

From Liquidity to Employment: The KLM Lending Channel Through Labor-Intensive Credit in Indonesia

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ABSTRACT

This study investigates the transmission effectiveness of Macprudential Liquidity Policy (KLM) on unemployment levels in Indonesia, through the working capital and investment credit channels. The study utilizes panel data from 25 provinces covering the 2021–2025 period, selected based on data availability and consistency. Estimation was conducted using the Panel Autoregressive Distributed Lag (ARDL) method with the Pooled Mean Group (PMG) approach. The estimation results indicate that working capital and investment loans have a significant negative impact on poverty levels in the long run. Increasing credit disbursement to the business sector stimulates production activity and business expansion, thereby raising labor demand and reducing poverty. These findings provide empirical evidence that the non-interest rate transmission channel via KLM loans operates effectively in influencing employment conditions in Indonesia. However, short-term estimation results reveal heterogeneity in policy transmission. The effectiveness of KLM is not uniform across provinces, as it is influenced by regional structural characteristics and business sector capacity. Therefore, credit disbursement needs to be more precisely targeted toward sectors and regions possessing high credit absorption capacity and job creation potential. Coordination among the central government, local governments, and the banking sector must be strengthened to ensure that credit expansion is effectively channeled into production activities and job creation.

ABSTRAK

Penelitian ini bertujuan menguji efektivitas transmisi Kebijakan Likuiditas Makprudensial (KLM) terhadap tingkat pengangguran di Indonesia melalui lending channel kredit modal kerja dan kredit investasi. Penelitian menggunakan data panel 25 provinsi selama periode 2021–2025 yang dipilih berdasarkan ketersediaan dan konsistensi data. Estimasi dilakukan menggunakan metode Panel Autoregressive Distributed Lag (ARDL) dengan pendekatan Pooled Mean Group (PMG). Hasil estimasi menunjukkan bahwa kredit modal kerja dan kredit investasi berpengaruh negatif signifikan terhadap tingkat pengangguran dalam jangka panjang. Peningkatan penyaluran kredit kepada sektor usaha mendorong aktivitas produksi dan ekspansi usaha sehingga menurunkan tingkat pengangguran. Temuan ini memberikan bukti empiris bahwa saluran transmisi non-suku bunga melalui KLM lending channel bekerja secara efektif dalam memengaruhi kondisi ketenagakerjaan di Indonesia. Hasil estimasi jangka pendek menunjukkan adanya heterogenitas dalam transmisi kebijakan. Efektivitas KLM tidak berlangsung secara seragam di seluruh provinsi karena dipengaruhi oleh karakteristik struktural daerah dan kapasitas sektor usaha. Oleh karena itu, penyaluran kredit perlu diarahkan secara lebih tepat sasaran pada sektor dan daerah yang memiliki kapasitas penyerapan kredit serta potensi penciptaan lapangan kerja yang tinggi. Koordinasi antara pemerintah pusat, pemerintah daerah, dan sektor perbankan perlu diperkuat untuk memastikan ekspansi kredit dapat ditransmisikan secara efektif ke aktivitas produksi dan penciptaan lapangan kerja.

1. INTRODUCTION

The main function of a country's central bank is to preserve price stability. However, amid the increasingly complex dynamics of the global economy, this mandate is widely regarded as insufficient to address the multidimensional challenges of economic development. This situation has prompted numerous countries to expand central bank mandates by assigning additional responsibilities to support broader macroeconomic objectives, such as economic growth, employment creation, and improvements in societal welfare (Bank International Settlements, 2009; Bertsch et al., 2025; Khan, 2025). Notable examples of central banks that have adopted such mandate expansions include the Federal Reserve System and the Reserve Bank of Australia, both of which operate under a dual mandate requiring the simultaneous achievement of price stability and maximum employment (Federal Reserve System, 2021; Reserve Bank of Australia, 2025a).

The theoretical support for this mandate expansion is the New Keynesian approach through the concept of Flexible Inflation Targeting. This framework positions price stability as a prerequisite for maximizing social welfare, while acknowledging the tension between inflation stabilization and real economic stabilization, particularly concerning responses to output and employment fluctuations (Bernanke & Mishkin, 1997; Svensson, 1999; Woodford, 2003). Conversely, the classical view holds that expanding the mandate can generate goal conflict, as a single monetary instrument cannot effectively achieve multiple objectives simultaneously, while also increasing the risk of time inconsistency, which may undermine central bank credibility in maintaining price stability (Kydland & Prescott, 1977; Rogoff, 1985; Tinbergen, 1952).

The Federal Reserve's experience in implementing the dual mandate since 1977 illustrates that efforts to balance price stability with maximum employment have not always proceeded smoothly. Both before and after the introduction of the dual mandate, the Fed was unable to achieve price stability from the late 1960s to the early 1980s. Nevertheless, this experience does not necessarily indicate that the dual mandate constitutes an impediment to price stability. Following that period, core inflation remained relatively consistent near the 2 percent target from September 1992 to April 2021, particularly after the Fed formally established a long-run inflation target of 2 percent in 2012. During the same period, recessions were relatively infrequent and short-lived, with the exceptions of 1981–1982 and 2007–2009, while unemployment also remained at relatively low levels in nearly every decade since the 1990s. Questions regarding the credibility of the dual mandate began to emerge in 2021, when the Fed opted to delay monetary tightening even as inflation surged to a peak of 7 percent. This delay was predicated on considerations of low unemployment, which ranged between 3.7 and 5 percent. Ultimately, however, the Fed pursued an aggressive policy response, raising the benchmark interest rate from near zero to approximately 5.50 percent within 16 months (from March 2022 to July 2023). While this aggressive tightening succeeded in curbing inflation, it also contributed to a gradual rise in unemployment. A similar pattern of delayed response subsequently occurred in reaction to a surge in tariffs and energy prices stemming from turmoil in Iran, which was presumed to be transitory. Such a stance carries the risk of triggering a recession while simultaneously delaying the return of inflation to its target (Congressional Research Service, 2026).

From a cross-country comparative perspective, the Congressional Research Service (2026) asserts that there is no robust evidence indicating that countries operating under a dual mandate systematically achieve superior employment outcomes compared with those with a single mandate. Indeed, since 2000, Japan and Switzerland have recorded lower average inflation and unemployment rates than the United States, as presented in Table 1.

Table 1. Inflation and Unemployment Outcomes across the United States, Japan, and Switzerland

Country	Average Annual Inflation Rate (%)		Average Annual Unemployment Rate (%)	
	2000-2020	2021-2025	2000-2020	2021-2025
Japan	0,1	2,3	4,06	2,63
Swiss	0,4	1,4	4,18	4,54
United Stated	2,1	4,5	5,99	4,82

Source: Congressional Research Service, 2026 and World Bank 2025 (processed)

Based on the comparison presented in Table 1, the Federal Reserve's dual mandate framework has generated debate regarding its effectiveness, which has subsequently evolved into a broader discourse on institutional reform. In May 2026, the U.S. House Financial Services Committee deliberated on H.R. 5396, a bill proposing the replacement of the Federal Reserve's dual mandate with a single mandate focused solely on price stability.

Australia offers a pertinent institutional case through the reforms implemented at the Reserve Bank of Australia (RBA) since 2022. These modifications largely reflect the recommendations of the Review of the Reserve Bank of Australia, which advocated for a renewed focus on the RBA's dual objectives of maintaining price stability and supporting full employment. In response to this review, the Australian government enacted the Reserve Bank Reforms Bill 2023, with the ensuing institutional changes becoming effective on 1 March 2025 (Pyburne, 2024). The reform package introduced several substantial modifications to the RBA's institutional structure, including the establishment of an independent Monetary Policy Board alongside the Governance Board, enhanced safeguards for the central bank's policy independence by removing the Treasurer's authority to override monetary policy decisions, and an amended Statement on the Conduct of Monetary Policy. The revised statement continues to uphold flexible inflation targeting as the primary operational framework through which the RBA pursues its dual mandate.

In its submission to parliament, the RBA stated that no significant distinction exists between the practice of flexible inflation targeting and the dual mandate approach, as the central bank had, in substance, long accorded weight to the achievement of full employment, even though this had not been explicitly stated within the previous legal framework (Reserve Bank of Australia, 2024). This position drew academic criticism from Quiggin, published in *The Economic and Labor Relations Review*. Quiggin (2023) argues that the outcomes of the RBA review represent a missed opportunity, as the review panel devoted greater attention to governance changes than to scrutinizing the effectiveness of the prevailing monetary policy framework, namely, interest-rate-based inflation targeting. He contended that this framework had exhibited numerous shortcomings in its application across several countries since the global financial crisis. He further argued that the review's outcomes fell short of providing a sufficiently robust commitment to achieving full employment and enhancing societal welfare. This critique underscores that legally strengthening a mandate does not necessarily translate into substantive changes in monetary policy, so long as the underlying operational framework remains unchanged.

The literature also supports the dual-mandate approach. According to (Ferguson, 2024), while this framework entails short-term trade-offs, it ultimately allows the Federal Reserve to preserve economic equilibrium and sustain the long-term health of the U.S. economy. In the same vein, the Reserve Bank of Australia (2024) posits that price stability and full employment reinforce one another over the long term and, in many cases, complement each other even in the short term. This means that incorporating an employment objective does not inherently conflict with the price-stability goal, so long as full employment is properly understood as the highest employment level attainable without compromising price stability, a condition often termed sustainable full employment.

Conversely, opponents of mandate expansion contend that a single policy instrument is ill-suited to pursuing multiple objectives simultaneously. Michl (2008) demonstrates that incorporating an employment target into the Taylor Rule continues to yield equilibria that deviate from both targets, owing to the multiplicity of possible equilibrium points within Phillips-curve-based growth models. A study of the Bank of England's (BoE) mandate similarly reveals comparable risks, namely the erosion of accountability when secondary objectives such as growth and employment are formulated asymmetrically. Such circumstances risk opening avenues for political pressure on central bank decision-making (Koop & Scotto di Vettimo, 2023). Lastra & Alexander (2020) illustrate that when a single instrument, the policy interest rate, is burdened with more than one objective, the resulting outcome risks being suboptimal for both objectives and may even fail to achieve either due to unavoidable policy compromises.

Amid persisting theoretical and empirical gaps concerning the effectiveness of the dual mandate, Indonesia's House of Representatives (DPR) nonetheless proceeded to approve an expansion of Bank Indonesia's role to include support for economic growth and job creation. This approval was formally granted at the DPR RI Plenary Session held on June 4, 2026, through an amendment to Law Number 4 of 2023 on the Development and Strengthening of the Financial Sector (P2SK). This provision is stipulated under Article 7, Paragraph (2), which mandates that Bank Indonesia implement policies and policy mixes capable of cultivating an economic climate conducive to growth in the real sector and the creation of employment opportunities.

This provision aligns with Bank Indonesia's core objectives set out in Article 7, Paragraph (1): maintaining the stability of the rupiah, safeguarding the Payment System, and helping preserve Financial System stability in the service of sustainable economic growth. Through this mandate expansion, Bank Indonesia now stands alongside the Federal Reserve and the Reserve Bank of Australia in adopting a broader policy remit, as discussed above. Beyond mirroring this trend toward mandate expansion, the legal revision also served to formally codify practices that Bank Indonesia had already been carrying out well before the P2SK Law was revised in 2023 (Bank Indonesia, 2024).

Three instances of policy implementation illustrate Bank Indonesia's tangible support for national economic growth and employment generation. The first traces back to the COVID-19 pandemic, when Bank Indonesia and the government reached a burden-sharing arrangement formalized through a Joint Decree between the Ministry of Finance and Bank Indonesia, anchored in Government Regulation in Lieu of Law Number 1 of 2020. Under this scheme, Bank Indonesia directly purchased government bonds acquired directly through the primary market to finance the national economic recovery program, including social safety nets and support for businesses affected by the pandemic (Kementerian Keuangan Republik Indonesia, 2020). The second reference is the growth-oriented policy mix framework explicitly introduced by Bank Indonesia. Within this framework, monetary policy is directed to be pro-stability, while the four remaining policy areas, namely macroprudential policy, payment system policy, money and foreign exchange market deepening policy, and inclusive and green financial economic policy, are explicitly oriented toward being pro-growth (Bank Indonesia, 2024).

The third reference is the macroprudential liquidity incentive policy (KLM) instrument, which represents the most concrete policy in relation to job creation. Through this instrument, Bank Indonesia provides incentives in the form of reduced statutory reserve requirements for banks channeling credit to priority sectors, such as downstream industrialization, housing, tourism, and micro, small, and medium enterprises (Bank Indonesia, 2023). The KLM instrument was subsequently reformulated in late 2024 to redirect a portion of the incentive targets from capital-intensive sectors toward labor-intensive sectors, with the aim of more directly supporting job creation.

This policy trajectory suggests that Bank Indonesia had, in practice, already been contributing to real sector development and employment generation through a range of instruments within its broader policy mix well before these objectives were formally incorporated into the legal mandate in 2026. However, the formal strengthening of this mandate also highlights an important empirical question regarding the extent to which Bank Indonesia's policy instruments are effectively transmitted to labor market outcomes. In this context, the KLM represents one of the instruments that is most explicitly associated with employment generation. Introduced in 2023 and subsequently recalibrated in late 2024, KLM increasingly emphasized providing incentives to sectors characterized by relatively high labor absorption. Despite this policy orientation, empirical evidence directly examining the transmission of KLM to employment outcomes remains scarce. Existing research on the expansion of central bank employment mandates has predominantly focused on theoretical and institutional dimensions, drawing extensively on the experiences of advanced economies, including the Federal Reserve, Reserve Bank of Australia, and Bank of England. However, such literature provides only limited insight into how employment-oriented monetary and macroprudential policies operate within the distinct structural and institutional settings of developing economies such as Indonesia.

This gap creates an opportunity to bridge the macroprudential policy literature with the literature on central bank employment mandates. In contrast to dual mandate studies, which generally emphasize the interest rate as the primary transmission instrument, this research focuses on non-interest-rate transmission channels through macroprudential policy, specifically the KLM mechanism in promoting banking intermediation. Policy effectiveness is assessed not only in terms of increased credit disbursement but also in terms of its capacity to be transmitted to the real sector and employment conditions.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 The Phillips Curve

The study of the relationship between monetary policy and unemployment originated with the empirical findings of Alban William Phillips. Phillips (1958) identified a stable inverse pattern linking wage pressures to joblessness: as unemployment fell, wage growth accelerated, and the reverse held true as well.

Two years later, Samuelson & Solow (1960) transformed this finding by replacing the wage variable with the rate of price inflation, giving rise to what became known as the Phillips Curve. In its early formulation, this curve was viewed as a policy trade-off, in which monetary authorities had to choose between suppressing inflation at the risk of higher unemployment or reducing unemployment at the risk of higher inflation.

Friedman (1968) asserted that the negative relationship between inflation and unemployment is only temporary, holding only as long as economic agents' inflation expectations have not yet been adjusted. When the central bank pursues an expansionary policy, the surge in aggregate demand initially stimulates production and employment, thereby reducing the unemployment rate. However, once the public anticipates the resulting price increases, the real benefits of that policy for employment dissipate.

Friedman (1968) developed the concept of the natural rate of unemployment, referring to the equilibrium level of unemployment shaped by the structural characteristics of the labor market rather than monetary policy. Persistent attempts to push unemployment below its natural rate by means of sustained monetary expansion will only lead to ever-accelerating inflation, without generating any lasting reduction in unemployment. Nevertheless, this hypothesis does not imply that monetary policy loses all relevance to unemployment, but rather demonstrates that its influence varies according to the time horizon. In the short run, changes in monetary policy remain capable of affecting labor market conditions through the aggregate demand channel. However, in the long run, unemployment is arbitrated more by structural factors such as labor market characteristics, workforce quality, the sectoral composition of the economy, and the degree of informality.

2.2 Theory of Monetary Policy Transmission Mechanisms

Mishkin (1996) outlines several transmission mechanisms through which monetary policy influences real economic activity. The first is the interest rate route, in which shifts in the policy rate feed through to the real interest rate, thereby shaping consumption and investment decisions. The second is the asset price channel, which operates through changes in stock prices and household wealth. Monetary easing can raise stock prices and stimulate investment through the concept of Tobin's q . Increases in wealth can also boost consumption through the wealth effect. The third is the exchange rate channel, which operates through changes in trade competitiveness and the cost of imported inputs. A reduction in interest rates can exert depreciation pressure on the exchange rate, thereby enhancing export competitiveness and net exports. The resulting increase in external demand then stimulates production and employment in export-oriented sectors. However, depreciation also raises the cost of imported production factor costs, such that its effects may differ across sectors.

The fourth is credit transmission, which comprises both the bank lending and balance sheet channels. This channel explains how monetary policy affects banks' capacity to extend credit and the balance sheet conditions and financing access of borrowers. The fifth is the expectations channel, which operates through changes in economic agents' expectations regarding inflation, interest rates, and growth prospects. Credible central bank policy and communication can influence decisions on consumption, investment, price setting, and hiring, even before the effects of policy are fully realized. Therefore, central bank credibility is a critical factor in determining the strength of monetary policy transmission.

These five channels ultimately operate through changes in aggregate demand, production activity, and firms' decisions regarding labor utilization. Monetary easing that boosts consumption, investment, credit, or exports can stimulate production and labor demand, thereby reducing the unemployment rate. Conversely, monetary tightening can dampen economic activity and increase the pressure on the labor market.

2.3 Flexible Inflation Targeting and the New Keynesian Approach

The expansion of the central bank mandate toward dual objectives is supported by the New Keynesian approach through the concept of flexible inflation targeting. Svensson (1999) argues that flexible inflation targeting allows the central bank to construct a loss function encompassing not only the deviation of inflation from its target but also the deviation of output from its potential level. Consequently, the central bank strikes an optimal balance between the pace of inflation's return to target and the goal of stabilizing output and employment, rather than pursuing price stability as rapidly as possible without regard for other considerations. Svensson's view is reinforced by Bernanke and Mishkin (1997). The authors assert that inflation targeting is not a strict mechanical rule, but rather a policy framework that allows for constrained discretion. This latitude enables the central bank to respond to shocks in the real sector, including labor market shocks, without necessarily sacrificing its long-term credibility in maintaining price stability. The microeconomic foundations of this approach were further developed by Michael Woodford. In his book,

Woodford (2003) formally derives the central bank's loss function from the utility function of a representative household within a New Keynesian model. Woodford demonstrates that, under certain conditions which he terms the divine coincidence, both inflation stabilization and output gap stabilization can be attained simultaneously using a single interest rate instrument. This condition holds only when the economy faces demand-side shocks. Conversely, this coincidence does not hold when the source of the shock originates from the supply or cost side (cost-push shock), in which case the central bank faces a conflict of objectives between price stability and output stability.

2.4 Theory of Macroprudential Policy

The second pillar of Bank Indonesia's policy in support of job creation draws on the macroprudential policy literature that developed following the 2008 global financial crisis. Borio(2009) emphasizes that macroprudential policy is necessary to manage systemic risk and the financial cycle, which exhibits dynamics distinct from those of the business cycle. This policy complements monetary policy by directing instruments more specifically toward financial system stability and credit growth.

According to Borio (2011), macroprudential instruments, such as the loan-to-value (LTV) ratio and countercyclical capital buffer, can be used to manage credit growth and limit the accumulation of systemic risk. The existence of this policy means that the objective of financial stability is not entirely borne by the policy interest rate. This separation of instrument functions is consistent with the Tinbergen Rule (1952), which states that policymakers require at least one independent policy instrument for each objective they seek to achieve.

Within the framework of this research, Borio (2011) provides the foundation for viewing macroprudential policy as an instrument that complements the transmission of monetary policy to the labor market. Macroprudential policies that support credit availability for productive sectors can enhance business financing capacity, particularly for MSMEs, which play a significant role in labor absorption. Improved access to financing enables businesses to expand production and investment, which, in turn, increases labor demand.

3. RESEARCH METHOD

4.1 Data Sources

This study uses a quantitative approach to test the effectiveness of the Macroprudential Liquidity Policy (MCLP) transmission on the unemployment rate in Indonesia. The data used is panel data, a combination of time series and cross-individual data, covering 25 provinces in Indonesia during the 2021–2025 period. The selection of the 25 provinces was based on the availability and consistency of data required for the study. Therefore, provinces with incomplete data during the observation period were excluded from the sample. The research data were obtained from two primary sources: Bank Indonesia (BI) and the Central Statistics Agency (BPS). Some of the required data is included in the following table (Table 2).

Table 2. Operational Definition of Variables

	Variable	Proxy	Operational Definition	Unit	Sources
Dependent	1. Employment	Unemployment Rate	The percentage of the unemployed relative to the total labor force in each province.	Percent (%)	Badan Pusat Statistik
Independent	2. KLM Lending Channel	Working Capital Loan	Percentage change in working capital loans disbursed in each province	Percent (%)	Bank Indonesia
		Investment Loan	Percentage change in investment credit disbursed to each province.	Percent (%)	Bank Indonesia
Control	2. Economic Growth	Real GRDP growth	Percentage change in GRDP at constant prices compared to the previous year	Percent (%)	Badan Pusat Statistik
	3. Inflation	Inflation Rate	Percentage change in the Consumer Price Index (CPI) on a year-on-year (YoY) basis over the observation period.	Percent (%)	Bank Indonesia

4.2 Estimation Method

This study adopts the panel autoregressive distributed lag (Panel ARDL) model as its estimation approach to examine how macroprudential policy is transmitted via the lending channel to shape conditions in the labor market. Panel ARDL was selected because it is capable of identifying relationships among variables in both the short and long run, and because it allows for the estimation of the adjustment process toward long-run equilibrium following changes in policy variables.

The model specification adopted in this study draws on the panel data regression approach developed by Khan (2025) to examine how central bank policy responds to macroeconomic objectives. Building on this approach, the economic model applied in this study is presented below.

$$UNEMP = f(KMK, KINV, PDRB, INF) \quad (1)$$

The framework was then modified to adapt the research variables and data characteristics used. Based on this framework, the econometric model used in this study is formulated as follows:

$$\begin{aligned}
 \Delta UNEMP_{it} = & \alpha_i + \sum_{j=1}^{p-1} \phi_{ij} \Delta UNEMP_{it-j} + \sum_{j=0}^{q_1-1} \phi_{1ij} \Delta KMK_{it-j} + \sum_{j=0}^{q_2-1} \phi_{2ij} \Delta KINV_{it-j} + \sum_{j=0}^{q_3-1} \phi_{3ij} \Delta PDRB_{it-j} \\
 & + \sum_{j=0}^{q_4-1} \phi_{4ij} \Delta INF_{it-j} + \lambda_i (UNEMP_{it-1} - \theta_1 KMK_{it-1} - \theta_2 KINV_{it-1} - \theta_3 PDRB_{it-1} - \theta_4 INF_{it-1}) \\
 & + \varepsilon_{it}
 \end{aligned} \quad (2)$$

In detail, within the model, $UNEMP_{it}$ represents the unemployment rate in province i during period t , while KMK_{it} and $KINV_{it}$ denote working capital credit and investment credit, respectively, which represent the transmission of KLM through the lending channels. The variable $PDRB_{it}$ serves as a proxy for regional economic performance, while INF_{it} denotes the inflation rate. Meanwhile, α_i captures the province-specific effect, reflecting the unobserved individual characteristics that remain constant throughout the study period. The components employing the Δ operator represent the short-run relationship, namely the change in the unemployment rate as influenced by changes in working capital credit, investment credit, PDRB, and inflation, including the effects of the lagged values of these variables. The bracketed term containing the period $t-1$ variables serves as the error correction term (ECT), which captures the long-run equilibrium relationship among the variables. The coefficient λ_i reflects how quickly the system adjusts from short-run deviations back to this long-run equilibrium.

4. DATA ANALYSIS AND DISCUSSION

4.1 Analysis of ARDL-PMG Panel Estimation Results

This section presents the empirical findings on the effectiveness of macroprudential liquidity policies on the unemployment rate in Indonesia. The analysis employs panel data covering 25 provinces over the period 2021–2025. The analysis proceeds through a series of sequential steps. It commences with a stationarity test to determine each variable's order of integration, followed by a panel cointegration test to examine whether a long-run relationship exists among the variables. The Panel Autoregressive Distributed Lag (ARDL) model, estimated via the Pooled Mean Group (PMG) approach, was then applied to capture both long-run and short-run dynamics. Beyond this, province-level short-run coefficients were examined to uncover variations across provinces in their response to the transmission of macroprudential liquidity policies.

The initial stage of the analysis was directed at identifying the stationarity characteristics of each research variable. This test is essential, as Panel ARDL estimation requires that the variables employed not be integrated of order two, $I(2)$. Accordingly, a unit root test was conducted on the five research variables: the Open Unemployment Rate (UNEMP), Working Capital Credit (KMK), Investment Credit (KINV), Economic Growth (PDRB), and Inflation (INF). The stationarity test was performed using the Phillips–Perron (PP) Fisher test with an individual effects specification. This approach allows the characteristics of each province to be reflected in the testing process without requiring uniformity of the autoregressive coefficient across cross-sections. The results of the stationarity test are presented in Table 3.

Table 3. Stationarity Test Results

		Level		Fisrt Difference	
		Statistic	Prob.	Statistic	Prob.
UNEMP	PP - Fisher Chi-square	90.1821	0.0004*	324.578	0.0000*
KMK	PP - Fisher Chi-square	77.7566	0.0072*	134.867	0.0000*
KINV	PP - Fisher Chi-square	62.9861	0.1027	127.929	0.0000*
PDRB	PP - Fisher Chi-square	101.976	0.0000*	128.753	0.0000*
INF	PP - Fisher Chi-square	61.5869	0.1261	117.986	0.0000*

Note: *) significant at the $\alpha = 5\%$ level

Source: Processed by the Author

As shown in Table 3, the stationarity test results reveal that, at the 5% significance level, KINV and INF are not stationary in their level form, a conclusion supported by probability values above 0.05, meaning the null hypothesis of a unit root cannot be dismissed. Once first differencing is applied, however, every variable in the study yields probability values below 0.05, allowing the null hypothesis to be rejected and confirming that all variables achieve stationarity at first difference. These results place the maximum order of integration for the research variables at $I(1)$, with none reaching second difference, $I(2)$, a condition that satisfies one of the key requirements for applying the Panel ARDL model.

The analysis then proceeded to assess whether a long-run relationship exists among the variables, a question addressed through cointegration testing. This test establishes whether the variables move together toward long-run equilibrium, thereby furnishing the empirical foundation required to estimate the long-run relationship. This was carried out using the Kao Residual Cointegration Test, an approach that detects cointegration by assessing the stationarity of residuals generated from the long-run relationship among the variables. The corresponding results are presented in Table 4.

Table 4. Results of the Kao Cointegration Test

Uji Kao (Residual Cointegration Test)			
Test	Statistic	Prob.	Result
ADF	1.910232	0.0281*	There is cointegration

Note: *) significant at the $\alpha = 5\%$ level

Source: Processed by the Author

As reported in Table 4, the Kao Residual Cointegration Test yields an ADF statistic of 1.910232, corresponding to a probability value of 0.0281. Since this value falls below the 0.05 threshold at the 5% significance level, the null hypothesis of no cointegration is rejected, pointing to a cointegrating relationship

among the research variables and, by extension, a long-run equilibrium among them. This outcome supplies the empirical justification for moving forward with Panel ARDL estimation via the PMG estimator to capture both the long-run relationship and the short-run dynamics linking the variables.

The next step involved estimating the Panel Autoregressive Distributed Lag (ARDL) model using the Pooled Mean Group (PMG) estimator. This specification consists of one lag for the dependent variable, the Open Unemployment Rate (UNEMP), as well as one lag for each of the independent variables, namely Working Capital Credit (KMK), Investment Credit (KINV), Economic Growth (PDRB), and Inflation (INF). This lag structure was chosen to enable the model to capture both the persistence of the unemployment rate and the dynamic response of unemployment to changes in the explanatory variables across periods. Under the PMG approach, the long-run coefficients are assumed to be homogeneous across provinces, while the short-run parameters and the error correction term coefficients are permitted to vary by province. The results of the Panel ARDL estimation are presented in Table 5.

Table 5. Panel ARDL Estimation Results

Variable	Coefficient	Std.Error	t-statistic	Prob.
Long-run (Pooled) Coefficients				
KMK	-0.103111	0.017683	-5.830960	0.0000*
KINV	-0.014330	0.001783	-8.036867	0.0000*
PDRB	1.172769	0.152935	7.668399	0.0000*
INF	0.988173	0.112511	8.782900	0.0000*
Short-run (Mean-Group) Coefficients				
COINTEQ01	-0.022605	0.029741	-0.760060	0.4491
D(KMK)	-0.010829	0.011556	-0.937082	0.3511
D(KINV)	-0.004257	0.004094	-1.039831	0.3010
D(PDRB)	-0.037702	0.120332	-0.313319	0.7547
D(INF)	-0.034715	0.039572	-0.877266	0.3825
C	-0.163843	0.096850	-1.691721	0.0939
Log-Likelihood: 51.80781				

Note: *) significant at the $\alpha = 5\%$ level

Source: Processed by the Author

The results reported in Table 5 provide evidence that the liquidity-based macroprudential policy transmission through the lending channel operates primarily over the long run in Indonesia. Both working capital credit (KMK) and investment credit (KINV) exhibit statistically significant pooled long-run coefficients at the 1% level, with p-values of 0.0000. The estimated coefficient for KMK is -0.103 , suggesting that a 1% increase in working capital credit growth is associated with a 0.103-percentage-point reduction in the unemployment rate in the long run, *ceteris paribus*. Similarly, KINV enters the model with a negative coefficient of -0.014 , implying that a 1% increase in investment credit growth is related to a 0.014-percentage-point decline in the unemployment rate, holding other factors constant.

The negative and statistically significant coefficients of both credit components indicate that greater access to bank financing is associated with improved labor market conditions over a longer horizon. Economically, this finding is consistent with the credit channel and financial accelerator framework of Bernanke and Gertler (1995), whereby improved credit availability relaxes firms' financing constraints and strengthens their capacity to undertake working capital expenditures and productive investments. The resulting expansion in production capacity and business activity can generate additional demand for labor, thereby reducing the unemployment rate. The relatively large magnitude of the KMK coefficient also suggests that working-capital financing may have more immediate structural relevance for employment generation than investment credit, potentially reflecting its closer link to firms' ongoing production and operational activities.

Based on the results in Table 5, the effect of macroprudential policy liquidity through the lending channel on the unemployment rate in Indonesia can be observed in both the long and short runs. The estimation results indicate that both variables, working capital credit and investment credit, exhibit significant long-run pooled coefficients at the 1% significance level, with a probability value of 0.0000. The working capital credit (KMK) variable shows a coefficient of -0.103 , indicating that a 1% increase in working capital credit growth is associated with a 0.103-point decrease in the unemployment rate in the long run. The coefficient for the investment credit (KINV) variable is likewise negative and consistent, at -0.014 , meaning that for every 1% increase in investment credit growth, the unemployment rate falls by 0.014 percentage points, all else held constant. This direction of the relationship is consistent with the credit channel and financial accelerator mechanism developed by Bernanke and Gertler (1995), in which increased credit disbursement expands the financing capacity of business actors, enabling them to increase production

capacity and business activity, which ultimately drives higher demand for labor.

Meanwhile, the control variables, namely economic growth (PDRB) and inflation (INF), also show positive and significant coefficients in the long run, at 1.172 (0.0000) and 0.988173 (0.0000), respectively. PDRB's positive coefficient implies that a 1% increase in economic growth is accompanied by a 1.172769 percentage-point rise in the unemployment rate in the long run, all else held constant. Likewise, a 1% increase in inflation is accompanied by a 0.988173 percentage-point rise in long-run unemployment, *ceteris paribus*. Such findings point to the fact that expansion in aggregate economic activity has not consistently led to a decline in unemployment throughout the observation period.

In contrast to the long-run estimates, none of the explanatory variables demonstrated a statistically significant influence on the unemployment rate within the short-run horizon. This includes the error correction term (COINTEQ01) as well as the first-differenced variables, D(KMK), D(KINV), D(PDRB), and D(INF). In particular, the coefficients of D(KMK) and D(KINV) were statistically insignificant, as indicated by the corresponding probability values of 0.3511 and 0.3010. The findings suggest that changes in the volume of credit disbursement do not translate immediately into measurable changes in the unemployment rate within the same period. Rather, the labor market appears to respond with a certain lag to changes in credit conditions, reflecting the gradual nature of the transmission process from credit expansion to firms' production and investment decisions and, ultimately, to labor demand. This result is consistent with the view that credit-based macroprudential transmission does not necessarily generate an immediate employment response, as firms may require time to convert additional financing into expanded productive capacity, higher output, and new employment opportunities.

In contrast to the long-run estimation results, all independent variables show statistically insignificant effects in the short run, including both the Error Correction Term (COINTEQ01) and the four differenced variables, D(KMK), D(KINV), D(PDRB), and D(INF). In particular, the insignificance of D(KMK) and D(KINV), with probability values of 0.3511 and 0.3010, respectively, indicates that changes in credit disbursement within the current period are not yet directly reflected in changes in the unemployment rate. This points to a time lag in the transmission between credit expansion and the response of the labor market.

This transmission lag remains consistent with the credit channel mechanism described by Bernanke & Gertler (1995), in which changes in credit conditions affect economic activity through the ability of business actors to obtain and utilize financing. Within this mechanism, an increase in credit disbursement is not directly translated into higher labor absorption but instead unfolds through several stages. In the initial stage, increased credit expands the availability of financing for business actors, whether to meet working capital needs or to finance investment. This additional financing then provides firms with the capacity to increase production, expand business scale, or undertake broader economic activity. Once production capacity and business activity have increased, the demand for factors of production, including labor, may subsequently rise as well. The effect of credit on the unemployment rate is therefore the outcome of a transmission process that unfolds gradually over time.

This transmission process reflects the fact that changes in financial variables, such as credit, can occur more rapidly than the corresponding response in output and the labor market. This mechanism is further elaborated by Kiyotaki & Moore (1977), who explain how changes in credit conditions can affect investment through the interlinkage between financing capacity, net worth, and asset values. Greater access to external financing strengthens firms' capacity to undertake investment and expand productive activities. Conversely, tighter credit conditions can constrain investment and weaken firms' income-generating capacity and asset values, thereby reducing their ability to secure financing in subsequent periods. This interaction creates a reinforcing feedback mechanism between credit conditions, firms' financial positions, and real economic activity. Consequently, the effects of credit expansion are unlikely to materialize instantaneously or proportionally to changes in financing conditions. Instead, the transmission process tends to unfold gradually, with the effects accumulating and persisting over subsequent periods as improved financing conditions are progressively translated into higher investment, production, and employment. This empirical pattern is consistent with the study by Amaluddin et al.; (2024) on the relationship between bank credit financing and manufacturing industry performance in Indonesia. Using a similar method, Amaluddin et al. (2024) found that, in the short run, the effect of bank credit financing tends to be weak, owing to the sticky adjustment process through which the business sector absorbs labor in response to credit expansion or contraction.

Table 6. ARDL-PMG Panel Estimation Results at the Provincial Level

Cross-Section Short-Run Coefficient						
	COINTEQ01 (Prob)	D(KMK) (Prob)	D(KINV) (Prob)	D(PDRB) (Prob)	D(INF) (Prob)	C (Prob)
Aceh	-0.048681 (0.0063)*	0.003823 (0.0000)*	0.007916 (0.0000)*	-0.120382 (0.0184)*	-0.072887 (0.0067)*	-0.170812 (0.0212)*
Bali	0.020923 (0.0000)*	-0.185985 (0.0000)*	0.010114 (0.0000)*	0.010776 (0.0037)*	0.127966 (0.0000)*	-0.472678 (0.0001)*
Bangka Belitung	-0.002032 (0.7306)	-0.005995 (0.0005)*	-0.000087 (0.8769)	0.048647 (0.1646)	-0.075843 (0.6076)	-0.059191 (0.6245)
Banten	-0.000625 (0.7537)	0.005076 (0.0002)*	-0.020044 (0.0000)*	0.223938 (0.0117)*	0.041328 (0.0002)*	-0.257805 (0.0000)*
DKI Jakarta	0.024689 (0.5212)	0.034395 (0.0040)*	-0.047575 (0.0319)*	-0.199845 (0.1271)*	-0.258971 (0.1868)*	-0.183773 (0.0932)*
Gorontalo	-0.409240 (0.0000)*	-0.003324 (0.0000)*	-0.006020 (0.0000)*	0.020925 (0.0014)*	-0.182761 (0.0000)*	-1.555001 (0.0037)*
Jambi	0.017332 (0.0000)*	0.001992 (0.0000)*	-0.008153 (0.0000)*	0.271880 (0.0078)*	0.022956 (0.0000)*	-0.037109 (0.0019)*
Jawa Barat	0.362670 (0.0000)*	-0.061482 (0.0000)	0.045881 (0.0000)	-0.999005 (0.0000)	0.228802 (0.0000)	0.027504 (0.8303)
Jawa Tengah	-0.032247 (0.0385)*	0.022225 (0.0023)*	-0.024879 (0.0001)*	-0.046255 (0.2981)	0.056208 (0.0232)	-0.204824 (0.0976)
Jawa Timur	-0.091086 (0.4243)	-0.153367 (0.0050)*	-0.031781 (0.0098)*	-0.318202 (0.1850)	0.438390 (0.0344)*	-0.268858 (0.8783)
Kalimantan Barat	-0.157759 (0.0014)*	0.024222 (0.0000)*	-0.011192 (0.0000)*	-0.624312 (0.4382)	-0.196486 (0.0014)*	-0.498640 (0.0423)
Kalimantan Selatan	0.129345 (0.0062)*	-0.011824 (0.0000)*	-0.005387 (0.0000)*	-0.648670 (0.0050)*	0.151595 (0.0012)*	0.575816 (0.1323)*
Lampung	0.056540 (0.0000)*	-0.012765 (0.0000)*	0.002116 (0.0000)*	-0.399509 (0.0000)*	0.051138 (0.0000)*	0.237023 (0.0000)*
Maluku Utara	0.032278 (0.0000)*	-4.98E-05 (0.0000)*	0.003851 (0.0000)*	0.012067 (0.0000)*	-0.404796 (0.0000)*	0.636085 (0.0056)*
Nusa Tenggara Barat	-0.052050 (0.0000)*	0.029098 (0.0000)*	-0.007262 (0.0000)*	0.162882 (0.0024)*	-0.242592 (0.0024)*	-0.137937 (0.0786)
Nusa Tenggara Timur	0.011908 (0.0238)*	-0.007165 (0.0002)*	-0.000871 (0.0001)*	-0.130946 (0.0842)*	0.036562 (0.0007)*	0.051364 (0.2471)
Papua	0.062553 (0.0006)*	-0.002281 (0.0694)	0.047992 (0.0000)	-0.120685 (0.0085)*	-0.149360 (0.0027)*	0.582565 (0.0629)
Sulawesi Barat	-0.157905 (0.0015)*	0.034072 (0.0000)	-0.011089 (0.0024)*	0.169588 (0.0489)*	-0.064905 (0.0469)*	-0.556747 (0.0369)*
Sulawesi Selatan	-0.318918 (0.0000)*	0.096548 (0.0000)*	-0.019480 (0.0000)	2.377896 (0.0000)*	-0.478475 (0.0000)*	-0.990847 (0.0004)*
Sulawesi Tenggara	-0.100322 (0.0000)*	-0.000275 (0.0008)*	0.006485 (0.0000)*	0.247502 (0.0040)*	0.053944 (0.0001)*	-0.638030 (0.0003)*
Sulawesi Utara	0.157876 (0.0000)*	-0.062157 (0.0000)*	-0.009195 (0.0000)*	-0.338084 (0.0000)*	0.105011 (0.0000)*	0.224675 (0.0007)*
Sumatera Barat	-0.028166 (0.0000)*	-0.000676 (0.0555)	0.007240 (0.0000)*	-0.288948 (0.0003)*	-0.001365 (0.0136)*	-0.161284 (0.0000)*
Sumatera Selatan	0.058386 (0.0000)*	0.026442 (0.0000)*	-0.018092 (0.0004)*	0.105741 (0.0004)*	-0.122438 (0.0004)*	0.058780 (0.0084)*
Sumatera Utara	0.012582 (0.3816)	-0.049854 (0.0000)*	0.000444 (0.0970)	-0.623626 (0.0044)*	0.126222 (0.0012)	0.154811 (0.2733)*
Riau	-0.113171 (0.0000)*	0.008586 (0.0000)*	-0.017346 (0.0000)*	0.264071 (0.0000)*	-0.057113 (0.0000)*	-0.451165 (0.0000)*

Note: *) significant at the $\alpha = 5\%$ level

Source: Processed by the Author

The Cross-Section Short-Run Coefficient findings in Table 6 point to considerable variation across

provinces in how they adjust to deviations from the long-run equilibrium. Provinces displaying a negative, statistically significant COINTEQ01 coefficient demonstrate an active error correction process working toward long-run equilibrium.

Among the provinces exhibiting a statistically significant error-correction mechanism, Gorontalo demonstrates the fastest speed of adjustment toward its long-run equilibrium, indicating a relatively strong capacity to absorb and correct short-run disequilibria. South Sulawesi records a relatively high speed of adjustment, indicating a stronger tendency to restore equilibrium following short-term disturbances. By comparison, the convergence process in West Sulawesi and West Kalimantan appears more gradual, indicating that these regional economies require a longer period to restore equilibrium following short-run disturbances. Riau exhibits a relatively moderate adjustment process, while Southeast Sulawesi records the slowest convergence among the provinces with statistically significant error-correction dynamics. This variation in adjustment speed highlights substantial heterogeneity in the regional transmission and absorption of macroprudential policies. Provinces with faster error-correction dynamics appear to possess a greater capacity to translate short-run changes in credit and financing conditions into adjustments in real economic activity and labor-market outcomes. Conversely, slower adjustment may reflect structural rigidities, differences in financial intermediation, sectoral composition, credit dependence, or the varying capacity of regional economies to respond to changes in financing conditions. The empirical results therefore highlight that the mechanism of macroprudential policy should not be interpreted as a homogeneous process across Indonesia. Rather, its effectiveness and speed are potentially influenced by the institutional, financial, and structural characteristics of individual provinces.

A negative and significant COINTEQ01 value indicates that deviations from the long-run equilibrium relationship at the provincial level are addressed through a correction process in the following period. The absolute value of the COINTEQ01 coefficient indicates the rate at which short-run disequilibrium is eliminated. Such that a larger negative coefficient corresponds to a greater proportion of the deviation being corrected within one semester. The empirical results indicate that the process of adjustment toward long-run equilibrium does not proceed at a uniform speed across the 25 provinces in Indonesia, as presented in the table above.

4.2 Discussion

The empirical findings provide evidence that macroprudential liquidity policy can generate a significant unemployment-reducing effect in Indonesia, particularly through the credit disbursement channel over the long run. The consistently negative and statistically significant relationship between working capital credit (KMK) and investment credit (KINV) and the unemployment rate suggests that the expansion of bank credit is an important mechanism through which liquidity-oriented macroprudential policy can affect labor market outcomes. This result has particular significance within Indonesia's predominantly bank-based financial system, where firms remain substantially dependent on bank-intermediated financing to support working capital, investment, and productive expansion. These findings suggest that the role of macroprudential policy is not limited to maintaining financial stability but can also influence real economic conditions and labor market outcomes.

The stronger association between working capital credit and unemployment provides an important economic insight. Working capital financing is directly connected to firms' day-to-day production, inventory management, input purchases, and operational expenditures. An expansion in this type of credit can therefore enable firms to increase production capacity and sustain business operations, generating additional demand for labor. Investment credit, by contrast, is more closely associated with the expansion of productive capacity and longer-term capital formation. Although its employment effects may materialize more gradually, sustained investment can increase firms' productive capacity and create new employment opportunities as production expands. The negative coefficients associated with both forms of credit consequently suggest that credit expansion operates through complementary mechanisms: working capital financing supports the intensive margin of existing economic activity, whereas investment financing contributes to the extensive expansion of productive capacity.

These results are generally in line with recent empirical evidence on the relationship between financial intermediation and labor-market performance in developing economies. For instance, Azolibe et al., (2025), demonstrate that banking-sector credit plays an important role in reducing unemployment in developing countries, along with other macroeconomic drivers, including lending rates, inflation, government expenditure, and population dynamics. Similarly, Wu et al. (2023) show that broader access to credit and the adoption of digital financial instruments are associated with lower unemployment across several Asian

economies. Taken together, these studies reinforce the proposition that improvements in financial access can relax firms' financing constraints and facilitate the expansion of productive activities, thereby strengthening labor demand. The present findings extend this literature by placing the credit channel within the broader framework of macroprudential liquidity policy and by providing evidence that its employment effects are more pronounced over the long run.

Importantly, the results should not be interpreted as implying an automatic or instantaneous employment response to macroprudential liquidity provision. The empirical results reveal no significant short-run effects, suggesting that the transmission from additional liquidity and credit availability to labor-market outcomes is subject to considerable time lags. Credit expansion must first be translated into firms' financing decisions, followed by adjustments in production, investment, and capacity utilization before generating additional labor demand. This gradual transmission mechanism is consistent with the financial accelerator perspective, in which improvements in financing conditions strengthen firms' balance sheets, facilitate access to external finance, and progressively amplify real economic activity. Accordingly, the employment effects of macroprudential liquidity policies are likely to emerge cumulatively rather than contemporaneously.

From a policy perspective, these findings point to an important distinction between the financial objective and the real-sector consequences of macroprudential policy. While liquidity-oriented macroprudential instruments are primarily designed to improve financial intermediation and strengthen the transmission of policy to productive sectors, their effects can extend to employment when increased credit is effectively allocated toward economically productive activities. Nevertheless, the extent to which credit expansion contributes to employment is influenced by the sectoral composition and allocation of financing. Credit directed toward labor-intensive and productive sectors may generate stronger employment effects than credit concentrated in highly capital-intensive or asset-based activities. This consideration is particularly important for Indonesia, where substantial heterogeneity exists across provinces in terms of industrial structure, financial depth, and firms' dependence on bank financing. Thus, the effectiveness of macroprudential liquidity policy in supporting employment should be assessed not merely by the volume of credit generated but also by the extent to which that credit is transmitted to productive activities capable of generating sustainable labor demand. In this respect, the findings of Abd. Nasir et al., (2025) and Wardhono et al., (2019;2022) further support the broader argument that financial intermediation and the quality of credit allocation constitute important determinants of real-sector performance. The contribution of the present study lies in linking this financial transmission mechanism more explicitly to labor-market outcomes within a macroprudential policy framework. The evidence suggests that macroprudential liquidity policy can function not only as an instrument for strengthening financial intermediation but also as an indirect mechanism for supporting employment through the expansion of productive credit. This dual dimension is particularly relevant for emerging economies, where the boundaries between financial stability, credit allocation, economic growth, and employment are often more closely interconnected than in mature financial systems.

Statistical evidence of a short-run effect arising from macroprudential liquidity policy can be further understood from the sequential nature of policy transmission in developing economies. Checo et al. (2024) point out that monetary and macroprudential policy shocks are initially transmitted through financial market conditions, including changes in risk premia, banks' portfolio allocation, and financing conditions, before gradually affecting aggregate credit and, ultimately, real-sector outcomes such as employment. This evidence suggests that the transmission of macroprudential policy should not be viewed as an instantaneous process from policy intervention to changes in labor-market conditions. Rather, it operates through a series of intermediate financial and behavioral adjustments that unfold over time.

From this perspective, the limited short-run response of unemployment to KLM via the credit channel is plausible. An increase in liquidity or policy-induced incentives does not necessarily translate into additional credit utilization by the firm. Banks may initially adjust their liquidity positions, reassess portfolio risks, modify lending standards, or reallocate credit across sectors before expanding their loan supply. On the demand side, firms may also delay borrowing decisions until they perceive improvements in market conditions, expected demand, and investment profitability. Consequently, the initial impact of KLM may be concentrated within the financial system rather than being directly observable in labor market indicators.

The transmission process becomes more consequential when additional credit is eventually converted into working capital, investment, and productive expenditure. Firms require time to secure financing, procure inputs, expand production capacity, and adjust their scale of operations. Employment decisions are typically downstream from these processes, as firms are unlikely to increase labor demand solely in response

to improved credit availability without corresponding expectations of higher production and sales. The unemployment rate may therefore respond only after the financial impulse has propagated through credit allocation and real economic activity. This sequential mechanism provides a coherent explanation for why the short-run coefficients of the KLM credit channel may remain statistically insignificant even when the long-run relationship is economically meaningful.

The evidence obtained from the analysis reveals an important divergence in the speed of financial transmission and real-sector transmission. Financial conditions may respond relatively quickly to macroprudential interventions, whereas credit expansion, production, and employment adjust with greater persistence and delay. In this sense, that employment fails to respond immediately does not, in itself, warrant the conclusion that the policy is ineffective. Rather, it may indicate that the policy shock remains within the earlier stages of the transmission chain during the short-run horizon. The significant long-run relationship identified in this study is therefore consistent with a delayed but cumulative transmission process, in which the initial financial response gradually propagates into credit expansion, productive activity, and labor demand.

This interpretation also has important implications for the assessment of KLM. Assessing the effectiveness of macroprudential liquidity policy solely based on contemporaneous employment outcomes may underestimate its eventual contribution to labor market performance. A more appropriate assessment should consider the dynamic sequence through which liquidity incentives affect banks' lending behavior, firms' financing decisions, production, investment, and ultimately, employment. The evidence from Checo et al (2024), together with the findings of this study, therefore supports a dynamic rather than instantaneous view of macroprudential transmission, particularly in developing economies where financial intermediation and credit markets play a central role in connecting policy interventions to real-sector outcomes.

The results of the Cross-Section Short-Run Coefficient in this study offer a more comprehensive understanding of the speed of adjustment across various provinces, with values ranging from Gorontalo, which corrects approximately 40.92 percent of deviations per semester, to other provinces where the coefficients lack statistical significance. This spatial heterogeneity aligns with empirical investigations into the bank credit channel across Indonesian provinces, which assert that the efficacy of credit transmission to real variables is unlikely to be spatially uniform. Instead, it is predominantly influenced by the structural characteristics of each region, including financial market depth and the extent of banking penetration. This pattern is further supported by studies examining the interaction between monetary and fiscal policies and regional employment absorption in Japan, revealing that the impact of macroeconomic policies on labor market conditions varies considerably across regions, depending on the industrial structure and the degree of economic openness to national policy shocks. From a policy perspective, this heterogeneity suggests that the effectiveness of the KLM credit channel in influencing unemployment is spatially contingent. Therefore, sector-based incentive policy designs, such as KLM, may yield more optimal outcomes when they incorporate differentiated implementation strategies across regions.

5. CONCLUSION

The findings of this study show that the macroprudential liquidity incentive policy (KLM), operating through working capital credit and investment credit, is linked to a statistically meaningful decline in the unemployment rate over the long run. This suggests that greater credit disbursement to businesses can spur production and drive business expansion, thereby raising labor demand and lowering unemployment. Taken together, these results offer research-based support for the proposition that the non-interest-rate transmission channel operating through KLM lending functions effectively in shaping long-run employment outcomes in Indonesia.

Nevertheless, the short-run estimation results reveal heterogeneity in the policy transmission process. The effectiveness of KLM in influencing the unemployment rate does not proceed uniformly across provinces but is instead shaped by the structural characteristics of each region and the capacity of its business sector, including the structure of the local economy and the ability of the financial system to channel financing to productive sectors. This finding underscores that the effectiveness of macroprudential policy should be understood not only in terms of increased credit volume but also in terms of the quality of credit disbursement, its intended use, and its linkage to productive economic activity. Accordingly, a viable policy recommendation is to strengthen coordination among Bank Indonesia, the central government, regional governments, and the banking sector in identifying priority sectors and regions with strong credit absorption capacity and high potential for job creation. Such an approach is expected to promote more precisely targeted credit disbursement, so that increased liquidity does not merely translate into expanded financing but is

instead transmitted more effectively into production activity and job creation at the regional level.

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