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#### RESEARCH ARTICLE

# Mitigating Youth Unemployment through Gig Employment: A System GMM Analysis

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ARTICLE INFO	ABSTRACT
Received: May 15, 2024	A panel data from 79 countries from 2017 to 2021 was estimated using the System-Generalised Method of Moments (GMM) to empirically test
Accepted: Aug 18, 2024	the nexus between youth unemployment and the gig economy. The
	results indicate that the measure of the gig economy, the Online Labour Index, has a negative and significant impact on youth unemployment.
Keywords	This finding provides a new path for governments to tackle youth
Gig Economy	unemployment through the gig economy. The policy implications include further strengthening gig economy opportunities and safeguards for
Youth Unemployment	young people and strengthening macroeconomic fundamentals to
Dynamic Panel	support young people's transition from education into the labour force. In terms of control variables, inflation, and Gross Domestic Product
System-Generalised Method of Moments (GMM)	(GDP) growth are statistically significant and exert a negative impact on youth unemployment. Education on the other hand has a positive and statistically significant effect on youth unemployment. Nonetheless, urban population growth was found insignificant in determining youth
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## **INTRODUCTION**

Worldwide, there is a general trend of higher youth unemployment as opposed to adult unemployment. The younger generation has faced numerous labour market challenges through the years. The COVID-19 crisis, geopolitical tensions, an unbalanced pandemic recovery, inflationary issues and supply chain bottlenecks has further added to the labour market challenges faced by young people (International Labour Organisation, 2023). Between years 2017 to 2021, those aged between 15 and 24 years, making up the youth population, experienced a much higher percentage loss in employment than adults. The table below shows the differences between worldwide youth and adult unemployment from 2017 to 2021.

Table 1. World Youth and Adult Unemployment Rate from 2017-2021

Year	Youth Unemployment (%)	Adult Unemployment (%)
2017	15.96	5.87
2018	15.92	5.70
2019	15.24	5.54

2020	18.40	6.90
2021	16.36	6.20

Source: (The World Bank, 2023)

From the table, it is seen that regardless of the economic situation, youth unemployment is significantly higher than adult unemployment. At the height of job losses in the year 2020, the difference between these two types of unemployment was 11.5 percent. Youth unemployment can cause a loss of lifetime income due to the loss of initial years of working experience that is experienced during adolescence (De Fraja et al., 2021; Mroz and Savage, 2006). There is also the loss of productivity due to the deterioration of talent and motivation during the period of unemployment as formerly acquired skills are now less valuable in the marketplace (Cheng Calvin and Mohamad Juita, 2020; Görlich et al., 2013; Pacheco and Dye, 2013). In addition, employers may take periods of unemployment as a signalling device which suggests that these potential employees may have low productivity, making it even more difficult for young people to find jobs (Görlich et al., 2013).

The COVID-19 pandemic may have accelerated structural change in the labour market, where growing sectors present an opportunity for young people at the start of their careers (Anderson et al., 2021; International Labour Organisation, 2022; Piacentini et al., 2022; Wilson and Papoutsaki, 2021). One such growing sector is the digital economy. Bukht and Heeks (2017) defines the digital economy as "that part of economic output derived solely or primarily from digital technologies with a business model based on digital goods or services". The current evolution of the digital economy has led to the "platformisation" of traditional business practices. Platformisation simply means the use of online platforms to conduct business activities. It is estimated that there are currently a total of 545 online gig work platforms globally, with headquarters in 63 countries and platform workers and clients located in 186 countries (Datta et al., 2023). There are two major types of platforms – online web-based platforms, where work can be undertaken from any location at any time; and on location-based platforms where work is performed in a specified physical location (International Labour Organisation, 2021). Jobs offered on both platforms may not be inherently new such as transport services or even food delivery. Nonetheless, these activities are now a part of the digital economy as these services are mediated through digital applications. The work undertaken on these platforms is also commonly referred to as "platform work" or "gig work" (International Labour Organisation, 2021).

The gig economy is often praised for its flexibility, autonomy to choose work and potential for income generation (Katz and Krueger, 2018; Mehta, 2020; Rani and Dhir, 2020). It was found that the demographics of people involved in the gig economy belong to the age group of 18 to 34 years of age (Edison Research, 2018; Harun et al., 2020; Lepanjuuri et al., 2018). This group of people have a different view of life and wishes to have a work-life balance (Deloitte, 2022; Mehta, 2020; Pasko et al., 2021). With this, there is a possibility that the developing gig economy may be able to aid the transition of youth who are currently facing unemployment to potential employment through the gig economy.

Previous studies on youth unemployment mainly focus on trends in the economy (Aun, 2020; Bruno et al., 2017, 2014; Choudhry et al., 2012; Ni et al., 2021; Sudan, 2021), foreign direct investment (Hasan and Sasana, 2020; Ni et al., 2021) skill mismatch (Quintini et al., 2007; Sudan, 2021), gender (Aun, 2020; Gregg and Tominey, 2005) and educational attainment (Anyanwu, 2014, 2013; Aun, 2020; Bayrak, 2016). Yet, the impact of the gig economy on youth unemployment remains underresearched.

Therefore, this study aims to focus on the ability of the gig economy, through gig employment to mitigate youth unemployment to fill the research gap in this area. Unemployed youth are in a precarious position as failure to integrate to society means a loss of production, productivity, and innovation potential. This study will highlight the impact of the gig economy on youth unemployment and showcase its viability to reduce youth unemployment. The outcome of this study can help provide a better understanding of the impact of the gig economy on youth unemployment to employers, gig platforms, youth and policy makers. A synergy between employers, gig platforms and youth would make a better-informed labour market, which would improve job matching, thus reducing youth unemployment.

Additionally, the impact of the gig economy on youth unemployment can inform policy decisions on labour market regulations, social security nets and education. Through this, it is hoped that youth unemployment rates can significantly be reduced.

## LITERATURE REVIEW

## The Gig Economy

The Internet, which drives the digital economy has significantly reduced transaction costs and this has had a polarising effect on firms. Internet-based platforms, the backbone of the gig economy, have reduced transaction costs and allowed goods and services to be exchanged in situations which were previously impossible due to the high costs of searching, contacting, and contracting (Acquier et al., 2017; Henten and Windekilde, 2016; Lobel, 2018). The gig economy has three important characteristics. Firstly, the gig economy is run on Internet based platforms (International Labour Organisation, 2021). Secondly, gig work includes crowd work and work-on-demand activities (Mehta, 2020; Stefano, 2016). Thirdly, the Internet serves as a mediator between employers and employees in the gig economy (Koutsimpogiorgos et al., 2020).

# The Determinants of Youth Unemployment

Previous studies have revealed that there are several determinants of youth unemployment namely Gross Domestic Product (GDP), inflation, urbanisation and educational attainment.

According to Okun's law, as the economic growth rate increases, unemployment decreases (Okun, 1962). During periods of economic prosperity, more jobs are created in the labour market, hence individuals have more job opportunities, resulting in lower unemployment. Through the review of the literature, Okun's law was generally found to be true. However, youth are more vulnerable to business cycle fluctuations and financial crises. Therefore, during recessions, youth unemployment is generally higher than adult unemployment (Aun, 2020; Bayrak, 2016; Bayrak and Tatli, 2018; Bruno et al., 2017; Caporale and Gil-Alana, 2014; Fung and Nga, 2022; Ghoshray et al., 2016; Park and Cho, 2022). Business cycle fluctuations is usually proxied by changes in GDP.

Nonetheless, there are instances where a positive relationship between economic growth and unemployment was found. When economic growth was a result of the Schumpeterian creative destruction process, the duration of employment reduces. As a result, unemployment increases because the job separation rate increases and there are fewer job vacancies created (Aghion and Howitt, 1994). Another possibility for the positive relationship between economic growth and unemployment could be the nature of unemployment faced by the country. If a country faces structural unemployment, there may be a negative relationship between economic growth and unemployment because those who are unemployed are unqualified (Tenzin, 2019).

According to the "Phillip's curve" theory, there is an inverse relationship between inflation and unemployment (Phillips, 1958). Several researchers (Anyanwu, 2014; Bayrak and Tatli, 2018; Bruno et al., 2014; Choudhry et al., 2012; Mahjoub Ebaidalla, 2016) have also found a negative association between inflation and unemployment. However, an opposing position was proved whereby

uncontrolled inflation reduces real wages, leading to a fall in aggregate demand (Liotti, 2022). This in turn reduces production levels and reduces the need for labourers, leading to unemployment.

Mismatch unemployment may increase due to rapid urbanisation which causes an excess supply of labour. Hence, youth unemployment may increase despite the availability of employment opportunities (Awad, 2019; Baah-Boateng, 2016; Hjazeen et al., 2021). This aspect holds for developing nations with a simultaneous growth of youth populations over the past few decades and a general increase in urban dwellers (Anyanwu, 2013; Baah-Boateng, 2016; Fung and Nga, 2022; LaGraffe, 2012; Sawyer et al., 2021).

Human capital development is another theme seen in the labour market aspects which determine youth unemployment. The education variable usually has a negative effect on total youth unemployment (Alfonsi et al., 2020; Anyanwu, 2014; Berlingieri et al., 2014). Nonetheless, while education adds to human capital, there is also the instance when education results in higher youth unemployment because there is a limited opportunity to use tertiary education to transition into the labour market (Alfonsi et al., 2020; Aun, 2020) thus leading to structural unemployment and graduate unemployment (Aun, 2020; Berlingieri et al., 2014).

Based on the past studies done on youth unemployment, it is seen that the impact of the gig economy on youth unemployment remains under-researched. Therefore, this study aims to address this gap by examining how gig employment can mitigate youth unemployment.

#### DATA AND METHODOLOGY

#### **Theoretical Framework**

The relationship between youth unemployment and the gig economy can explained through the Diamond-Mortenson-Pissarides Model (DMP). This model is based on the works of Diamond (1982), Pissarides (1985) and, Mortensen and Pissarides (1994). This model is built upon principles of market tightness, unemployment rate and real wage.

The DMP Model involves three main equations, namely the Beveridge Curve, the vacancy supply curve equation and the wage setting equation.

The Beveridge Curve equation is given by:

$$u = \frac{\lambda}{\lambda + A\sqrt{\theta}} \tag{1}$$

Where u is the unemployment rate,  $\lambda$  is the separation rate,  $\theta$  is the market tightness and A is the efficiency of matching.

Next, the vacancy supply curve is obtained from the equation below:

$$\theta = \left[ \frac{A}{\kappa} \left( \frac{y - w}{\lambda} \right) \right]^2 \tag{2}$$

Where  $\theta$  is market tightness, A is matching efficiency,  $\kappa$  is the cost to post and advertise vacancies, y is the output or revenue attained, w is the real wage rate and  $\lambda$  is the separation rate.

Lastly, the wage setting equation is given by equation (3) below:

$$w = \beta(y + \theta \kappa) + (1 - \beta)b \tag{3}$$

Where w is the real wage,  $\beta$  is the relative bargaining power of workers, y is the output or revenue earned,  $\kappa$  is the cost to post and advertise job vacancies,  $\theta$  is the market tightness and b is an exogenous variable representing the benefit that is given up when accepting a job.

The gig economy has likely increased the matching efficiency since Internet platforms bring together workers and vacancies. Online web-based platforms offer the flexibility of undertaking work from any location, without geographical restrictions, at any time. For on location-based platforms, where vacancies are posted and work is performed in a specified physical location, the cost of information is greatly reduced. This improves matching efficiency, increases the labour market tightness, resulting in higher real wage increases and eventually the unemployment rate decreases. The DMP is particularly important in examining youth unemployment as it has been empirically proven that skill matching is often an issue that causes youth unemployment (Tåhlin and Westerman, 2020; Weerasiri and Samaraweera, 2021).

# **Empirical Model Specification and Estimation Methodology**

The model employed in this study is consistent with an implied relationship through the DMP Model and previous empirical studies on youth unemployment namely Mahjoub Ebaidalla (2016) and Choudhry et al., (2012). However, this model is extended by including a gig economy variable. A panel data method is applied to estimate the ability of the gig economy to mitigate youth unemployment in the selected countries. The model is specified as follows:

$$YUN_{it} = \beta_0 + \beta_1 OLI_{it} + \beta_2 GDP_{it} + \beta_3 INF_{it} + \beta_4 EDU_{it} + \beta_5 URB_{it} + \mu_{it}$$

$$\tag{4}$$

Where the subscript i represents country whereas the subscript t represents year. The variable  $YUN_{it}$  represents youth unemployment, the dependent variable in this study. This model examines the correlation between youth unemployment and selected explanatory variables believed to impact youth unemployment. The explanatory variables include a measurement for the gig economy using the online labour index (OLI), Gross Domestic Product growth (GDP), inflation (INF), years of compulsory education (EDU), and urban population growth (URB). Finally,  $\mu$  is the error term.

A dynamic panel estimation is used because the economic behaviour of the chosen variables is dynamic. A lagged dependent variable,  $YUN_{it-1}$  is included to capture this dynamic nature. If the fixed and random effects model is used, the presence of this variable could result in possible autocorrelation, endogeneity, and measurement errors among independent variables. Hence, this study employs a dynamic panel model utilising the Generalised Method of Moments (GMM) (Arellano and Bond, 1991).

The dynamic version of equation (4) is as follows:

$$YUN_{it} = \beta_0 + \beta_1 YUN_{it-1} + \beta_2 OLI_{it} + \beta_3 GDP_{it} + \beta_4 INF_{it} + \beta_5 EDU_{it} + \beta_6 URB_{it} + \mu_{it}$$
 (5)

There are two types of GMM models used to estimate panel regressions: the first difference GMM estimator (Arellano and Bond, 1991), and the system GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). Both methods recommend eliminating the unobserved effects by differencing the model and employing instruments to address the issue of correlation between the new error term and the lagged dependent variable.

However, there are potential statistical issues associated with the first difference GMM. The cross-sectional information is not utilised as the time-invariant variables are removed. Secondly, in cases where the regressors demonstrate significant persistence, the instrumental variables employed in the difference GMM approach might be considered weak instruments.

The System GMM estimators are derived by simultaneously estimating a system of two equations. The first equation is estimated in levels, utilising lagged first differences as instrumental variables. The second equation is estimated in the first differences, employing lagged levels as instruments. However, using lagged differences of the explanatory variables as instruments may potentially yield unreliable outcomes. To address this concern, two diagnostic tests are employed: the Sargan test of over-identifying restrictions and the Arellano and Bond (AB) test of serial correlation. These tests

help to assess the validity of the instrumental variables and the presence of serial correlation, respectively.

#### **Data Collection Methods**

All data used in this study are annual statistics which cover a period of 5 years, from 2017 to 2021 from 79 countries. Data for youth unemployment, Gross Domestic Product (GDP) growth, inflation, years of compulsory education, and urban population growth are taken from World Development Indicators (The World Bank, 2023). The gig economy is measured through the Online Labour Index (OLI) (Stephany et al., 2021). All data descriptions and countries are listed in Appendix 1 and 2 respectively.

## EMPIRICAL RESULTS AND DISCUSSION

There are a total of 395 observations for each variable used in this study. The descriptive statistics for the data used in this study are reported in Table II below:

**Table 2. Descriptive Statistics** 

Variable	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
YN	16.5867	9.7583	0.29	49.56	95.2248	0.9785	3.6579
OLI	1.3006	0.8941	0.3854	8.4173	0.7994	4.7841	34.9784
GDP_G	2.2382	4.5289	-17.9449	15.3359	20.5108	-0.8126	4.8171
INF	3.1604	5.9714	-2.52	58.4	35.6579	5.6510	44.1038
URB	1.0296	1.1473	-4.1703	4.4581	1.3162	-0.1058	4.1935
EDU_YRS	10.6785	2.1351	5	15	4.5588	-0.1507	2.9766

Based on this table it is seen that the minimum value for youth unemployment (YN) is 0.29 percent, whereas the maximum value is 49.56 percent. The mean value for this variable is 16.5867 percent. In this sample, Qatar has the lowest youth unemployment rate at 0.29 percent, occurring in 2018. Whereas South Africa recorded the highest youth unemployment rate of 49.56 percent occurring in 2021.

Next, for the measure of the gig economy, as proxied by the OLI, the minimum value is 0.3854, whereas the maximum value is 8.4173. The mean value is 1.3006. The highest OLI value was recorded in Costa Rica, occurring in 2018. Whereas the lowest OLI value was recorded in Estonia, occurring in 2019.

For GDP growth (GDP\_G), the minimum value is -17.9449 percent, and the maximum value is 15.3359 percent. The mean value is 2.2382 percent. Interestingly, the minimum and maximum value for GDP growth is both from Panama. According to World Bank (2023), this large fluctuation in GDP growth was attributed to its service-oriented economy. The decline in GDP growth was mainly attributed to the lockdown measures to combat the COVID-19 pandemic. Once the lockdowns were eased, the economy began to rebound.

For inflation, the minimum value is -2.52 percent, whereas the maximum value is 58.4 percent. The mean value is 3.1604 percent. Norway recorded a -2.52 percent inflation rate in occurring in 2018, making it the lowest inflation date in this sample. Whereas Argentina recorded the highest inflation rate of 58.4 percent, occurring in 2018. For urban population growth (URB), the minimum value is -4.1703 percent, the maximum value is 4.4581 percent, and the mean value is 1.0296 percent. Singapore recorded the lowest urban population growth, and this occurred in 2021. Whereas, Qatar recorded the highest urban population growth, which occurred in 2017.

The minimum value for years of compulsory education (EDU\_YRS) is 5 years whereas the maximum value is 15 years. The mean value is 10.6785 years of education. The country with the fewest

compulsory education years is Bangladesh. On the other hand, Dominican Republic, Ecuador and Israel recorded the highest number of years of compulsory education.

Thereafter, the panel data estimation was conducted using system GMM. The estimated results using the system GMM method are presented in Table 3 below.

Table 3. System GMM estimation results

Variable	System GMM
YN (-1)	0.6983***
	(0.1583)
OLI	-1.8750***
	(0.4004)
GDP_G	-0.3434***
	(0.0829)
INF	-0.0651*
	(0.0389)
EDU	1.8263**
	(0.8216)
URB	-0.7788
	(0.57918)
Constant	-10.3667
	(6.6267)
Sargan Overidentification Test	39.7199
	(0.1355)
AB- test for AR(1)	-2.0455**
	(0.0408)
AB- test for AR(2)	0.3772
	(0.7060)
Number of instruments	38
Number of groups	79

WC-Robust Standard errors in parentheses

\*\*\*, \*\* and \* denote significance at the 1, 5 and 10 percent level

For Sargan test, chi-squared values are reported, with the probability in parentheses.

For the Arellano-Bond test, z statistics are reported, with the probability in the parentheses.

With system GMM, instruments are used in the estimation. Utilising too many instruments in an estimation may lead to the overfitting of endogenous variables (Roodman, 2009). Therefore, the number of instruments should be less than the number of groups. This regression estimation utilises 38 instruments, with 79 groups. Since the number of instruments is less than the number of groups, the number of instruments is deemed suitable.

To confirm the suitability of using system GMM for this analysis, two diagnostic tests must be conducted which are the Sargan test of overidentifying restrictions, and the Arellano and Bond test for serial correlation (Arellano and Bond, 1991; Sargan, 1958). Based on the Sargan and Arellano and Bond tests in Table III, it suggests that all variables in the model are valid and do not have second-order serial correlation issues. Therefore, it can be concluded that the system GMM method is a suitable estimation method.

The estimation results in Table III indicate that all the variables are significant except for urban population growth. The measure of the gig economy through the Online Labour Index has a negative and significant impact on youth unemployment. Specifically, a 1 percent increase in the Online Labour

Index, decreases youth unemployment by 1.875 percent. These results indicate that the presence of the gig economy can significantly reduce youth unemployment. This is consistent with the DMP Model as the gig economy has likely increased the matching efficiency. Improvements in matching efficiency cause a two-fold effect. Firstly, with better matching, firms create more vacancies as the probability of vacancy filling increases. Secondly, the job finding probability increases with each level of market tightness. The net effect is that labour market tightness increases as more vacancies are created per unemployed worker, real wage increases, and the unemployment rate decreases (Bhattacharya et al., 2018; Brunow et al., 2022).

In terms of control variables used in this study, both inflation and GDP growth are significant and exert a negative impact on youth unemployment, highlighting the importance of economic stability and good governance to address the issue of youth unemployment. The negative relationship between inflation and youth unemployment is consistent with Phillip's curve theory and various empirical studies (Anyanwu, 2014; Bayrak and Tatli, 2018; Bruno et al., 2014; Mahjoub Ebaidalla, 2016) The negative relationship between GDP growth and youth unemployment is consistent with Okun's law and various empirical studies such as (Aun, 2020; Bayrak, 2016; Bayrak and Tatli, 2018; Bruno et al., 2017; Caporale and Gil-Alana, 2014; Fung and Nga, 2022; Ghoshray et al., 2016; Park and Cho, 2022). Education is also seen to have a positive and significant effect on youth unemployment indicating that a higher level of education leads to more unemployment. These results suggest that there is a limited opportunity to use education to transition into the labour market (Alfonsi et al., 2020; Aun, 2020) thus leading to structural unemployment (Aun, 2020; Berlingieri et al., 2014).

## **CONCLUSION AND POLICY RECOMMENDATION**

Through the years, countries have been struggling to overcome or even reduce youth unemployment. Despite various efforts, youth unemployment remains high globally. This study aimed to analyse the impact of the gig economy and other macroeconomic variables on youth unemployment. The gig economy aligns with the future of work, characterised by technological integration and flexibility, which are particularly appealing to the younger demographic. It was found that the measure of the gig economy through the Online Labour Index has a negative and significant impact on youth unemployment. The finding provides a new path to tackling youth unemployment.

Governments can leverage on this finding by promoting and integrating the gig economy for both youth and employers. Targeted campaigns should be launched to educate young people about the alternative employment opportunities within the gig economy. Additionally, recognising the inherent vulnerabilities within the gig economy, policymakers should use this opportunity to educate young workers on safeguarding their income and practicing proper financial planning, thereby ensuring sustainable employment in the long term.

In addition to this, governments can also encourage employers to integrate gig workers into their organisations. This can be done by providing incentives and subsidies to firms who incorporate these workers into their organisations. Such measures can encourage employers to adopt new hiring practices that include gig workers, optimising their production capabilities and maintaining competitiveness in the evolving labour market. This approach can help firms avoid the pitfalls of Schumpeter's creative destruction while providing young people with opportunities to transition from unemployment to employment.

Despite the benefits of the gig economy, there is considerable concern regarding the precarious conditions faced by gig workers, who often lack legal protections and a social security net that are available in conventional employment. Given the increasing number of gig workers, policymakers should consider implementing legal provisions to protect the welfare of gig workers such as for minimum wages and dismissal protections. Additionally, creating avenues for gig workers and their employers to contribute to national or private social security programs can help safeguard their

future. These initiatives can make participation in the gig economy more attractive and secure for young workers.

The use of digital platforms in the gig economy requires a certain level of digital literacy and technological proficiency. Policymakers should develop specific policies reskill and upskill young people to harness the benefits of the gig economy. Through this, more youths can have access to more employment opportunities in the gig economy. Moreover, it is crucial for governments and policymakers to ensure strong macroeconomic fundamentals, as GDP growth and inflation significantly influence youth unemployment.

This study is not without its limitations. Firstly, there was a data limitation leading to fewer countries in the panel data estimation. Therefore, the results obtained in this study may not be applicable to all countries. Secondly, this estimation does not include the different levels of economic development, which may alter the results. Therefore, further research can be done in this area.

# **AUTHORS' CONTRIBUTIONS**

JJJ: Identified the issue, methodology, and completed data analysis and interpretation.

CSC: Provided policy recommendations.

CMY: Contributed to the data interpretation and conclusion.

FLP: Contributed to the limitations of the study.

All authors read and approved the final manuscript.

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# **APPENDIX**

# **Appendix 1: Data Sources**

Variable	ariable Description		
Youth	Youth unemployment refers to the share of the labour	World	
Unemployment	force ages 15-24 without work but available for and	Development	
	seeking employment.	Indicator	
Gig workers	This index measures the global utilisation of online	Online Labour	
(OLI)	freelance work at scale.	Index	
Gross Domestic	Annual percentage growth rate of GDP at market prices	World	
Product (GDP)	based on constant local currency.	Development	
Growth		Indicator	
Inflation	Inflation is measured by annual changes in the	World	
	consumer price index	Development	
		Indicators	
Education	Duration of compulsory education is the number of	World	
	years that children are legally obliged to attend school.	Development	
		Indicators	
Urban population	Urban population refers to people living in urban areas	World	
Growth	as defined by national statistical offices. It is calculated	Development	
	sing World Bank population estimates and urban Indicators		
	ratios from the United Nations World Urbanization	ations World Urbanization	
Prospects.			

# **Appendix 2: List of Countries**

Argentina	Dominican Republic	Lithuania	Saudi Arabia
Australia	Ecuador	Malaysia	Serbia
Austria	Estonia	Malta	Singapore
Bangladesh	Finland	Mauritius	Slovakia
Armenia	France	Mexico	Vietnam
Belgium	Georgia	Moldova	Slovenia
Brazil	Germany	Netherlands	South Africa
Bulgaria	Greece	New Zealand	Spain
Belarus	Hungary	Nigeria	Sweden
Cambodia	Iceland	Norway	Switzerland
Canada	India	Pakistan	Thailand
Sri Lanka	Indonesia	Panama	Trinidad and Tobago
Chile	Ireland	Paraguay	United Arab Emirates
China	Israel	Peru	Turkey
Colombia	Italy	Philippines	Ukraine
Costa Rica	Jamaica	Poland	Macedonia
Croatia	Japan	Portugal	Egypt
Cyprus	Jordan	Qatar	United States
Czechia	South Korea	Romania	Uruguay
Denmark	Latvia	Russia	