THE RELATIONSHIP BETWEEN MONEY SUPPLY, FINANCIAL DEVELOPMENT AND UNEMPLOYMENT: EVIDENCE FROM UPPER MIDDLE-INCOME COUNTRIES
Para Arzı, Finansal Gelişme ve İşsizlik İlişkisi: Üst Orta-Gelirli Ülkelerden Kanıtlar

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Abstract

In macroeconomic policy, loans to the private sector can help businesses in a variety of ways, such as providing access to capital, financing new investment and job creation. However, preventing businesses from over-indebtedness is essential as it can make them more vulnerable to financial shocks. However, with upward trajectory of financial globalization in macroeconomic policy, loans to the private sector can help businesses in a variety of ways, such as providing access to capital, financing new investment and job creation. However, preventing businesses from over-indebtedness is essential as it can make them more vulnerable to financial shocks. However, the upward trajectory of financial globalization in recent times has led to a significant expansion in the financial industry. This research investigates the interdependence of money supply, financial progress, and unemployment for the period 1990-2021 by evaluating panel information covering eight economies classified as upper middle income. According to the results of the long-term CCEMG/AMG for the effect of explanatory variables on unemployment, financial development decreases unemployment and money supply increases. The country group studied is very similar to the high-income group and this particular aspect has not been investigated for this country group before, making the findings of the study new.

Keywords: Macroeconomic Policy, Financial Development, Money Supply, Unemployment, Upper Middle-Income Economies.

Öz

Makroekonomik politikada, özel sektöre verilen krediler, işletmelere sermayeye erişim sağlama, yeni yatırımları finanse etme ve iş yaratma gibi çeşitli şekillerde yardımcı olabilir. Ancak, işletmelerin aşırı borçlanmasını önlemek, onları finansal şoklara karşı daha savunmasız hale getirebileceği için çok önemlidir. Bununla birlikte, son zamanlarda finansal küreselleşmenin yukarı yönlü yörüngesi, finans endüstrisinde önemli bir genişlemeye yol açmıştır. Bu araştırma, üst orta gelir olarak sınıflandırılan sekiz ekonomiyi kapsayan panel bilgilerini değerlendirerek 1990-2021 dönemi için para arzı, finansal ilerleme ve işsizliğin birbirine bağımlılığını araştırmaktadır. Açıklayıcı değişkenlerin işsizlik üzerindeki etkisine ilişkin uzun vadeli CCEMG/AMG sonuçlarına göre, finansal gelişim işsizliği azaltmakta ve para arzını artırmaktadır. İncelenen ülke grubunun yüksek gelir grubuna çok benzemesi ve bu hususun daha önce bu ülke grubu için araştırılmamış olması, çalışmanın bulgularını yeni kılmaktadır.

Anahtar Kelimeler: Makroekonomik Politika, Finansal Gelişme, Para Arzı, Işsizlik, Üst Orta Gelir Ekonomileri.

INTRODUCTION

Ensuring macroeconomic stability within national economies is widely regarded as crucial. Among the fundamental challenges faced by economies, unemployment stands out prominently. It is perceived as a significant impediment to economic activity, exerting considerable influence on components like consumption and investment, which are integral to economic growth. The level of employment holds a direct correlation with factors such as consumption and investment, pivotal drivers of economic expansion. Consequently, unemployment takes on a pivotal role as an economic concern (Jo et al., 2023; Zaria and Tuyon, 2023).

Nevertheless, unemployment distinguishes itself from other macroeconomic issues, warranting attention not only from an economic perspective but also as a societal quandary. Unemployment is a natural progression, entailing hardships for individuals and societal structures alike (Swanepoel, 2023). Consequently, the unemployment issue takes on the attributes of a socio-economic challenge, demanding a noteworthy resolution.

The advent of globalization has amplified the significance of the financial sector. This heightened prominence is particularly discernible in light of financial liberalization (Abro et al., 2023). Within the realm of the financial sector, which encompasses both financial markets and institutions, various markets exist, encompassing money, capital, foreign exchange, and derivatives. Money markets cater to the exchange of short-term instruments with durations of under a year, while capital markets serve as avenues for trading long-term capital assets (Backović et al., 2023). The foreign exchange market dictates currency rates, and the derivative markets facilitate the exchange of standardized derivative contracts (Kanberoğlu, 2014).

During the 1990s, there was a rapid and substantial increase in the significance of the financial industry. Particularly, the progress of the information-communication sector played a significant role in driving developments within finance (Rosl and Seitz, 2023). The interplay of technological progress and digitization have emerged as a vital conduit for efficient fund movement across financial institutions and markets, integral components of the financial sector, and fostering economic efficacy (Madura, 2011: 15). These advancements have been instrumental in fostering heightened investment. Ultimately, the economy's efficiency thrives through the financial system and the flow of funds. This intricate process is elucidated in the diagram below (Figure 1).
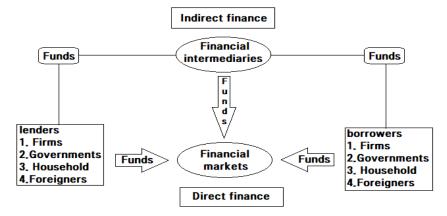

Figure 1. Flow of funds through the financial system (Mishkin and Eakins, 2012).

Figure 1 encapsulates the underlying process behind the establishment of financial markets. As depicted in Figure 1, financial markets serve as a nexus for parties supplying funds and those in need of funds. This process is directly termed as finance. However, this convergence can also be achieved through financial intermediaries, a concept referred to as indirect finance. The notion of financial development, including the expansion and growth of financial markets, encompasses a broader spectrum of situations (Mbarki et al., 2023). Within this context, financial development incorporates elements of financial liberalization and innovation. These innovative endeavors have gained momentum in tandem with technological advancements, particularly the surge in digitalization. Instances such as the heightened utilization of credit cards, virtual cards, QR code transactions, and mobile banking illustrate these trends. Beyond fostering financial development, these advancements yield positive contributions to commercial undertakings. This includes mechanisms like technological advancements, the deepening of information and communication networks, the proliferation of companies in the stock market, and increased participation of investors channeling their savings. Consequently, this synergy facilitates the concurrent growth of the financial and real sectors (Taddese Bekele and Abebaw Degu, 2023). Meanwhile, noteworthy strides have been achieved in reducing the speed of transactions in said investments, often measured in seconds (Armutcuoglu -Tekin and Ural, 2019: 45).

In 2008, the United States experienced a mortgage crisis that had widespread repercussions. The crisis, initiated by sub-prime loans, extended its impact to both the real sector and the global arena, evolving into a worldwide crisis (Apak and Aytac, 2009: 218). The ramifications were particularly profound in countries closely linked to the USA through substantial commercial and financial ties. The crisis environment led to a significant outflow of capital, impeding the real sector's access to financing (Isik and Duman, 2012: 89).

In the aftermath of this crisis, economic policies transformed numerous countries. Post the global crisis, many countries introduced macro prudential measures and bestowed central banks with the additional mandate of safeguarding financial stability (Wellink, 2023). In response to this augmented objective, various developed nations equipped their central banks with supplementary tools. An illustrative example is the establishment of the Financial Policies Committee within the Bank of England in 2013, empowered to regulate capital provisioning and debt ratios within the financial system and corporate sector (Ozbek, 2022). However, several developing nations did not embrace this new policy tool in support of the added target of financial stability (Ozatay, 2011; Gurkaynak et al., 2015).

Named the Global Financial Crisis because it originated in financial markets, this crisis highlighted the importance of both the depth and stability of finance. The concept of financialization, which refers to the expansion of financial development, has the potential to stimulate economic expansion in domestic economies, but it can also bring about possible disturbances. The process of financialization can lead to socio-economic challenges, such as unemployment triggered by shifts in the economy (Othman et al., 2022). In accordance with Okun's law, when the full employment unemployment rate is 4%, each 1% increase in unemployment contributes to a 2.8% reduction in production (Yalcinkaya et al., 2018: 11). While A. Okun's analysis varies for different countries, it is generally accepted that elevated unemployment leads to economic setbacks, given that labor constitutes a fundamental component of national income.

On the other hand, as financialization takes place, there is an increase in the movement of income from the real sector to the financial sector. As a result, income inequality worsens, impacting lower-income economic entities with higher tendencies for marginal consumption and leading to struggles with poverty. This situation leads to a decrease in overall demand, which in turn leads to reduced investments and economic growth, along with higher levels of unemployment (Ozbek and Turkmen, 2020).

The selected sample for this investigation embodies the upper echelon of the middle-income bracket, comprising countries that are on the cusp of transitioning into the high-income category. Consequently, it becomes imperative for these nations to scrutinize unemployment levels. This research is primarily driven by the absence of prior examinations concerning unemployment within the contexts of Argentina, Brazil, Bulgaria, Colombia, Jamaica, Malaysia, Paraguay, and Peru. As a result, the study aims to make a valuable contribution, augmenting the existing body of literature. Moreover, the study's distinctive attribute lies in the utilization of contemporary empirical methods.

Subsequent sections of the study delve into an overview of prior research on the subject, followed by the introduction of the dataset and model, alongside the presentation of empirical findings. Concluding the study, the final section offers assessments, outlines policy recommendations, and provides a summary of the research's outcomes.

1. LITERATURE REVIEW

Given the multidimensional impact of unemployment encompassing both societal and economic implications, numerous studies have explored its correlations with a range of socio-economic variables. These investigations encompass a spectrum of economic factors including per capita income, inflation, exchange rates, and foreign trade, as well as demographic variables such as education, age, gender, crime, and urbanization (Kyei and Gyekye 2011; Akca and Ela, 2012; Selim et al., 2014; Gunaydin and Cetin, 2015; Akcan and Ener, 2017; Gucluoglu, 2017; Kızılgol and Selim, 2017; Umit and Karatas, 2018; Akcan, 2018; Armutcuoglu - Tekin and Ural, 2019; Ayhan, 2019; Demirgil, 2021; Cinar and Tas, 2022).

The investigation of the connection between financial progress and joblessness have gained significant traction, especially following the repercussions of the 2008 Global Financial Crisis. This section is dedicated to presenting research that delves into the complex interplay between the advancement of finance and unemployment.

Gatti et al. (2009) conducted a study across 18 OECD countries to probe the relationship between financial development and unemployment. The research employed the Generalized Method of Moments (GMM) approach during the period from 1980 to 2004. The empirical findings indicated a strong correlation between the progress of finance and labor markets. The results suggest that when labor market regulations, frequency of mergers, and coordination of wage bargaining are weak, an increase in market capital and a decrease in bank density lead to a reduction in unemployment. Conversely, when the conditions are reversed, the influence of advancements in the financial sector on unemployment is considered ineffective. Monacelli et al. (2012) analyzed the connection between unemployment and financial markets in Italy. They employed quarterly data spanning from 1984 to 2011 and employed

VAR analysis. The empirical results underscored the significance of financial development as a determinant of unemployment. In a similar vein, Shabbir et al. (2012) investigated the interplay between financial development and unemployment within the Pakistani economy during the period from 1973 to 2007. They utilized ARDL bounds test and Granger causality analyses as their empirical methods. Indicators like M2/GDP, Average Market Value/GDP, Domestic Private Sector Credit/GDP, and Central Bank Asset/GDP were adopted to measure financial development. The research demonstrated a connection between all these variables and unemployment, in the short-long term. The study concludes that all the mentioned financial development indicators contribute to a reduction in unemployment.

Mecik and Afsar (2014) explored the impacts of financialization on overall employment and capital intensity. They analyzed OECD member nations using data from 1990 to 2009. The study employed dynamic panel data analysis as its empirical approach, revealing that financialization led to increased employment across 22 OECD countries. In a separate inquiry, Kanberoğlu (2014) delved into the connection between unemployment and financial advancement in the Türkiye economy. The study employed multivariate regression analysis, considering the period from 1985 to 2010. The empirical outcomes indicated that increases in private sector loan rates, M2 money supply, and the total financial asset stock were associated with reduced unemployment. However, the study concluded that the ratio of market stock value to gross domestic product, a financial sector indicator, was linked to an increase in the unemployment rate. Likewise, Karacayir and Karacayir (2016) conducted a similar investigation within the Türkiye economy. They utilized monthly data on domestic credit volume and unemployment from 2006 to 2015. Employing the ARDL boundary test as their empirical technique, the study's findings demonstrated that financial development had a diminishing effect on unemployment in the short term.

Conversely, it was determined that over the long term, financial development does not wield a substantial impact on unemployment. Hatipoglu (2019) examined the correlation between financial development and unemployment within D8 countries, including Bangladesh, Iran, Malaysia, Indonesia, Egypt, Nigeria, Türkiye, and Pakistan. The study employed panel quantile regression as its empirical method, using annual data spanning from 1991 to 2017. The empirical results indicated that financial development contributes to higher unemployment rates. Uzar (2019), in his investigation of the interrelation between financial development and unemployment across nine OECD nations, analyzed data from 1980 to 2015. The study adopted Westerlund's (2007) cointegration test and Dumitrescu and Hurlin's (2012) causality tests, which account for homogeneity and cross-section dependency. Empirical findings revealed a lasting connection between financial development and unemployment. Furthermore, a reciprocal causal relationship between these variables was established. Lapavitsas (2011), exploring the association between financial development and unemployment, focused on the economies of the USA, England, Germany, and Japan. The study highlighted that although the financial sector had expanded in these countries since 1970, this growth did not result in reduced unemployment. Lapavitsas attributed this phenomenon to three factors. Primarily, he noted that large corporations specializing in financial transactions aimed at profit rather than employment expansion, which contributed to the situation. Ozbek and Turkmen (2020) delved into the correlation between financial development

and unemployment within E7 countries. They considered the period from 1991 to 2018 and employed advanced unit root and cointegration tests, accounting for cross-sectional dependence. The study employed indicators such as broad money supply (M3) and the proportion of domestic loans extended to the private sector as a share of GDP to measure financial development. Empirical findings demonstrated that an increased share of broad money supply in GDP led to higher unemployment rates, while an increased proportion of domestic loans to the private sector in GDP resulted in decreased unemployment.

Analyzing the correlation between financial development and unemployment within the Nigerian economy, Ajide (2020) studied data from 1980 to 2017. The study employed the Nonlinear Autoregressive Distributed Latency (NARDL) test. The empirical findings unveiled an asymmetric relationship existing in both the short and long terms. These results underscored the unemployment-mitigating impact of financial development but highlighted the necessity for policy development to ensure a sustained effect. Chen et al. (2021) explored the connection between financialization and unemployment across a panel of 97 countries, encompassing both OECD and non-OECD nations, during the period 1991 to 2015. The study employed the System GMM estimation as the empirical method, revealing that the relationship hinged on the financing type and the level of labor market flexibility within a country. Raifu and Afolabi (2022) examined the influence of financial development on unemployment in the economies of 19 developing countries, factoring in age groups and gender disparities. They scrutinized data from 1991 to 2019 and employed empirical methods including OLS, DOLS, and regression (quantile) through moments. The empirical outcomes indicated that financial development contributed to reduced unemployment. Nevertheless, the study concluded that this effect varied across age groups and gender distinctions. Gur (2023) investigated the nexus between unemployment in the Türkiye economy and the volume of domestic credit provided by the banking sector. The study employed Bayer-Hanck's (2013) cointegration test and monthly data spanning from 2010:M01 to 2022:M12, corresponding to the period of explicit inflation targeting adoption. Additionally, the FMOLS method was employed as the coefficient estimator. The empirical results highlighted a long-term relationship between the interconnected variables. The findings indicated that increases in credit volume within Türkiye had a dampening effect on unemployment rates.

2. METHODOLOGY AND EMPRICAL RESULTS

2.1. Data and Model

The objective of this study is to investigate how the progress of the financial sector affects the rate of unemployment between the years 1990 and 2021. The World Bank categorizes countries based on their income levels, where low-income countries have a per capita GNP of $1,135 or below. Middle-income countries fall within the range of 1,136 to $13,845 in per capita GNP, while high-income countries have a per capita GNP exceeding $13,845 (World Bank, 2023). Additionally, these country groups are further divided into upper- and lower-income categories.

For this study, a sample of 8 countries with an upper middle-income status was selected, although there are a total of 31 countries in this group. The chosen countries represent the top tier of the middle-income category and are

also closest to reaching the high-income level, indicating their significant economic and social potential. Hence, the inquiry centered on analyzing the influence of financial advancement on unemployment within these eight economies categorized as upper middle-income. This was done using yearly data from 1990 to 2021. To achieve this goal, the following model was formulated.

$$UNMP_{it} = \beta_{0i} + \beta_{1i}BM_{it} + \beta_{2i}FD_{it} + u_{it} \tag{1}$$

In this study, the time period is denoted by "t," ranging from 1990 to 2021, while "i" represents the individual unit periods from 1 to 8. "t" signifies the temporal aspect, and "i" designates the specific unit being analyzed. The model incorporates three key variables: UNMP, which indicates the unemployment rate in the total workforce; M3, representing the substantial proportion of money supply in GDP; and the proportion of loans to the private sector in FD GDP. To ensure consistent comparisons, all variables were transformed using the logarithm base 10. Consequently, coefficient interpretations will be presented with flexibility. The study's data sources and relevant information are detailed in Table 1.

Table 1. Summary Information of the Variables.

Variables	Description	Units	Source
UNMP	Log(Unemployment)	(% of total labor force)	World Bank (2023)
BM	Log(Broad Money)	(% of GDP)	World Bank (2023)
FD	Log(Domestic credit to private sector)	(% of GDP)	World Bank (2023)

The descriptive statistics for the variables were computed for both the panel and individual country levels, and the findings are displayed in Table 2. Upon reviewing the table, it is evident that the money supply and unemployment exhibit the highest/lowest mean and volatility based on the panel statistical results. Likewise, when considering the results for each country, the money supply and unemployment also display the highest/lowest mean and volatility.

Table 2. Descriptive Statistics of Variables.

	Variables	Mean	Median	Maximum	Minimum	Std. Dev.
Panel	UNMP	0.877	0.908	1.312	0.230	0.230
	BM	1.662	1.647	2.146	1.024	0.243
	FD	1.534	1.495	2.200	0.844	0.301
Argentina	FD	1.193	1.191	1.396	0.986	0.107
	M3	1.395	1.433	1.538	1.024	0.120
	UNMP	1.016	1.004	1.292	0.736	0.148
Brazil	FD	1.684	1.669	2.127	1.442	0.165
	M3	1.796	1.818	2.038	1.483	0.162
	UNMP	0.960	0.974	1.137	0.567	0.117
Bulgaria	FD	1.599	1.699	1.918	0.932	0.284
	M3	1.786	1.826	1.974	1.400	0.154
	UNMP	0.981	1.048	1.299	0.230	0.223
Colombia	FD	1.515	1.505	1.735	1.321	0.129
	M3	1.554	1.532	1.766	1.382	0.108
	UNMP	1.056	1.048	1.312	0.892	0.106
Jamaica	FD	1.423	1.425	1.755	1.112	0.149
	M3	1.687	1.668	1.861	1.605	0.063

	UNMP	1.037	1.060	1.214	0.698	0.159
Malaysia	FD	2.065	2.077	2.200	1.841	0.076
	M3	2.086	2.104	2.146	1.809	0.077
	UNMP	0.527	0.529	0.657	0.389	0.055
Paraguay	FD	1.395	1.435	1.742	0.844	0.232
	M3	1.522	1.520	1.772	1.212	0.145
	UNMP	0.703	0.679	0.994	0.507	0.157
Peru	FD	1.400	1.394	1.699	1.067	0.190
	M3	1.472	1.443	1.740	1.307	0.126
	UNMP	0.734	0.714	0.973	0.531	0.098

Note: The time (T) is 32 and the unit (N) is 8 for all variables. NT is 256.

2.2. Unit Root Test

Granger and Newbold (1974) observed that a problem of spurious regression arises when there is no stability among the variables or their linear combinations. Hence, it has become essential to ascertain whether the variables utilized in the models possess unit roots before proceeding with the estimation process. Before conducting the unit root test, it is crucial to investigate the interdependency among the variables across different sections. The existence of such cross-sectional dependence is a noteworthy issue that must be taken into account during the estimation and testing of panel data models. Neglecting this cross-sectional dependence during analysis can lead to results that are biased and inconsistent (Guloglu and Bayar, 2016). To address this concern, a test known as the LM_{adj} test, developed by Pesaran et al. (2008), is employed for evaluating cross-sectional dependence. The LM_{adj} test statistic is

$$LM_{adj} = \sqrt{\frac{2}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \frac{(T-k)\hat{\rho}_{ij}^2 - \mu_{ij}}{\sigma_{ij}} \qquad (2)$$

In this given context, ρij symbolizes the estimated correlation of residuals in a bidirectional manner within the sample. T represents the timeframe, and N signifies the number of distinct sections. The null hypothesis for the LM_{adj} test posits the absence of interdependence across sections. If the computed LMadj test statistic surpasses the critical threshold, the null hypothesis is dismissed, indicating the presence of such interdependence. When interdependence is absent, first-generation panel unit root tests are appropriate. However, if interdependence exists among the series, second-generation panel unit root tests are more suitable. In this research, the CIPS test, designed to account for interdependence, is employed. The CIPS statistics (Pesaran, 2007) are defined as shown in the figure below

$$CIPS_{ist} = \left(\frac{1}{N}\right) \sum_{i=1}^{N} CADF_i \qquad (3)$$

where, $CADF_i$ represents the simple mean of the cross-section generalized ADF test statistic. The critical values of the CIPS statistics were tabulated by Pesaran (2007). The null and alternative hypotheses for the CIPS test are respectively: "H_0=Unit root" and "H_a=No unit root.".

2.3. Cointegration Test

Based on empirical research, it has been discovered that the majority of macroeconomics time series display non-stationary behavior, which leads to a problem called spurious regression due to the presence of a unit root. To

address this issue, one of the recommended approaches is to take the differences of these non-stationary series and conduct regression analysis on the transformed data. However, this method of differencing may result in the loss of significant long-term information and disrupt the enduring relationships between these series. To overcome this challenge and preserve long-term relationships, experts suggest utilizing cointegration analysis. Cointegration examines whether there is a stable long-run equilibrium relationship between variables and directly investigates the specific relationship in question. This method is vital for determining the presence of cointegration between variables. Westerlund (2007) introduces a cointegration test tailored for panel data, which is based on the error correction model. This test assesses the existence of cointegration by examining whether each unit in the panel possesses its error correction mechanism. The test is an extension of the cointegration test initially developed for time series data by Banerjee et al. (1998) and assumes that the series are uniformly stationary. The test statistics for Westerlund's (2007) cointegration test involve equations

$$Z(M) = \frac{1}{M}\sum_{i=1}^{N}\sum_{j=1}^{M_i+1}\sum_{t=T_{ij-1}+1}^{T_{ij}}\frac{S_{it}^2}{(T_{ij}-T_{ij-1})^2\hat{\sigma}_i^2} \tag{4}$$

$$\Delta y_{it} = \delta_i' d_t = a_i y_{i,t-j} + \lambda_i' x_{i,t-1} + \sum_{j=0}^{p_i}\gamma_{ij}\,\Delta x_{i,t-j} + \sum_{j=1}^{p_i}a_{ij}\Delta y_{i,t-j} + e_{it} \tag{5}$$

$$G_a = \frac{1}{N}\sum_{i=1}^{N}\frac{T\hat{a}_i}{\hat{a}_{i(1)}} \qquad\qquad G_t = \frac{1}{N}\sum_{i=1}^{N}\frac{T\hat{a}_i}{SE(1)} \tag{6}$$

$$p_{a=}T\hat{a}\ p_{a=}\frac{\hat{a}}{SE(\hat{a})} \tag{7}$$

(4), (5), (6), and (7). Equation (4) outlines the dimensions of the panel data, where T represents the time dimension, N is the number of units in the panel, and M denotes the number of variables. For N distinct individuals in the panel, N equations are formulated, each comprising M variables. Equation (5) presents an alternate method for computing test statistics, which involves estimating the error correction parameter ai using the least squares method. Westerlund (2007) provides four test statistics based on the least squares estimation of ai and its t ratio. To compute the group mean test statistics Gα and Gt used in panel analysis, the error correction model needs to be estimated for each section of the panel. Group mean test statistics are expressed in equation (6), and for the entire panel analysis, Westerlund (2007) supplies cointegration test statistics as shown in equation (7). In cases where the assumptions of the error correction model are not met, the Bootstrap Method can be applied as a correction process. The Bootstrap Method involves iteratively repeating the statistical estimation process to establish confidence intervals, minimize error estimations, reduce standard deviations, and improve the reliability of parameter estimations.

2.4. Estimator (CCEMG) and Robustness Test (AMG)

Pesaran et al. (1996) introduced the Mean Group Estimator (MG), a statistical tool used to estimate panel data models when there are many time periods (T). This method assumes no presence of heterogeneous and cross-sectional dependence. However, if cross-sectional dependence exists, the MG estimator might lead to biased results. Therefore,

in such cases, it is advisable to employ alternative estimators that can handle cross-sectional dependence. In this study, the more recent CCEMG and AMG estimators were used to address this issue.

The CCEMG estimator, proposed by Pesaran (2006), is designed to accommodate cross-sectional dependence and consider variations among variables across different units. It involves utilizing linear combinations of the cross-sectional means of the dependent and explanatory variables, along with their observed joint effects. The CCEMG estimator is obtained by calculating the simple arithmetic mean of each coefficient over each regression.

$$\hat{\beta}_{CCEMG} = N^{-1} \sum_{i}^{N} \hat{\beta}_i \tag{8}$$

Where $\hat{\beta}_i$, represents the LCC estimation coefficients of the units.

Similarly, Eberhardt and Bond (2009) and Eberhardt and Teal (2010) have introduced Extended Mean Group (AMG) estimators that employ cross-sectional averages. Instead of solely relying on the cross-sectional averages of the variables, these estimators incorporate the common dynamic effects of AMG. By considering unobservable common factors, AMG allows for a more comprehensive analysis. Additionally, the initial model includes dummy variables. To estimate using POLS, the first step involves taking the difference in the following manner:

$$\Delta y_{it} = \beta \Delta x_{it} + \sum_{t=2}^{T} c_i \Delta D_t + u_{it} \tag{9}$$

Next, for each slice, the common dynamic process ($\hat{c}\_t \equiv \hat{u}\_t^{\wedge}$) is either added to or subtracted from the dependent variable, leading to the equation:

$$y_{it} - \hat{u}_t^* = a_i + \beta_i x_{it} + u_{it} d_i x_{it} \tag{10}$$

$$y_{it} = a_i + \beta_i x_{it} + d_i \hat{u}_t^* + u_{it} \tag{11}$$

In the final step, the prediction is performed, and the slope parameters in the model are estimated using the arithmetic average as follows:

$$\hat{\beta}_{AMG} = N^{-1} \sum_{i}^{N} \hat{\beta}_i \tag{12}$$

Where N represents the number of observations.

3. EMPRICAL RESULTS

Before conducting the stationarity test, a Cross-Sectional Dependence (CSD) test will be carried out for the variables. The outcomes of the CSD test will then determine the stationarity tests to be used. If CSD is present in the variables, second-generation stationarity tests will be utilized; otherwise, first-generation stationarity tests will be applied. The variables have undergone CSD tests, and the results have been displayed in Table 3. Upon reviewing Table 3, it becomes evident that there is CSD at the 1% significance level for all variables.

Table 3. Results of CSD Tests.

Variables	Breusch-Pagan LM	Bias-corrected scaled LM	Pesaran CD
UNMP	98.045***	9.231***	5.672***
BM	271.836***	32.455***	13.186***
FD	207.484***	23.856***	8.819***

Note: *** is a significance level at the 1% level.

The stationarity of all variables was examined through second-generation cointegration tests, specifically using the CIPS test, due to the presence of CSD. The findings are reported in Table 4. Table 4 includes the evaluation of both the original level and first-difference levels of stationarity for the variables. Upon analyzing the original level values, it is evident that all variables have unit roots. However, after applying the first difference to all variables, they exhibit stationarity. As a result, the integrated order for all variables is determined to be I(1).

Table 4. Results of CIPS Unit Root Test.

Variables	Level		Δ	
	C	C+T	C	C+T
UNMP	-1.669	-2.350	-4.136***	-4.282***
BM	-2.071	-1.722	-3.112***	-2.945**
FD	-1.779	-2.163	-3.064***	-3.114***

*Note: *** and ** are significance levels at the 1% and 5% level, respectively.*

An investigation will be carried out through a cointegration test to ascertain if the variables demonstrate a joint movement within the economic domain between 1990 and 2021. To achieve this, the homogeneity of slope coefficients will be subjected to testing. Delta tilde and Delta tilde adj tests were executed for this purpose, and their outcomes have been documented in Table 5. Upon scrutiny of the table, it is evident that the slope coefficients are found to be heterogeneous for both test results at the 1% significance level.

Table 5. Results of Homogenity Test.

Statistic	Value	Prob.
DT	5.333***	0.000
DT_{adj}	5.602***	0.000

*Note: DT: Delta tilde, DT_{adj}: Delta tilde adjoint, and *** is significance level at the 1% level.*

Now, a cointegration relationship will be established in the field of economics. For this purpose, the Westerlund (2007) panel cointegration test has been applied, and the results are presented in Table 6. The table comprises cointegration test statistics and probability values for the model. For interpreting cases with homogeneous slope coefficients, the Pt and Pa test results will be referred to, while for cases with heterogeneous slope coefficients, the Gt and Ga test results will be utilized. To examine the underlying hypothesis, either Bootstrap or probability values will be employed. The null hypothesis (H0) suggests the absence of cointegration. After analyzing the table, it is evident that, based on the Gt test, there is cointegration confirmed by Bootstrap and probability values. Conversely, according to the Ga results, cointegration is established for the Bootstrap probability value.

Table 6. Results of Cointegration Test.

Statistic	Value	Z-value	p-value	Bootstrap p-value
Gt	-2.614	-1.780	0.037	0.055
Ga	-8.568	0.251	0.599	0.092
Pt	-6.292	-1.400	0.081	0.043
Pa	-9.456	-1.816	0.035	0.025

Note: For the cointegration test, the Bootstrap 10000 simulation value was entered.

Finally, long-term coefficient estimation will be conducted for the variables in the field of economics. For this purpose, the CCEMG estimator, which relies on the assumption that error terms have common correlation in the presence of cointegration, was employed. On the other hand, the AMG estimator, which takes into account

heterogeneity and time series dependence even in the absence of cointegration, was used as a robustness test. The findings obtained are presented in Table 7. Upon examining the table, both panel and individual results are presented. According to the panel results, broad money supply and domestic credit to the private sector have significant effects on unemployment in the long run. Furthermore, the CCEMG and AMG estimators yielded similar magnitudes and directions for the variables. Specifically, a 1% increase in broad money supply within the GDP leads to a 0.48% / 0.56% rise in unemployment according to CCEMG/AMG. Conversely, a 1% increase in credit to the private sector within the GDP results in a 0.34% / 0.41% decline in unemployment according to CCEMG/AMG.

When examining the results on a country basis, it was observed that broad money supply within the GDP positively affects unemployment in all countries except Bulgaria. On the other hand, concerning the countries with statistically significant results for at least one estimator, Argentina, Brazil, and Colombia experience adverse effects on unemployment. In contrast, when investigating credit to the private sector within the GDP, all countries except Argentina and Bulgaria show a negative impact on unemployment. Among the countries with statistically significant results for at least one estimator, Brazil, Jamaica, Malaysia, and Peru are positively affected by financial development in terms of unemployment.

Table 7. Results of CCE and AMG Regressions.

Countries	BM		FD		C	
	CCEMG	AMG	CCEMG	AMG	CCEMG	AMG
Panel	0.480**	0.563***	-0.347*	-0.413***	-0.161	0.679***
Argentina	0.669**	0.410***	0.066	0.111	-0.043	0.203
Brazil	0.319	0.607***	-0.514**	-0.383***	-0.581	0.472**
Bulgaria	-1.437**	-0.640	0.813**	0.474*	-1.165	1.176**
Colombia	0.742	0.680*	-0.224	-0.485	0.164	0.653**
Jamaica	0.493	0.658	-0.519**	-0.749***	1.515***	0.945*
Malaysia	-0.238	0.149	-0.558**	-0.546***	0.935***	1.323***
Paraguay	0.247	0.615*	-0.104	-0.256	-0.619	0.113
Peru	1.148***	0.546	-0.892***	-0.582**	-1.128**	0.578*

Note: ***, **, and * are significance levels at the 1%, 5%, and 10% level, respectively.

4. CONCLUSION AND POLICY IMPLICATIONS

In light of the comprehensive investigation conducted in this study, several crucial findings have emerged that shed light on the dynamics of unemployment within the selected countries on the cusp of transitioning into high-income status. The research has not only contributed to the existing body of literature but has also provided valuable insights into the intricate relationship between economic variables and unemployment.

Hence, the present study delved into the relationship between unemployment and financial development, examining data from 1990 to 2021. The Durbin-Hausman test has unveiled evidence of cointegration among the variables under scrutiny, indicating a lasting link between economic factors and unemployment in the selected countries. Panel cointegration tests have showcased significant impacts stemming from both broad money supply and domestic credit allocated to the private sector, affecting unemployment over the long term. The Fixed Effects Common Correlated Effects Mean Group (CCEMG) and Augmented Mean Group (AMG) estimators, which assess the influence

of explanatory variables on unemployment, have demonstrated significant consequences arising from fluctuations in broad money supply and domestic credit to the private sector. Specifically, an upsurge in broad money supply within the GDP leads to an escalation in unemployment, while an increase in credit provided to the private sector within the GDP results in a reduction in unemployment.

Furthermore, the research has undertaken an examination of the individual effects of these variables on unemployment across the chosen countries. It was determined that these effects do not exhibit uniformity across all nations. While broad money supply positively affects unemployment in the majority of countries, Bulgaria emerges as an exception. Conversely, the impact of private sector credit fluctuates; except for Argentina and Bulgaria, most nations undergo an adverse effect.

The outcomes of this study carry noteworthy policy implications for countries striving to ascend to the high-income category. Primarily, policymakers, especially in countries experiencing rising unemployment rates, should meticulously assess the expansion of broad money supply in the economy. This may entail adopting a cautious approach to regulate the growth of the money supply to avert a surge in unemployment rates. Conversely, given the observed diverse effects among countries, policymakers should adopt tailored approaches that take into account the distinct economic conditions of each nation. Factors influencing the relationship between economic variables and unemployment may vary from one country to another, necessitating bespoke strategies. Additionally, labor market reforms should also be given consideration. While financial factors hold significance, they do not exist in isolation. Comprehensive labor market reforms and initiatives aimed at enhancing workforce skills and employability should form an integral part of the policy agenda to effectively tackle unemployment.

In summation, this research has made a substantial contribution by unveiling the complexities of unemployment dynamics in countries poised on the edge of high-income status. Identifying the roles played by broad money supply and credit allocated to the private sector, equips policymakers with insights to formulate effective strategies that mitigate the adverse impacts of unemployment while sustaining economic growth. However, it is crucial to recognize the necessity for nuanced and context-specific policy interventions that account for the distinctive economic landscape of each country.

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Author's Declaration | *Yazar Beyanı*

Financial Support | *Finansal Destek:* Mustafa NAİMOĞLU who is the author has not received any financial support for the research, authorship, or publication of this study. **|** *Mustafa NAİMOĞLU, bu çalışmanın araştırılması, yazarlığı veya yayınlanması için herhangi bir finansal destek almamıştır.*

Authors's Contributions | *Yazarların Katkıları:* This article was prepared by the author alone. **|** *Bu makale yazar tarafından tek başına hazırlanmıştır.*

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