%. These figures reflect D-8 OIC countries experiencing an economic downturn from the highest rate of unemployment due to the COVID-19 crisis.

The effect of the pandemic on international trade has been more basic in services than in merchandise. The worth of global trade in service declined by one fifth in 2020 from the preceding year. OIC nations experienced a more noteworthy fall

in service trade. Their exports trades fell 37.6% and amounted to US\$ 279 billion. This plunge was to such an extent that their portion in worldwide administration dropped to 5.6% in 2020 contrasting with 7.2% every year beforehand.

OIC nations, based on total conditions, turned into a net shipper in the 2020 stock exchange, with an import/export imbalance adding up to US\$ 90 billion which contrasts with an excess of US\$ 70 billion for the previous year. The total shortages of OIC nations in administrations exchange added up to US\$ 152 billion in 2020, practically equivalent to that of the previous year (US\$ 155 billion). With the flare-up of the COVID-19 pandemic, merchandise products fell strongly by 35.6% in the second quarter of 2020 and 15.6% in the second from last quarter of 2020. In accordance with these patterns, intra-OIC trades likewise declined pointedly by 25.7% in the second quarter of 2020.

Following all around debilitating worldwide monetary development—down to 2.8% in 2019, subsequent to topping at 3.8% in 2017—because of difficulties originating before the pandemic, the world genuine GDP is presently assessed to have shrunk by 3.2% in 2020. Monetary development in OIC nations pursued a decelerating direction in the previous decade, from 6.0% in 2010 to 2.6% in 2019, averaging 4.3% every year. Under pandemic conditions in 2020, the OIC economy shrunk by 1.6%.

Brecher (1974) and Davis (1998) observed that fusing least wages into exchange advancement can deteriorate jobless Heckscher-Ohlin models. Egger and Kreickemeier (2009) bring reasonable wages into a model with expanding gets back to scale and observe that exchange progression can build joblessness. Helpman and Itskhoki (2010) additionally utilize the pursuit matching methodology, yet they consolidate similar benefit intentions and the increment gets back to scale. They observe that globalization can build joblessness.

The relationship between trade and unemployment has been intensively analysed by several studies but there are no studies focussing on D-8 OIC countries, despite the objective of D-8 being to focus on accelerating the number and share of trade intra-OIC member countries. Considering the OIC Ten Year Program of Action 2016-2025 (OIC-2025) target will encourage participation in creating impressive enhancements in labour economic situations in OIC nations, consequently diminishing joblessness, expanding work usefulness, and working on the condition of relative wellbeing and security.

Based on the literature, the objective of this paper is to examine the effect of trade openness on unemployment focussing on D-8 OIC countries, with control variables, for example, GDP, population, inflation, and wages. This research

is essential for the government of each country to develop a proper policy for sustainable trade growth and reducing unemployment numbers. The remainder of the paper is structured as follows: Section 2 presents evidence and literature review. Section 3 submits data used in the analysis. The main empirical results are reported in Section 4, while Section 5 provides the results and conclusion.

2. Literature Review

2.1. Trade on Unemployment

A study by Dutt et al(2009) examined the relationship between international trade and unemployment in 90 countries over 1990-2020 and 1985-2014 using panel regression and the GMM method. It showed that trade liberalization prompts a quick momentary expansion in unemployment. Besides, a striking contrast in the short versus since quite a while ago run responsiveness of joblessness to trade openness. At long last, there is just powerless and non-vigorous proof for the Heckscher–Ohlin suggestion which articulates that the effect of exchange strategies on joblessness is contingent on whether the nation is work bountiful or capital plentiful.

The relationship of trade openness might be ambiguous—either increased or decreased unemployment in different countries. Stepanok (2018) revealed that international trade can improve welfare through stronger intellectual property that tends to reduce unemployment in North countries. He showed that trade openness decreases unemployment in the North where the outside option of workers is high. In an economy with low outside options for workers, trade liberalization increases steady-state unemployment. Extending an existing study on trade openness and unemployment for 20 OECD countries yields empirical support for the latter result.

Similar research conducted by Ranjan (2012) found that trade liberalization has two side effects in a two sectors extension of the Mortensen–Pissarides model. Trade liberalization increments both work creation and occupation annihilation in the import contending area and diminishes them in the product area. Since trade liberalization expands joblessness in the import contending area and lessens it in the commodity area, the effect on economy-wide joblessness is equivocal. At last, a more liberal joblessness benefit expands the responsiveness of occupation obliteration to trade liberalization. There is a renegotiation of wages following changes in job productivity, the model exhibits intra- and intersectoral wage inequality. It is shown that the intersectoral wage inequality increases upon trade liberalization. As far as intra-sectoral wage inequality is concerned, it increases in

the export sector and decreases in the competing import sector.

The recent study in OIC countries by Ali et al. (2021) regarding the effect of trade, human resources, public consumption, and institutional execution on unemployment shows that trade has a critical and negative relationship with the unemployment rate in mostly lower-income OIC economies and a positive connection with joblessness in higher-income OIC nations in the long run. Public expenditure affects unemployment negatively and significantly in higher-income and overall OIC economies. Institutional performance is negatively and significantly linked with unemployment in all panels of OIC economies. However, in the long term, public expenditure is positively and insignificantly connected with unemployment in lower-income OIC economies, which may be attributed to the specific economic circumstances in these countries

Contrarily, Felbermayr et al. (2011) posited that trade openness did not increase structural unemployment in the long run in 20 OECD countries over 1983-2003. The main finding is robust to various definitions of unemployment rates and openness measures. Our benchmark specification suggests that a 10-percentage point increase in total trade openness reduces aggregate unemployment by about three quarters of one percentage point. Hasan et al. (2012) argued that trade has a joblessness diminishing impact in states with adaptable work markets, and in states with a high business share in the net commodity areas. In the state-level discoveries, they additionally observed that specialists in ventures encountering more prominent trade advancement were more averse to becoming jobless. Moreover, the industry-level analysis indicated that workers in industries experiencing greater reductions in trade protection were less likely to become unemployed, especially in net export industries.

2.2. Inflation to Unemployment

Unemployment and inflation are two of the most essential boundaries in an economy. Low unemployment rates normally come with high GDP development rates; in actuality, the primary objective of economy strategy producers is to cut down joblessness, and furthermore, increment GDP development rates. The expansion rate exceptionally affects financial circumstances. A high pace of expansion makes speculations more hazardous since it is more enticing to expect future loan costs and ostensible pay development rates. It likewise forces a few different expenses, for example, menu cost, shoe cowhide cost, and so on. Parallel to economy policy makers, inflation and unemployment is browsed and probed

by politicians. In fact, a high rate of unemployment and inflation to some extent would prove sufficient for an election loss for the governing party. Even more interesting than the parameters themselves, is their correlated behaviour. This is due to the fact that the unemployment–inflation correlation is one of the most important correlations discussed in economics. At this stage it is worth stating some economic highlights that have formed the backbone of the present attitude of scientists, policy makers, and politicians. It was in the year 1958 that Phillips published his observations on the rise of nominal wages and unemployment rates in the United Kingdom. Being the first to notice, he stated that not only is there a correlation between inflation and unemployment, but also this correlation is negative, in the sense that as the nominal wages in UK increases, unemployment decreases (Phillips, 1958).

This negative correlation proved to be interesting for other researchers, as Samuelson and Solow also supported Phillips' statement on the negative correlation in the United States (Samuelson & Solow, 1960). This observation provided a temptation for policy makers to increase inflation for the sake of lower unemployment at the time of crisis. Such temptation initiated a debate among economists. A famous disagreeing statement was issued by Friedman who declared, "although such a policy may stimulate the market in the short run, [but] it will have nothing to do with it in the long runs" (Friedman, 1968). However, in the 1970s, the shock produced by the rapid increase of oil prices plunged the world's economy into a real recession. The consequence was that most policy makers turned to favour Friedman's point of view. This was due to the fact that, by taking the stimulating policy measures (the Keynesian view point), the central banks had failed to overcome the stagnation caused by the oil crisis. This failure was in the sense that both the inflation rate and high unemployment became present at the same time, disavouring Samuelson et al.'s suggestions.

It is well known that the two players in an economy—unemployment and inflation—are directly affected by population, technology, and economic growth. These effects cause inflation and unemployment to inherit the dynamics and trend of the economical parameters. Safdari et al. (2016) carried out a scaling analysis on the coupling between unemployment and inflation. This work was based on the wavelet analysis as well as the detrended fluctuation analysis (DFA). Through their analysis, they stated that while unemployment is time-scale invariant, inflation is bi-scale. The findings showed that inflation possesses a five-year time scale where it experiences different behaviours before and after this scale period. This behaviour of inflation provides the basis for the coupling to inherit the stated time

interval. Although inflation is bi-scaled, it is unemployment that shows a strong multifractality feature. Using cross-wavelet analysis, they provided a picture that illustrates the dynamics of coupling between unemployment and inflation regarding intensity, direction, and scale. The fact of the matter is that the coupling between inflation and unemployment is not equal in one way compared to the opposite. Regarding the scaling, coupling exhibits different features in various scales, in the sense that although in one scale its correlation behaves in a positive/negative manner, at the same time it can be negative/positive for another scale.

This observation makes sense due to the fact that when unemployment sharply rises, the economy tends towards recession. This results in a change of view in agents making change in their consumption function. The way systems respond to big shocks differs from small amplitude fluctuations. There is debate over the influence of the consumer confidence index on an economy. In some papers however, it has been suggested that big shocks in this index have been simultaneous to induce a different mood in the economy. It has also been shown how the coupling of unemployment and inflation possesses a scaling behaviour which is directed and weighed. In the 1980s there was a strong coupling, wherein large-scale inflation acted as a guiding field for unemployment, while in smaller scales of the same time interval, they still observed the negative correlation.

Putnam & Azzarello (2015) discussed some of the controversies revolving around how to analyse labour markets in this dynamic environment from the perspective of monetary policy making, given the dual mandate of the Federal Reserve to encourage both full employment and price stability. The statistical research documents the changing association between US unemployment and core inflation. There was a perceived trade-off between inflation and unemployment in the 1950s and 1960s that gave way to 'stagflation' in the 1970s, when both unemployment and inflation were rising. The 1980s were a transition period where the trade-off was perceived to have returned. This trade-off has not been so clear, however, when one looks at the last twenty years. Since 1995, a period of stable and low inflation was consistently observed despite considerable cycles in the unemployment rate.

Conventional wisdom holds that, in the long run, the Phillips curve is vertical. Haug and King (2014) re-examined the relationship between inflation and unemployment in the long run, using quarterly US data from 1952 to 2010, and state-of-the-art econometric methods. Using a band-pass filter approach, they found strong evidence that a positive relationship existed, where inflation leads unemployment by some 3–3 1/2 years, in cycles that last from 8 to 25 or even

50 years. Tests for multiple structural changes at unknown dates show that this relationship is stable. The statistical approach is atheoretical in nature but provides evidence in accordance with the predictions of Friedman (1977) and the recent New Monetarist model of Berentsen et al. (2011); that is, the relationship between inflation and unemployment is positive in the long run.

Recent study by Gomis-Porqueras et al. (2020) explored the long-run relationships between inflation, unemployment and capital accumulation by proposing a model with search frictions in both goods and labour markets. This framework allows us to identify a negative extensive margin effect of inflation on the number of firms demanding capital and a positive intensive margin effect of inflation on the capital demanded per firm. The two effects together generate a hump-shaped relationship between long-run inflation and aggregate capital. These results are consistent with the empirical evidence from a cross-section of 76 countries, which suggests a non-monotonic relationship between inflation and investment to GDP ratio in the long run. The calibrated results are also consistent with empirical findings from the U.S. data on the effect of inflation on capital stock, unemployment, and the real interest rates.

2.3. Economic Growth to Unemployment

Based on labour search models with an exogenous labour force, existing papers have found a negative relation between long-run economic growth and unemployment. Motivated by the fact that the labour force participation has changed substantially across OECD countries, (Chen et al., 2016) revisited the long-run relation by taking account of endogenous labour-force participation. They learnt that, via the effects on employment, changes in labour market institutions may increase or decrease long-run economic growth. Moreover, depending upon the effects on the labour force and employment, these labour market institutions may increase or decrease unemployment rates in the long run. Thus, changes in labour market institutions lead to a non-monotone relation between long-run economic growth and unemployment that is consistent with the data.

Concerning the long run, Bean & Pissarides (1993) produced a theoretical paper that studied the link between unemployment and economic growth. Using an overlapping-generations model modified to allow for sustainable growth and labour search, their paper found that adverse labour market institutions such as increases in unemployment compensation, vacancy posting costs, and workers' bargaining power all raise unemployment and lower employment and economic

growth, and thus there is a negative relation between long-run economic growth and unemployment in the long term.

Furthermore, Eriksson (1997) investigated how unemployment and the long-run growth rate influence each other in steady state. It builds on Pissarides but Ramsey preferences are introduced, thus influencing the interest rate. A central finding is that there is a trade-off between successful growth and unemployment if one considers direct changes in the growth rate, but when the changes are indirect, what is good for growth is also good for employment. Thus, to increase both growth and the employment rate, the policy implication seems to be that one should improve incentives (lower capital tax or unemployment benefits) rather than subsidize R&D incentives.

From Fung & Zeng's study (1997) which utilized a three-sector general equilibrium model, the dynamic effects of equity control of multinational firms have been derived. It was shown how the policy affects the structural change of a small open economy in the process of economic growth. Hence, a careful reconsideration of regional policy should also be taken when the policy of equity control is implemented. On the other hand, it was also shown that both unemployment and income dynamics can be affected by the magnitude of equity control.

Sadiku et al. (2015) empirically estimated the relationship between economic growth and the unemployment rate in FYR of Macedonia, applying Okun's Law. Four types of models are used in analysing Okun's coefficient: the difference model, the dynamic model, ECM, and VAR estimation approach, in order to consider both the possible short-term and the long-term relationship. The analysis consists of quarterly data covering the period 2000-2012. The empirical results from all models do not indicate robust evidence and do not confirm an inverse linkage between unemployment rate and economic growth, as Okun's Law suggests. Based on the VAR methodology and Engel-Granger cointegration test, it doesn't confirm the existence of a causal relationship between these two variables and a change in the growth rate of real GDP doesn't cause a change in the rate of unemployment and vice-versa. The main reasons that go far to explain the regression outputs are: first, the large informal employment that accounts for about one fourth of total employment and second, the structural unemployment. The study also highlighted that the country's economic policies have not been suitable for fostering development and reducing unemployment, as the primary source of employment is the public sector rather than the private sector.

2.4. *Wage to Unemployment*

Gavrel et al., (2010) re-examined Card and Krueger's intuition on the impact of the minimum wage on unemployment. In the short term, a rise in the minimum wage increases the employment level by making firms less selective. In the long term, numerical simulations show that, despite the reduction in job creation, introducing a minimum wage may lower unemployment as soon as workers and jobs are sufficiently differentiated. However, beyond some limit, the wage increase raises unemployment whatever the degree of differentiation is.

The monetary policy should consider analysing the effect of wage-stickiness to the economy. Rhee & Song (2020) analysed the implications of the monetary policy for the unemployment rate in a small open economy. They introduced nominal wage rigidities and unemployment into the small open economy version of the dynamic stochastic general equilibrium model. The author derived three main findings. First, under nominal wage rigidities, the cyclical properties of the calibrated model, in response to a productivity shock, were consistent with the empirical evidence of a decrease in employment and an increase in real wages. Second, for all the variables considered, the Taylor rule tracked the optimal policy better than the simple rule with unemployment as an argument. Third, regardless of the output or unemployment gap being targeted, it was not optimal that central banks respond to nominal exchange rate variations.

Moreover, Faryna et al. (2022) examined the relationship between labour market conditions and wage dynamics by exploiting a unique dataset of more than one million online job vacancies. They found a weak trade-off between aggregate wage inflation and unemployment. This link becomes more evident when the wage inflation is disaggregated at the sectoral and occupational level. The examination, using vacancy-level data, showed a negative correlation between offered wage and unemployment. The degree of wage elasticity, however, was different across regions and skill segment.

Workers in less-secure jobs are often paid less than similar workers in more secure jobs. Pinheiro & Visschers (2015) showed that this lack of compensating differentials for unemployment risk can result in equilibrium when all workers are identical and firms differ only in job security (i.e., the probability that the worker is not sent into unemployment). In a setting where workers search for new positions both on and off the job, the worker's marginal willingness to pay for job security is endogenous, increasing with the rent received by a worker in his job, and depending on the behaviour of all firms in the labour market. The author solved for

the labour market equilibrium and found that wages increased with job security for at least all firms in the risky tail of the distribution of firm-level unemployment risk. Unemployment became persistent for low-wage and unemployed workers, a seeming pattern of ‘unemployment scarring’ created entirely by firm heterogeneity. Higher in the wage distribution, workers can take wage cuts to move to more stable employment.

Aloi & Hoefele (2019) investigated how the effect of offshoring on unemployment is influenced by the wage setting process. They assumed staggered wage contracts in an otherwise standard search and matching model. In this setup, the contract wage depends also on expected future conditions. This study showed that more flexibility in the wage contracting process induced greater offshoring, a decrease in the worker’s job-finding probability and higher worker wages within job spells. Notably, less stickiness leads to a fall in the rents that firms can extract by producing domestically.

After the 1980s, advanced capitalist economies witnessed a significant decline of the wage share in income. Along with the conventional view, which ascribes this decline to technological factors and international trade, another line of enquiry has endorsed a ‘political economy’ approach and identified several drivers of the wage-share erosion. Yet, the role of persistent changes in unemployment has remained relatively unexplored. Stirati & Meloni (2021) tried to fill this gap, moving from a recent contribution by Anwar Shaikh, who analysed the relation between unemployment and changes in income distribution in the US economy. They studied this relationship by adopting a long-term approach, and two alternative measures of labour market slack. They extended Shaikh’s method of analysis to eight mature economies, and carried out the analysis using further econometric techniques. Results generally confirmed the adverse impact of unemployment on the labour share, while not supporting the notion of equilibrium unemployment.

3. Data and Methodology

The main purpose of this paper is to examine the effect of trade openness on unemployment in D-8 OIC countries. The sample comprised D-8 OIC countries—Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan and Turkey—over the period 1991-2020. The trade openness was collated from the World Bank database, which is the sum of exports and imports of goods and services measured as a share of gross domestic product. Economic growth is the annual percentage growth rate of GDP at market based on a constant local currency, while wage as workers who hold the type of jobs defined as paid employment jobs that give them

basic remuneration; population is log natural from total population which counts all residents and inflation is annual percentage of consumer price index from World Bank database. Using panel data regression with fixed effect as the estimation model, the model analysis of this study is:

$$\text{UNEMP}_{it} = \alpha_1 + \beta_1 \text{TRADE}_{it} + \beta_2 \text{INF}_{it} + \beta_3 \text{GDP}_{it} + \beta_4 \text{LNPOP}_{it} + \beta_5 \text{WAGE}_{it} + \varepsilon_{it} \quad (1)$$

4. Result and Discussion

Table 1: Descriptive Statistics

	UNEMP	TRADE	INF	GDP	LNPOP	WAGE
Mean	6.09	58.78	13.87	4.52	18.35	46.63
Median	4.37	44.21	8.58	5.03	18.41	50.24
Maximum	13.67	220.40	105.21	15.32	19.41	76.78
Minimum	0.40	18.88	0.58	-13.12	16.73	10.32
Std.dev	3.67	45.44	17.30	3.47	0.66	18.02
Skewness	0.34	2.25	2.89	-1.27	-0.60	-0.24
Kurtosis	1.85	6.96	11.56	7.89	2.75	2.29
Observations	232	232	232	232	232	232

Table 1 represents the results of descriptive statistics among all variables. The mean of unemployment is 6.09 with a minimum value of 0.40 and a maximum value of 13.67 in the period 1991 to 2020. This result shows that D-8 OIC countries still have a higher rate of unemployment. The standard deviation in the unemployment variable is 3.67.

Table 2: Result of Regression Panel (FEM)

Variable	Coefficient	t-statistic	Sig.	Result
TRADE	0.012	2.209	0.028**	Significant
INF	-0.020	-3.390	0.000***	Significant
GDP	-0.063	-2.734	0.006***	Significant
LNPOP	4.606	6.458	0.000***	Significant
WAGE	-0.052	0.029	0.077*	Significant
R ²	0.913			
Adj.R ²	0.908			
F Sig.	0.000***			

Notes: *,**,*** refer to the level of significance at 10%, 5%,1% respectively.

Table 2 represents the result of fixed effect estimation and shows that trade openness has positive and statistically significance to the unemployment rate in D-8 OIC countries. This is similar to previous studies conducted by Ali et al. (2021) who found that the unemployment rate might be increased by trade openness in

high-income OIC countries, while the condition in lower-income countries has a significant negative effect; as trade openness increases, the unemployment rate will decrease. Trade openness can exacerbate the unemployment rate in countries when the volume of net import is larger than net export. Moreover, the trade liberalization might lead to wage inequality in the export sector, and in the import sector implication, vice versa (Ranjan, 2012).

Fuat & Ener (2001) explained using Schumpeterian theory that an item supplanting system combined with a tedious occupation matching interaction produces joblessness. A worldwide decrease in duties animates innovation and development. It additionally raises the overall compensation of gifted laborers, inspiring more people to go through ability overhauling. Also, trade liberalization builds the unemployment pace of incompetent work; however, ambiguously it affects the economy-wide joblessness rate.

The relationship between inflation and unemployment remains a classic trade-off in Philips' curve theory. The empirical evidence in D-8 OIC countries remains robust and consistent being strongly negative and significant; thus, when the rate of inflation might be high, then unemployment will lead to low-rate. These findings were supported by Iwasaki et al. (2021) from the New Keynesian model with awry compensation change costs and a regular pace of joblessness. The L-formed pay Phillips bends between wage expansion and the unemployment rate plainly arise in Japan, the euro region and the UK, but not in the US. Joblessness and inflation are the most pivotal boundaries in an economy. Low joblessness rates for the most part are accompanied high GDP development rates; indeed, the primary objective of economy strategy producers is to cut down joblessness and increment GDP development rates (Safdari et al., 2016b).

The economic growth has a negative and statistically significant effect on the unemployment rate in D-8 OIC countries. The unemployment and output gap commonly move in inverse bearings. The nominal interest rate stays fixed under the nominal GDP target, in light of the fact that such a system requires that after an innovation shock, the value level and result move in inverse headings by a similar sum (Billi, 2020) Furthermore, the effects on employment, and changes in labour market institutions may increase or decrease long-run economic growth (Chen et al., 2016). The standard coordinating model with mechanical advancement predicts that a quicker pace of innovative advancement is probably going to reduce joblessness through a "capitalization effect"—quicker development raises the profits to firm creation, more firms are urged to enter and the work observing pace of jobless laborers rises (Carré & Drouot, 2004).

Regarding the effect of population to unemployment rate remaining significantly positive means that if the population number in D-8 OIC countries increases, the unemployment rate will also increase. This is also happening in the Russian Federation as mentioned in empirical evidence found by Sadikova et al. (2017) who declared that populace development prompts the extension of the homegrown market, the significance of which expands with regards to intercountry contest, which implies a more solid reason for growing the size of public creation and expanding its usefulness.

The effect of wage toward unemployment is negative and statistically significant. It means that if the level of salaried workers is increasing, the unemployment rate will lead to a decrease. This finding is in line with Faryna et al.'s (2021) study which showed a negative correlation between offered wage and unemployment. Continuously, most of the changes in the wage share are in the negative quadrant. This exploration shows that a 'structural' Phillips-type relationship between unemployment rate or unemployment intensity and the pace of change of the wage share in the private sector is remarkable for the US, Italy and Germany (Stirati & Meloni, 2021).

5. Conclusion and Policy Recommendation

The aim of this paper was to investigate the effect of trade openness on unemployment rate in D-8 OIC countries. Using several control variables, namely inflation, economic growth, population and wage during the period 1991-2020, the result shows that all variables have statistically simultaneous effects on the unemployment rate. Regarding the main control variable, trade openness has a strong positive effect on the unemployment rate. Obviously, the trade-off occurs between inflation and unemployment, hence, support for the Philips curve theory is warranted. Economic growth represents the main channel to reduce the unemployment rate. The more share of wage and salaried workers may foster output in economies.

Regarding policy recommendations, from the empirical evidence, the government should repair the structural economy's composition in order to reduce net import and enhance net export. Diversification from each OIC country is needed in order to strengthen the fundamental economies as the basic concept is to know more deeply the strength and weakness from each region of OIC countries. Collaboration among OIC countries to drive innovation and the transfer of technology is required to enhance value-adding of total production so that the

competitive advantage of goods and service will raise net export and might lead demand-skilled labour. If it is required, government should apply intervention in the total amount and quota of import-export to analyse and ensure there is nothing left behind as the result of trade liberalisation, particularly in the small businesses. Furthermore, the supporting system and collaboration from the private sector might be helpful to create employment to balance the total production function from the real sector.

The limitation of this study is that it only focuses on the effect of trade openness to unemployment. For future research, factor analysis seems to be needed to analyse the determinant factor that affects and drives unemployment in OIC countries. The threshold research for trade openness from net import-export could be added to boarder and bold at which point, the policy maker should intervene.

6. Reference

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Appendix

Hausman test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.430618	5	0.0197

Fixed Effect result

Dependent Variable: UNEMP

Method: Panel Least Squares

Date: 12/27/21 Time: 10:22

Sample (adjusted): 1991 2019

Periods included: 29

Cross-sections included: 8

Total panel (balanced) observations: 232

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-76.21762	12.26328	-6.215109	0.0000
INF	-0.020552	0.006062	-3.390338	0.0008
LNPOP	4.606988	0.713358	6.458173	0.0000
TRADE	0.012486	0.005650	2.209894	0.0281
WAGE	-0.052102	0.029412	-1.771449	0.0779
GDPGROWTH	-0.063271	0.023136	-2.734788	0.0068

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.913500	Mean dependent var	6.091164
Adjusted R-squared	0.908760	S.D. dependent var	3.672330
S.E. of regression	1.109261	Akaike info criterion	3.099669
Sum squared resid	269.4709	Schwarz criterion	3.292805
Log likelihood	-346.5616	Hannan-Quinn criter.	3.177559
F-statistic	192.7325	Durbin-Watson stat	0.495964
Prob(F-statistic)	0.000000		

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