


**DOES THE PERFORMANCE OF BANKING SECTOR PROMOTE ECONOMIC GROWTH?
A TIME SERIES ANALYSIS**

Karthik Reddy^A, Samiya Mubeen^B, K. Hari Hara Raju^C, Jalaja V.^D, Mahabub Basha S.^E



ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 10 March 2023</p> <p>Accepted 08 June 2023</p>	<p>Purpose: In terms of stimulating the economy, banks play an essential role. These banks directly or indirectly influence the economic growth (GDP) of a country. This study analyses the association between banks' performance and GDP growth.</p>
<p>Keywords:</p> <p>Banking; Indian Banks; Banking Performance; Economic Growth; Time Series Analysis; Ordinary Least Square.</p>	<p>Theoretical Framework: The banking sector acts as an effective mechanism that funds various projects all over the country. The majority of such studies focus on developed nations. Although there is a great deal of literature on this issue concerning developed markets, there is a lack of literature related to emerging and developing economies (Sensarma & Bhattacharyya, 2016). This study has been undertaken to analyse the influence of banks on India's economy, which is a developing economy</p>
	<p>Design/Methodology: The data of the study includes the independent variables that indicate banking performance. The proxies used for the bank's performance are: bank nonperforming loans to total gross loans (%) (NPL), domestic credit provided by the financial sector (% of GDP) (DC), Return on Equity (ROE), bank capital to assets ratio (%) (CAP), and regulatory capital to risk-weighted assets (CAR). At the same time, the substitute for economic growth is growth in domestic product (GDP). All organised banks operating in India form the sample of the study. The period of study is from 1990 to 2029. To test the hypotheses, simple regression, multicollinearity tests, and ordinary least square (OLS) are performed.</p> <p>Findings: The findings indicate that a few of the variables such as domestic credit, return on equity, and capital adequacy ratio, which are linked to the bank's operational and financial efficiency, are correlated with India's GDP growth. The study's empirical results recommend that this country's (India's) policymakers should assist the banking sector by laying down new growth and developmental policies that will strengthen the banking sector, which will in turn strengthen the economy.</p> <p>Research, Practical & Social Implications: This study shows that Indian banks have a major impact on Indian economic growth. It also identifies the primary banking attributes that influence GDP. Such a study will help policymakers and researchers understand the significant contributors to economic growth.</p> <p>Originality and Value: There are many studies that have studied the determinants of GDP. But this is the first study that has tried to establish the impact/relationship of banking variables on GDP growth.</p>

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O DESEMPENHO DO SETOR BANCÁRIO PROMOVE O CRESCIMENTO ECONÔMICO? UMA ANÁLISE DE SÉRIES TEMPORAIS

RESUMO

Objetivo: Em termos de estímulo à economia, os bancos desempenham um papel essencial. Esses bancos influenciam direta ou indiretamente o crescimento econômico (PIB) de um país. Este estudo analisa a associação entre o desempenho dos bancos e o crescimento do PIB.

Estrutura teórica: O setor bancário atua como um mecanismo eficaz que financia vários projetos em todo o país. A maioria desses estudos se concentra em nações desenvolvidas. Embora exista uma grande quantidade de literatura sobre essa questão relativa aos mercados desenvolvidos, há uma falta de literatura relacionada às economias emergentes e em desenvolvimento (Sensarma & Bhattacharyya, 2016). Este estudo foi realizado para analisar a influência dos bancos na economia da Índia, que é uma economia em desenvolvimento

Projeto/Metodologia: Os dados do estudo incluem as variáveis independentes que indicam o desempenho bancário. As proxies usadas para o desempenho do banco são: empréstimos bancários inadimplentes em relação ao total de empréstimos brutos (%) (NPL), crédito doméstico fornecido pelo setor financeiro (% do PIB) (DC), retorno sobre o patrimônio líquido (ROE), índice de capital bancário sobre ativos (%) (CAP) e capital regulatório sobre ativos ponderados pelo risco (CAR). Ao mesmo tempo, o substituto do crescimento econômico é o crescimento do produto interno (PIB). Todos os bancos organizados que operam na Índia formam a amostra do estudo. O período de estudo é de 1990 a 2029. Para testar as hipóteses, são realizados testes de regressão simples, de multicolinearidade e de mínimos quadrados ordinários (POLS).

Resultados: Os resultados indicam que algumas das variáveis, como crédito doméstico, retorno sobre o patrimônio líquido e índice de adequação de capital, que estão ligadas à eficiência operacional e financeira do banco, estão correlacionadas com o crescimento do PIB da Índia. Os resultados empíricos do estudo recomendam que os formuladores de políticas desse país (Índia) devem ajudar o setor bancário estabelecendo novas políticas de crescimento e desenvolvimento que fortaleçam o setor bancário, o que, por sua vez, fortalecerá a economia.

Implicações sociais, práticas e de pesquisa: Este estudo mostra que os bancos indianos têm um grande impacto sobre o crescimento econômico da Índia. Ele também identifica os principais atributos bancários que influenciam o PIB. Esse estudo ajudará os formuladores de políticas e os pesquisadores a entender os principais contribuintes para o crescimento econômico.

Originalidade e valor: Há muitas pesquisas que estudaram os determinantes do PIB. Mas este é o primeiro estudo que tentou estabelecer o impacto/relação das variáveis bancárias sobre o crescimento do PIB.

Palavras-chave: Bancos, Bancos Indianos, Desempenho Bancário, Crescimento Econômico, Análise de Séries Temporais, Mínimos Quadrados Ordinários.

¿FAVORECE EL RENDIMIENTO DEL SECTOR BANCARIO EL CRECIMIENTO ECONÓMICO? UN ANÁLISIS DE SERIES TEMPORALES

RESUMEN

Objetivo: En términos de estímulo de la economía, los bancos desempeñan un papel esencial. Estos bancos influyen directa o indirectamente en el crecimiento económico (PIB) de un país. Este estudio examina la asociación entre los resultados de los bancos y el crecimiento del PIB.

Marco teórico: El sector bancario actúa como un mecanismo eficaz que financia diversos proyectos en todo el país. La mayoría de estos estudios se centran en las naciones desarrolladas. Si bien existe una gran cantidad de literatura sobre este tema relativa a los mercados desarrollados, hay una falta de literatura relacionada con las economías emergentes y en desarrollo (Sensarma & Bhattacharyya, 2016). Este estudio se realizó para analizar la influencia de los bancos en la economía de la India, que es una economía en desarrollo

Diseño/metodología: Los datos del estudio incluyen las variables independientes que indican el rendimiento bancario. Los proxies utilizados para el rendimiento bancario son: préstamos bancarios morosos sobre el total de préstamos brutos (%) (NPL), crédito interno proporcionado por el sector financiero (% del PIB) (DC), rendimiento de los fondos propios (ROE), ratio de capital bancario sobre activos (%) (CAP) y capital regulatorio sobre activos ponderados por riesgo (CAR). Al mismo tiempo, la variable sustitutiva del crecimiento económico es el crecimiento del producto interior bruto (PIB). Todos los bancos organizados que operan en la India constituyen la muestra del estudio. El periodo de estudio va de 1990 a 2029. Para probar las hipótesis, se realizan pruebas de regresión simple, multicolinealidad y mínimos cuadrados ordinarios (POLS).

Resultados: Los resultados indican que algunas de las variables como el crédito interno, la rentabilidad de los fondos propios y el coeficiente de adecuación del capital, que están relacionadas con la eficiencia operativa y

financiera del banco, están correlacionadas con el crecimiento del PIB de la India. Los resultados empíricos del estudio recomiendan que los responsables políticos de este país (India) ayuden al sector bancario estableciendo nuevas políticas de crecimiento y desarrollo que fortalezcan el sector bancario, lo que a su vez fortalecerá la economía.

Implicaciones sociales, prácticas y de investigación: Este estudio demuestra que los bancos indios tienen un gran impacto en el crecimiento económico del país. También identifica los atributos bancarios clave que influyen en el PIB. Este estudio ayudará a los responsables políticos y a los investigadores a comprender los factores clave que contribuyen al crecimiento económico.

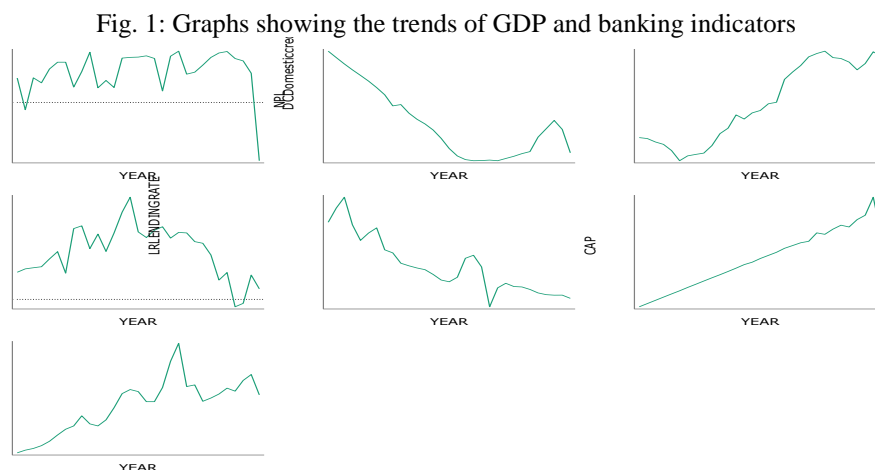
Originalidad y valor: Hay muchas investigaciones que han estudiado los determinantes del PIB. Pero éste es el primer estudio que ha intentado establecer el impacto/relación de las variables bancarias en el crecimiento del PIB.

Palabras clave: Bancos, Bancos Indios, Rendimiento Bancario, Crecimiento Económico, Análisis de Series Temporales, Mínimos Cuadrados Ordinarios.

INTRODUCTION

Many recently developed macro-financial studies summarise new insights into overlapping macro-economic fields and financial economic theory to explain economic fluctuations (Sensarma & Bhattacharyya, 2016). In recent years, one of the most debated topics has been India's GDP growth, and most observers feel that India is overcoming the worst phase of economic growth. India is regaining its position as the world's fastest growing country.

In South Asia, India has a vast financial system with various financial institutions and instruments (Kaur, 2010). In the last decade, the fastest-growing industry in India has been Indian banking. As a result of reform and rapid technological progress, banks underwent noteworthy transformations in the post-liberalization period (Gulati & Kumar, 2011). Therefore, the bank's profitability is vital for the country's welfare and economic growth. But, RBI reports say that various banking attributes are showing a poor track. These attributes are influencing the bank's profitability, which is disturbing the GDP of the country. The figure below explains the same:



Source: Prepared by Authors (2023)

Every economy's growth depends on the bank's performance and helps the system absorb adverse and foreign financial shocks (Tabash & Dhankar, 2014). For many years, academics and policymakers have debated whether financial growth has an association with economic growth (Nyasha & Odhiambo, 2016). Economic growth is stimulated by financial availability. There is an enormous and well-documented review that showcases Indian banks' contributions to economic and social development. (Schumpeter 1911)

By impelling savings and investment, the financial system uplifts the economy. The majority of the earlier research mainly focused on economic growth and its fundamental association with financial development (Akinlo & Egbetunde, 2010; Deb & Mukherjee, 2008). If a bank and a bank-like financial institution control the economy, such economies are called "a bank-based financial system."

"The connection between the development of financial institutions and economic growth has been evaluated, despite extensive efforts. However, no study analysed the relationship between the effects of bank growth and the economic progress of the country. Empirical results were usually inconclusive in the majority of such studies. (Nyasha and Odhiambo 2016).

The following are the reasons for basing the study on India. First, considering purchasing power parity, India is the third-largest and one of the world's fastest-growing economies, with real average GDP growth of about 6% in the last ten years. Even as all-pervasive depression fears plagued the global economy, India registered a remarkable 7.8% post-crisis growth (2009-2011). Second, the Indian financial system is well-structured, which means it has managed the global financial crisis very well. Third, although a system based on banks, India does have a large and diverse financial market infrastructure needed to mobilise resources to sustain growth. Finally, a transition since 1991, from a market economy that is partially regulated, where the monetary policy transmission mechanism continues to evolve and therefore remains relatively understood.

This first section of the paper sheds light on India's economic condition and the role of banks in its growth. The next section offers a summary of the related literature on the various bank-based variables affecting GDP. It also discusses the impact of the selected variables on GDP. The next section consists of the econometric variables used for the calculations and describes the collection of data and its methods. The following segment talks about the effects of the estimate. Finally, some concluding remarks are given in the last chapter.

LITERATURE OVERVIEW

Most of the researchers proved in their studies that the economic growth of any country is strongly related to the performance of the banking sector. In any economy, financial institutions like banks provide financial assistance to businesses. Current research analyses how the competence of the Indian banks affects economic growth.

The influence of specific banking sector variables on economic growth was analysed by a few researchers. But there are very few studies that test the impact of multiple banking-related variables on GDP. This study examines the association between the Indian bank's performance and the economic growth of the country (India).

Nkusu (2011) examined 26 advanced nations for the period 1998–2009. A panel vector autoregressive (PVAR) model is used to establish that the credit-to-GDP ratio, the drop in house prices, and GDP growth are influenced by higher NPLs. Ghosh (2017) claimed that an increase in total NPL led to a fall in US real GDP growth. NPLs in many sectors diminish employment growth in related sectors. NPLs have an immediate, significant, and negative influence on GDP growth.

With the objective of recording financial liberalisation and competition in the banking sector, determinants of credit growth are studied (Égert B et al., 2016). Recent studies on credit growth in growing nations have recorded that private sector lending has recently increased vigorously in numerous developing nations (Hilbers et al., 2006).

Based on commercial banks in Jordan, the impact caused by the bank's performance on economic growth was presented. GDP is the outcome variable considered, and the regressors considered in this analysis are ROA, deposits and credit facilities, and GDP as dependent variables. The influence of commercial banks on the growth of the Jordanian economy is evaluated using the Pooled Regression. (Alkhazaleh 2017)

The impact of profitability of Nigerian banks on economic growth proved that a bank's profitability has a significant and positive relationship with economic growth. Independent variables such as RoE, RoCE, and Gross Domestic Product (GDP) as dependent variables are analyzed using the pooled regression method. Adekola (2016)

Analyzed the determinants (micro and macro) of UAE commercial banks' profitability for the period 2009–2013. The study proved that capital adequacy, asset quality, and operational efficiency proved to have a significant positive connection with the profitability of the commercial banking sector. Also, they found that both RoA and RoE are negatively correlated with the performance of commercial banks in the UAE. Banerjee & Hazarika (2014)

"Central banks bring changes in money supply by influencing the interest rates imposed by banks" (Ardoin and Rodriguez, 2017). state that "the central bank of a country, such as the Reserve Bank of India (RBI) or the Central Bank of Sri Lanka (CBSL), stimulates the economic growth of a country by using various monetary policies." (Ahmad and Premaratne 2018)

Bank regulators and some academicians claim that banks take too much risk because of the low capital requirements set by the central bank. Bank managers and opposing academics argue that banks' funding costs increase because of the high capital requirements set by the central bank, thus pulling down the credit supply within the country. Superficially, the significant positive influence of a higher capital requirement on bank lending appears to be counterproductive and unreliable with the existing experimental proof. Earlier studies suggest that higher capital requirements ease financial instability, but they also diminish the amount of lending, which results in lower output. (Begenau 2015)

Moreover, Kenza, M. et al. (2016), "The consequence of the growth of the financial sector on economic growth in 11 MENA countries was examined in a study from 1980 to 2012. The study concluded by pointing out the need for economic reforms to develop a competitive banking system and thus boost financial growth.

There is limited research focusing on the connexion between Islamic banks' production and economic development. Many scholars have limited their scope to discussing the role of Islamic banking in economic growth (Tabash & Anagreh, 2017).

"Experiments have found that finance is positively correlated with productivity, generally with more than one long-term elasticity. This shows that per capita GDP often increases as credit rises to GDP levels, a phenomenon known as financial deepening. ", (Terrones and Mendoza, 2004)The vast majority of the studies prove that financial deepening spurs economic development (Beck et al., 2000; Rajan & Zingales, 2001).

In India, very common variables are used as substitutes for bank profitability factors. The uniqueness of this research is that it is the first research that attempts to understand the correlation between different variables in banking and economic development. In addition, all structured banks operating throughout the country are reflected by the data considered in this study.

MATERIAL AND METHODOLOGY

Data and Sample Collection

The study data was obtained from the IMF databases, the World Bank, etc. For the period 1991–2019, the primary purpose was to consider India's aggregate results. The

characteristics of the sample and the number of the analysed variables have created restrictions on data collection. The data considered for the research is time-series data with 29 observations representing the period 1991–2019.

As stated above, 20 Asian countries' aggregate data were considered to understand the banking factors that positively or negatively influence the GDP rate. Based on the evidence of earlier research that explores GDP, explanatory variables are considered in such models. The novelty of this study is that it is the first of its kind to focus on the impact of banking variables on India's GDP. Rinaldi and Sanchis-Arellano (2006) state that unbalanced panel data contains more conclusions and is less reliant on a fixed period of time.

Variables

Including dependent and independent variables, eight variables are used in the study. Independent variables are seven in number, and one is the independent variable.

Independent variables

Considering the literature review, we select non-performing loans to total gross loans (%) (NPL), domestic credit provided by the financial sector (% of GDP) (DC), Return on Equity (ROE), bank capital to assets ratio (%) (CAP) and regulatory capital to risk-weighted assets (CAR) as indicators of performance and profitability of Indian banks.

Dependent variables

As a dependent variable, GDP, which is an efficient economic indicator of economic health, is used as a measure. It is the most common measure that reflects a country's economic growth at a specific point in time.

Table 1: Variables Presentation

Bank Specific Variable	Symbol	Expected Sign
Aggregate NPL to total gross loans	NPL	(-)
Domestic credit provided by financial sector (% of GDP)	DC	(+)
Bank capital and reserves to total assets	CAP	(-)
Regulatory capital to risk-weighted assets	CAR	(-)
Return on equity	ROE	(+)

Source: Results obtained and compiled by the author

An NPL is a loan in which the debtor defaults on the scheduled instalments of principal or interest for a particular period. This constant increase in NPLs with its related consequences

is unhealthy for the country's banking industry. "We believe that there is a negative association between NPL and GDP." (Zeng & Shihong, 2011).

Domestic credit denotes loans that a nation or the central bank of a country provides to borrowers within the nation. This indicates the credit provided by the commercial banks and by the government itself. (Gozgor, 2014), "Domestic credit issued by banks can be an engine of economic growth. In his study, he has established that domestic credit is positively correlated with GDP.

A standard indicator of a bank's profitability, which helps assess and evaluate the bank's ability to earn revenue from its assets to sustain its profit, is the return on assets (ROA). (ROE) is the next standard indicator that represents the revenue generated from the shareholders' equity. (Alkhazaleh, 2017), "The ROA of the Jordanian banking sector was found to be associated positively with economic development." (Gull et al., 2011), "found that the ROE of banks is positively associated with economic growth."

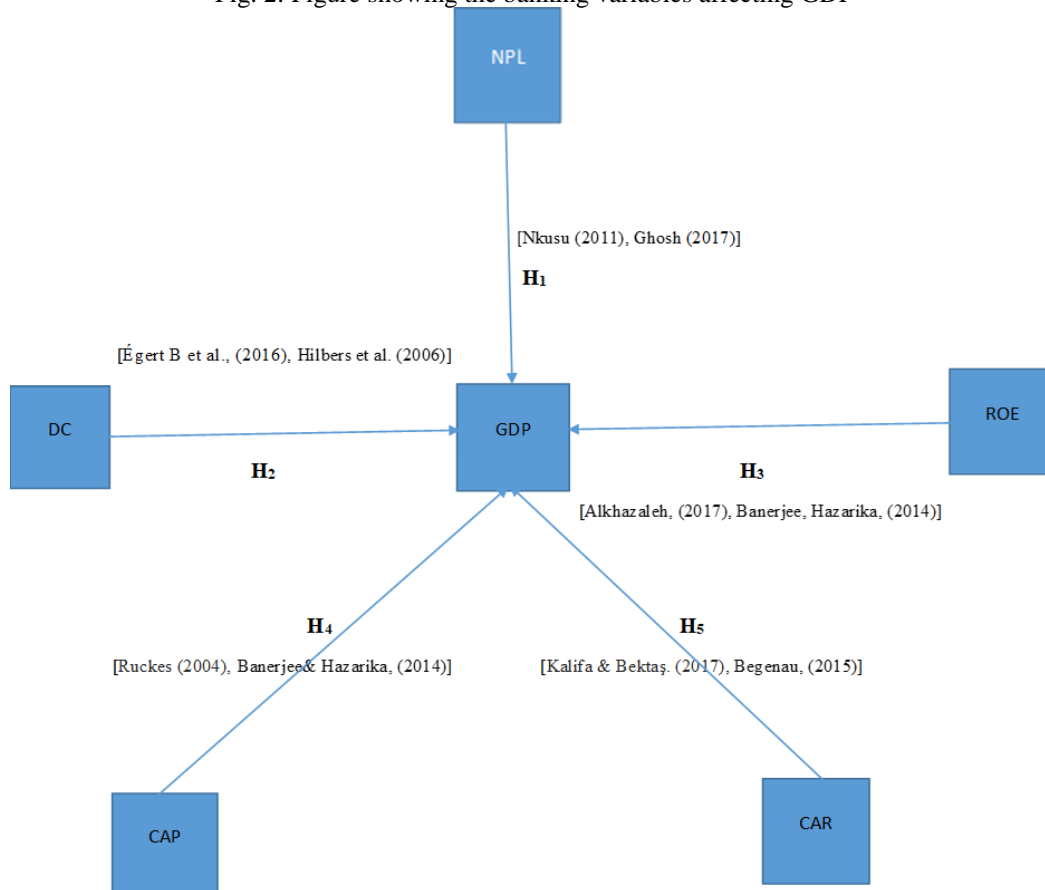
Adequacy ratio (CAP) is one of the essential banking variables considered in this study, which measures the bank's risk. According to many studies, such as Ruckes (2004), there exists a negative relationship between credit growth and capital ratios. We presume that bank risk is lower during strong economic growth, allowing banks to diminish their regulatory capital (CAR). Short growth cycles increase financial risk while allowing banks to keep a high capital ratio. In their study, Kalifa and Bektaş (2017) confirm this.

This study is the first study that analyses the banking factors affecting GDP in India.

RESEARCH PLAN

The research structure that illustrates the relationship between dependent variables and independent variables is shown in Fig. 2.

Fig. 2: Figure showing the banking variables affecting GDP



Source: Prepared by Authors (2023)

RESEARCH MODEL

This study uses a pooled regression method and a simple regression method to analyse the relationship between Indian banks' success and India's economic development.

$$Y [d (GDP)] = 1 [d (NPL) + 2 [d (DC) + 3 [d (ROE)] + 4 (CAP) + 5 (CAR) +$$

Where,

- d (GDP): The first difference between GDP and the dependent variable used to calculate economic growth.
- a: constant
- b1–b3: Independent variable coefficients
- : Error phrase

The first difference of the selected independent variables to measure the performance of the Indian banking sector is d (NPL), d (DC), d (ROE), d (CAP), and d (CAR).

The author can determine whether to accept or reject the established hypotheses on the basis of the results of this model. The following hypotheses have been developed:

H1: Indian banks' (NPL) non-performing loans have a strong influence on India's economic development.

H2: Indian banks' (DC) domestic credit has a strong influence on India's economic development.

H3: Indian banks' (RoE) Return on Equity has a strong influence on India's economic development.

H4: Indian banks' (CAP) bank capital and reserves to total assets have a strong influence on India's economic development.

H5: Indian banks' (CAR) regulatory capital to risk-weighted assets has a strong influence on India's economic development.

ANALYSES, FINDINGS, AND DISCUSSION

Statistics for Descriptive Purposes

Table 2: A descriptive summary of the study variables

Particulars	GDP	NPL	DC	ROE	CAP	CAR
N	31	31	31	31	31	31
Mean	4.24	10.6	61.6	16.4	6.14	12.1
Median	5.13	9.21	59.3	17.3	6.16	12.3
Standard Deviation	2.99	7.77	12.3	8.74	0.926	1.34
Minimum	-7.69	2.25	43.6	-2.53	4.62	9.77
Maximum	7.04	26.5	77.9	34.8	8.10	15.2
Skewness	-2.48	0.646	0.0244	-0.304	0.0953	-0.00857
Kurtosis	8.53	-0.840	-1.68	-0.170	-0.894	-0.331
Shapiro-Wilk p	<0.001	0.005	0.002	0.488	0.603	0.305

Source: Prepared by Authors (2023)

The descriptive statistics for all the variables are shown in Table 2. For the independent variables, NPL has a mean of 10.6, DC has a mean of 61.6, while for ROE it is 16.4, 6.14 is the mean of CAP, and 12.1 is the mean of CAR. The mean of the dependent variable, GDP, is 4.24. The control variable, TO, has a mean of 35.3, CE has a mean of 71.6, inflation has a mean of 6.54, and FDI has a mean of 1.24. The median of the dependent variables is greater than the mean, which means the results are negatively skewed.

Correlation Matrix

Correlation matrix (Table 3)

Correlation Matrix		GDP	NPL	DC	ROE	CAP	CAR
GDP	Pearson's r	—					
	p-value	—					
NPL	Pearson's r	-0.189	—				
	p-value	0.307	—				
DC	Pearson's r	0.055	-0.787 ***	—			
	p-value	0.767	< .001	—			
ROE	Pearson's r	0.193	-0.292	-0.204	—		
	p-value	0.297	0.111	0.272	—		
CAP	Pearson's r	0.189	-0.788 ***	0.921 ***	-0.217	—	
	p-value	0.308	< .001	< .001	0.240	—	
CAR	Pearson's r	0.282	-0.868 ***	0.799 ***	0.158	0.834 ***	—
	p-value	0.125	< .001	< .001	0.396	< .001	—

Note. NA

Note. * p < .05, ** p < .01, *** p < .001

Source: Prepared by Authors (2023)

Correlation Matrix (Figure 2) Plot

Correlation Matrix		GDP	NPL	DC	ROE	CAP	CAR
GDP	Pearson's r	—					
	p-value	—					
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	p-value	0.307	—				
DC	Pearson's r	0.055	-0.787 ***	—			
	p-value	0.767	< .001	—			
ROE	Pearson's r	0.193	-0.292	-0.204	—		
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Note. NA

Note. * p < .05, ** p < .01, *** p < .001

Source: Prepared by Authors (2023)

The correlation matrix of the explanatory variables is shown in Table 3. Gujarati (2005) reported that a correlation score of more than 0.75 between variables represents multicollinearity between variables. Table 5 shows that the correlation coefficients between variables are less than 0.75, which implies multicollinearity between a few variables. The problem with multicollinearity is that a significant variable becomes insignificant because of the high correlation between the two independent variables. This happens because high correlation increases standard error. When the expected error increases, the t-value will decrease, leading to a high P-value. The suggested method to handle multicollinearity is that we identify variables that have values greater than 0.75.

Individual Factor Simple Regression Results

Simple Regression (Table 4)					
Variable	R Square	Coefficient	Standard Error	t-stat	p-value
NPL	0.232167	-0.12283	0.042989	-2.85725	0.008128
DC	0.142674	0.063543	0.029977	2.119732	0.043367
ROE	0.00102	-0.00756	0.045552	-0.16603	0.869368
CAP	0.277269	1.22673	0.381158	3.218432	0.003341
CAR	0.300108	0.824231	0.242239	3.402556	0.002097

Source: Prepared by Authors (2023)

The following are the null hypothesis hypotheses developed:

H1: Indian banks' (NPL) non-performing loans don't have a strong influence on India's economic development.

H2: Indian banks' (DC) domestic credit doesn't have a strong influence on India's economic development.

H3: Indian banks' (RoE) Return on Equity doesn't have a strong influence on India's economic development.

H4: Indian banks' (CAP) bank capital and reserves to total assets doesn't have a strong influence on India's economic development.

H5: Indian banks' (CAR) regulatory capital to risk-weighted doesn't have a strong influence on India's economic development.

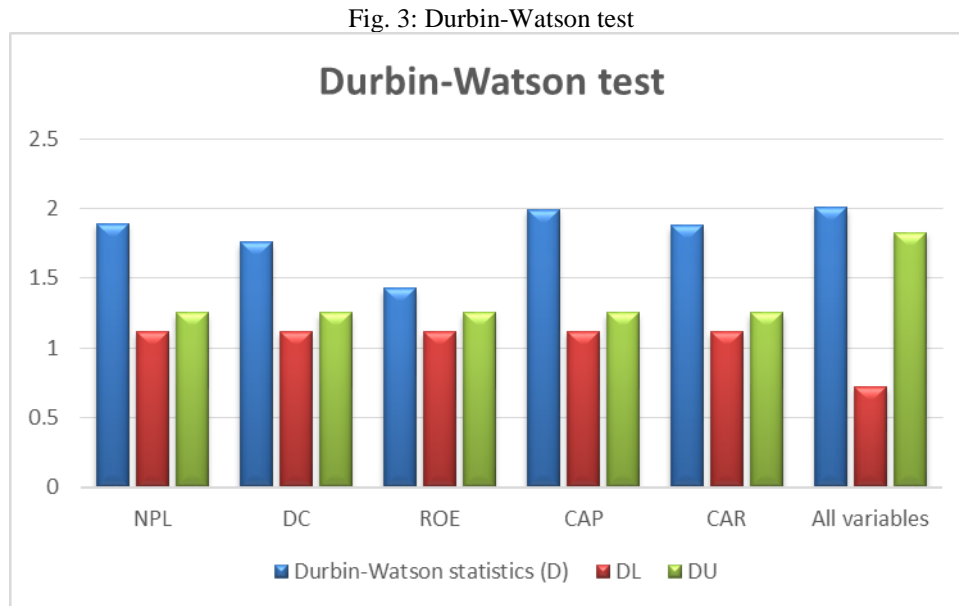
The P-value in the above table will help us decide whether to accept or reject the null hypothesis. We reject the null hypothesis if P-value is less than 0.05. We accept the null hypothesis if the P-value is greater than the sign level (0.05). Positive coefficients indicate positive correlation and negative coefficients indicate negative correlation. From the P-values, we can understand that the NPL has a significant negative impact on GDP. We also find that

DC, CAP, and CAR have a positive and significant impact on GDP. The study results also suggest that ROE has no significant impact on GDP.

Autocorrelation Test (Durbin-Watson Test)

Durbin-Watson test (Table 5)					
Variables	Sum of squared difference of residuals	Sum of squared residuals	Durbin-Watson statistics (D)	DL/DU	Decision
NPL	166.4554472	88.05129	1.890437	1.119/1.254	No Autocorrelation
DC	172.7125599	98.31395	1.756745	1.119/1.254	No Autocorrelation
ROE	163.3772228	114.5581	1.426151	1.119/1.254	No Autocorrelation
CAP	165.1657142	82.87922	1.992848	1.119/1.254	No Autocorrelation
CAR	150.9129786	80.26017	1.880297	1.119/1.254	No Autocorrelation
All variables	123.8807098	61.78853	2.004914	0.723/1.830	No Autocorrelation

Source: Prepared by Authors (2023)



Source: Prepared by Authors (2023)

H_0 : There is no autocorrelation.

There is autocorrelation.

The above table and graph will help us find the problem of auto-correlation between variables (dependent and independent). If D is less than DL, then we reject H_0 , and there is strong evidence the error terms are positively correlated. If D is more than DU, then we fail to reject H_0 . If D is between DL and DU, then the result is inconclusive. Thus, from the study results, we can conclude that there is no autocorrelation.

Test of Stationarity (Augmented Dickey Fuller Test):

The time series is not stationary.

The time series is stationary.

Table 6: Dickey-Fuller-Augmented Test

Variables	Test Statistics	P-value	Level of Significance
GDP	-1.8972	0.6310	5%
I_GDP	-5.3667	0.0008	5%
NPL	-3.2266	0.0792	5%
I_NPL	-3.5842	0.0311	5%
DC	-1.9126	0.6231	5%
I_DC	-1.8797	0.6399	5%
d_I_DC	-3.8687	0.0269	5%
ROE	-2.0571	0.5477	5%
I_ROE	-3.1432	0.0007	5%
CAP	-2.9183	0.7421	5%
I_CAP	-4.2556	0.0106	5%
CAR	-1.8235	0.5122	5%
I_CAR	-1.7686	0.5288	5%

Source: Prepared by Authors (2023)

Table 6 helps us understand whether the time series data has a unit root or not. Using the Augmented Dickey-Fuller test, we can check the stationarity of the data. The P-value of the test is 0.0065, which is less than the significance level of 5%. So we can reject the null hypothesis. Thus, we can understand that the time series data is stationary.

Regression Analysis (Ordinary Least Square Method)

Table 7 shows the Ordinary Least Squares Method

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	1.17514	0.858153	1.369	0.1847	
d_NPL	-0.151376	0.319127	-0.4743	0.6399	
d_DC	-0.435882	0.187484	-2.325	0.0297	**
d_ROE	-0.154478	0.0786615	-1.964	0.0623	*
d_CAP	-10.4766	7.36877	-1.422	0.1691	
d_CAR	1.67606	0.709400	2.363	0.0274	**

OLS model with observations from 1991 to 2018 (T = 28).

d_GDP is the dependent variable.

Source: Prepared by Authors (2023)

The model helps us to understand the significance of the variables and also to know the p-values. Variables having a P-value above the considered significance level can be considered. Considering the above-discussed criteria, DC, ROE, and CAR are the variables found to have a significant impact on GDP.

The independent variables considered in this study are NPL, DC, ROE, CAP, and CAR. But in an attempt to remove the problem of multicollinearity, we found that in India, only DC, ROE, and CAR have a strong influence on the GDP of the nation. Even though we failed to explain the relationship between all the considered variables, three out of five variables considered are proven to influence GDP.

Linear Restrictions Test

$$H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$$

$$H_1 : \beta_i \neq 0 \text{ for at least one } i.$$

Restricted Estimates:

	Coefficient	Std. Error	t-ratio	p-value
constant	0.0837159	0.466593	0.1794	0.8589
d_NPL	0.000	0.000	NA	NA
d_DC	0.000	0.000	NA	NA
d_ROE	0.000	0.000	NA	NA
d_CAP	0.000	0.000	NA	NA
d_CAR	0.000	0.000	NA	NA

Test Statistics: $F(5,22)=2.6955$, with p-value=0.0478628

The standard error of the regression is 2.46898.

Source: Prepared by Authors (2023)

Table 8 helps us understand the overall model significance. The P-value of the test statistics is 0.0478628, which is lower than the 5% threshold. We, therefore, conclude that the overall model is important.

CONCLUSION

This research is done with the objective of understanding the bearing of the success of organised banks on India's economic development. We used non-performing loans (NPL), domestic credit (DC), RoE, bank capital and reserves to total assets (CAP), and regulatory capital to risk-weighted assets (CAR) as proxies for the performance of an Indian bank, and GDP is used as a substitute for economic growth. The fact that it only looked at data from 1991-2019 and not 2020-2022 is one of the study's flaws. The researcher's current plan is to use linear regression to develop a model based on the study. But the tool failed to establish the model because of the problem of multicollinearity. Even though the findings of this

literature are important, it is complex to determine true causality. Because of the heterogeneity of countries and the association between financial development and growth, non-linearity problems arise (Favara, 2003). Ordinary Least Square is used to understand how these banking variables influence the GDP of India. Looking at the regression analysis results, we can realise that DC, ROE, and CAR strongly influence the economic growth (GDP) of India. DC & ROE have a negative relationship with economic growth (GDP), and CAR has a positive correlation with economic growth (GDP). The novelty of this research is that this is the first study that has attempted to understand the influence of selected banking performance attributes on the GDP of India. Therefore, the government should focus on developing policies that help improve the profitability and productivity of banks. The Reserve Bank of India (RBI) should develop a strict risk management system to boost Indian banks' efficiency. For this reason, we propose that researchers examine macro and micro variables on economic development of India.

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