Drivers of Bank Performance in Emerging Markets Amid the Covid-19 Pandemic: A Case Study of Private Banks in Turkey

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***Abstract*— The study aims to determine and examine the impact of the drivers of bank performance in emerging markets amid the Covid 19-pandemic. Specifically, the study attaches the importance of aiming to assess how income diversity, loans to total assets, inflation, the exchange rate of the Turkish Lira against the US dollar and Covid-19 affected the performance of banks in emerging markets. Annual data from 2011 to 2021 collected from 7 private banks in Turkey were analysed using a fixed effects model subject to robustness tests that proved the model to be robust and reliable in addressing related contemporary research issues. The results showed that inflation, the Covid-19 pandemic together with the depreciation of the Turkish Lira against the US dollar adversely affected the banks' performance measured using net interest margin. The study uncovered that income diversity and loans to total assets ratio contributed to improvements in the banks' performance. The findings' practical implications place a demand for inflationary targeting as has been previously advocated by related studies as well as placing huge importance on monetary and fiscal policies. Additionally, the findings enhance awareness among bank managers of the importance of diversifying and increasing their income sources amid the rise in challenges posed by the pandemic. The significance and implications of this study were highly called for as the study's policy implications are attached to financial sector stability, growth and development, and innovation as well as economic and social growth, and development.**

***Keywords:* Covid-19, exchange rate, income diversity, inflation, loans to total assets, net interest margin**

INTRODUCTION

It is undoubtedly that the Covid-19 pandemic has severely affected several corporations, notably banking institutions. Supporting studies denoting such effects cite a restriction in banking operations (Ordonez-Ponce et al., 2022), and operational capacity (Korzeb & Niedziółka, 2020) causing a reduction in bank performance (Dunbar, 2022). Following what has been happening in Turkey, the Turkish Lira depreciated against the United States (US) dollar from 1TRY=US$0.66 in January 2010 to 1TRY=US$0.056 in August 20222 (World Bank, n.d) and studies are attributing such observations to the Covid-19 pandemic (Dunbar, 2022; Korzeb & Niedziółka, 2020). However, there is a lack of evidence validating such effects as ideas are being derived from previous studies conducted before the pandemic (Chouikh & Blagui, 2017; Sun, Mohamad & Ariff, 2017; Tan, 2016). This obscures the retrieval of solid insights essential for policy formulation hence, this study advances the literature on banking and finance and has implications for social and economic development purposes. Furthermore, with the surge in inflation levels experienced in Turkey stretching from 6.3% in 2009 to 19.6% in 2022 (World Bank, n.d), one can presume that the Covid-19 pandemic has been stirring such effects.

Nonetheless, the pandemic has presented a completely different banking environment and triggered different forms of complexities. For instance, Ordonez-Ponce et al. (2022) opine that bank performance determinants are increasingly affecting banks more amid a surge in Covid-19 cases as compared to periods before the pandemic. This can be mirrored by Dunbar's (2022) established insights denoting that banks are increasingly diversifying their income activities so as to avert the impact of the pandemic. In another instance, Korzeb and Niedziółka

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(2020) outline changes in banks' loan-to-asset ratios citing that they have declined since the prevalence of the pandemic. Though these insights denote changes in drivers of bank performance, especially among private banks in Turkey, there are limited studies building integrated models capturing the combined effects of these variables in a Covid-19-ridden banking sector. In other words, it remains an interesting inquiry that changes in the drivers of bank performance in emerging market economies like Turkey be tested to ascertain if their impact on bank performance has changed since the prevalence of Covid-19.

In light of the above-highlighted issues, the main objective of the study is to determine and examine the impact of the drivers of bank performance in emerging markets amid the Covid 19-pandemic. Specifically, the study seeks to determine how changes in income diversity, loans to total assets, inflation, the exchange rate of the Turkish Lira against the US dollar and Covid-19 are affecting the performance of banks in Turkey as an emerging market. Subsequently, this leads to efforts in ascertaining the significance of such effects as well as determining the most effective related managerial and policy responses.

The findings' practical implications place a demand for inflationary targeting as has been previously advocated by related studies as well as placing huge importance on monetary and fiscal policies. Additionally, the findings enhance awareness among bank managers of the importance of diversifying and increasing their income sources amid the rise in challenges posed by the pandemic.

2. Literature review

2.1 Theoretical literature review on bank performance

Various theoretical perspectives have been deployed in analyzing the drivers of bank performance. Among such theories is Brahmana et al. (2018) examination of the risk reduction theoryHerciu (2017) on the dual-investor theory, Trujillo-Ponce (2013) on the signaling theory and Ferrouhi's (2017) application of the market-power and efficient-structure theories. Moving along Ferrouhi's (2017) propositions, bank performance is best analyzed using the market-power and efficient-structure theories. However, betters' insights regarding the connections linking internal factors and bank profitability, the efficient structure hypothesis was proposed (Ferrouhi, 2017). According to Athanasoglou et al. (2008), other aspects such as market power giving banks a monopoly advantage are elucidated by the structure-conduct-performance hypothesis and Ferrouhi's (2017) insights on product differentiation and market power, which he presumes accords banks huge opportunities to reap substantial performance benefits leading to abnormal profits. It, therefore, remains essential to infer that the concept of bank performance is a multifaceted concept that can be addressed from various angles using numerous and distinct perspectives. However, this can complicate efforts to foster understanding and establish common units of measuring bank performance. As such, studies on bank performance are continuously called for and this justifies the theoretical contributions of this study.

2.2 Determinants of bank performance

The determinants of bank performance are classified into three distinct forms; bank-specific, industry-specific and macroeconomic determinants (Sun, Mohamad & Ariff, 2017). Bank-specific variables are within the control of the banks while industry-specific and macroeconomic determinants are beyond the banks' controlling capacity. One of the key determinants that play a vital role in influencing bank performance is capital (Salami, 2018). According to Tan (2016), bank capitalization is essential for reducing banks' needs to borrow, enhancing prudent lending, acting as a safety net and reducing the cost of funding. For such reasons, a positive relationship between capitalization and bank profitability (Derbali, 2021; Le & Ngo, 2020). Other studies consider the quality of assets represented by non-performing loans to be another major determinant (Chouikh & Blagui, 2017; Sun, Mohamad & Ariff, 2017). Thus, a high proportion of non-performing loans entails that the quality of the banks' assets is poor and hence, a negative interaction is presumed (Athanasoglou et al., 2008).

Focus can also be attached to the management of the bank's expenses, which reflects the ability of the bank to achieve efficiency in its operations. As such, the operating expenses to operating income ratio is often deployed (Tan, 2016). Athanasoglou et al. (2008) assert that a high operating expense to operating income ratio denotes a lack of efficiency and hinders bank performance. Moving further, the size of the banks measured by total assets is also another important determinant of bank performance. While there is an adage that large banks are more profitable compared to smaller banks (Sun, Mohamad & Ariff, 2017), the complexity and bureaucracy of large banks' structure can reverse the relationship (Chouikh & Blagui, 2017). As such, ideas about the negative interaction between total assets and bank performance contradict the efficiency aspect embedded in large banks (Ordonez-Ponce et al., 2022). Adding to that, some studies consider diversified banks as being capable to reap huge potential rewards from numerous income-generating assets and projects (Derbali, 2021; Le & Ngo, 2020). In that regard, income diversity is presumed to contribute to reducing risks and enhancing bank performance (Brahmana et al., 2018). But Trujillo-Ponce (2013) asserts that income diversity is adversely related to NIM and positively related to ROA and ROE.

There are no limits to the exact nature of factors studies consider as determinants of bank performance as factors like taxation are also included as another determinant of bank performance (Korzeb & Niedziółka, 2020). Under such conditions, taxes are a monetary obligation that adds to the banks' operational expenses and there are strong undebatable arguments outlining that taxes hinder bank performance (Dunbar, 2022; Sun, Mohamad & Ariff, 2017). Furthermore, liquidity can also be thrust into the equation as another determinant but contrasting ideas are surrounding its interplay

and how it affects banks' performance. For instance, Herciu (2017) contends that excess liquidity implies that too many funds are tied up and not being expended on profitable activities. On the contrary, Salami (2018) argues that low levels of liquidity hinder bank profitability. But the major question surrounds the exact level of liquidity banks must hold to warrant optimum improvements in performance and such has not been established by prior studies (Athanasoglou et al., 2008; Chouikh & Blagui, 2017; Sun, Mohamad & Ariff, 2017).

At the industry level, industry concentration and ownership were also considered and tested as determinants of banks' performance (Ferrouhi, 2017). The list of industry-specific determinants broadens to include the number of bank branches (Dunbar, 2022), stock market developments (Demirgüç-Kunt & Detragiache, 1998), competition (Herciu, 2017), and banking sector developments (Ferrouhi, 2017). Mixed results have been obtained and the potential chances of such factors having a contrasting impact are conceivable as reasons are attached to factors like legal frameworks (Lee et al., 2014), financial and economic development (Brahmana et al., 2018), etc. Consequently, macroeconomic determinants impose effects on banks' performance. Macroeconomic indicators like economic growth and development, financial development, employment and exchange appreciation have effects that have been proven to be positive (Demirgüç-Kunt & Detragiache, 1998; Nouaili, Abaoub & Anis, 2015; Yesmine & Bhuiyah, 2015) while other indicators such as inflation, financial crisis, and structural imbalances were noted to adversely affect bank performance (Brahmana et al., 2018; Herciu, 2017; Lee et al., 2014; Nouaili, Abaoub & Anis, 2015). Again, the potential chances of observing contrasting results cannot be dismissed and remain to be ascertained. Hence, this study seeks to ascertain and validate whether macroeconomic determinants in the form of inflation and exchange rate that have imposed severe challenges on the Turkish economy will hold similar effects amid a surge in Covid-19 cases compared to what has been established by prior studies before the pandemic (Dunbar, 2022; Korzeb & Niedziółka, 2020; Ordonez-Ponce et al., 2022).

2.3 The related empirical studies on the conceptual determinants of bank performance

The subject matter of bank performance determinants is widely covered in academic studies (Chouikh & Blagui, 2017; Derbali, 2021; Le & Ngo, 2020; Sanni, Salami & Uthman, 2020; Sun, Mohamad & Ariff, 2017). As such studies propose a mixture of bank-specific and country-specific variables on bank performance. However, their validity amid a surge in Covid-19 cases and disastrous movement and physical interaction restrictions limiting banking activities and operations (Dunbar, 2022; Korzeb & Niedziółka, 2020; Ordonez-Ponce et al., 2022), presents a whole new scenario that this study desires to explore. Following the increased prevalence of the Covid-19 pandemic, private banks in Turkey have been engaging in income diversifying activities. Related studies consider diversification as essential for reducing risks as postulated by the risk-reduction hypothesis (Lee et al., 2014) and an effective way of using existing pools of bank resources as exemplified by the resource-based theory (Brahmana et al., 2018). Herciu (2017) contends that both risk-reduction and resource-based approaches are instrumental for enhancing returns obtained from both resources and assets. Hence, diversification is regarded to be a bank performance enhancement strategy (Lee et al., 2014) and its positive effects on banks are previously validated (Brahmana et al., 2018), but remain to be extended to private banks to analyse their interplay during Covid-19.

Regarding the impact of total loans in proportion to total assets, studies hold that a high proportion of bank loans unlocks banks' potential abilities to boost deposit levels used in expending more loans to customers (Brahmana et al., 2018; Herciu, 2017). In that instance, Herciu (2017) opines that more interest income will be collected thereby contributing to the bank's performance. However, Ferrouhi (2017) contends that the ratio of loans to total assets' effects on bank performance are conditional to the circumstance that the loans have not been devoted towards non-performing loans. This is because non-performing loans are a mere representation of the banks' poor asset quality (Brahmana et al., 2018). Hence, negative connections linking total loans in proportion to total assets are also conceivable.

Lastly, building on Herciu's (2017) study, inflation and exchange rate depreciation stand to hinder bank performance. Both macroeconomic indicators are associated with various risks acting to the disadvantage of the bank. Notable examples can be linked to transaction risk, interest rate risk, conversion risk and credit risk (Osundina et al., 2016; Taiwo & Adesola, 2013). However, inflation significantly causes a reduction in the value of assets with fixed interest payments (Katırcıoglu, Ozatac & Taspınar, 2020) and bank deposits as consumers avoid having the value of their savings eroded (Walsh, 2009). Hence, it becomes imperative to infer that both have an adverse effect on bank performance and such narratives will be extended to emerging market economies as they have been confined to developing countries (Demirgüç-Kunt & Detragiache, 1998) and developing countries (Nouaili, Abaoub & Anis, 2015)

Derbali (2021) reaffirmed the existence of connections linking total assets, bank liquidity and income divfersity to bank profitability. This follows previous suggestions denoting similar effects (Brahmana et al., 2018; Lee et al., 2014). Additionally, the importance of income diversity was emphasised as suggestions denoted that it is vital for cushioning banks from external effects (Brahmana et al., 2018; Lee et al., 2014). However, this needs to be validated in a situation characterised by continued Covid-19 effects (Dunbar, 2022; Korzeb & Niedziółka, 2020; Ordonez-Ponce et al., 2022). Building further, the effects of inflation and exchange volatility can also be added in this context (Boyd, Levine & Smith, 2001; Isaac, 2015; Taiwo & Adesola, 2013; Walsh, 2009).

Meanwhile, there have been some gradual developments focusing on the effects of inflation on bank performance. For instance, Umar, Maijama'a and Adamu (2014) illustrated that there is a negative connection spanning from inflation to bank performance. Though Katırcıoglu, Ozatac and Taspınar's

(2020) uncovered that inflation reduces the value of fixed-bearing interests thereby reducing NIM, Boyd, Levine and Smith (2001) had long-held similar beliefs. From another angle of analysis, Walsh (2009) previously suggested that bank customers are forced to withdraw their savings from banks to avert a reduction in their savings' purchasing power. Such effects have huge policy implications and put a test on the long-suggested inflationary targeting initiatives (Walsh, 2009) and how monetary and fiscal policy measures (da Silva & Vieira, 2017; Zaytsev, 2020) can be restructured amid the growing Covid-19's disastrous consequences.

Prior attempts by Isaac (2015) to uncover the impact of exchange rate risk on banks' performance in Nigeria show that a depreciating exchange rate undermines bank performance. Taiwo and Adesola (2013) and Osundina et al. (2016) voiced similar concerns and cited the existence of risks tied to exchange rate volatility and bank performance. With several kinds of risks such as transaction risk, conversion risk, credit risk, interest rate risk, and inflation risk being connected to exchange rate volatility, adverse changes in banks' profitability are inevitable. But such ideas are still yet to be analysed in the context of the emerging countries, especially Turkey amid the Covid-19 pandemic due to a limited number of studies analysing trends in the banking sector, especially private deposit banks as studies are confined to commercial banks (Yesmine & Bhuiyah, 2015), Asian countries (Saona,& Azad, 2018) and developed countries (Demirgüç-Kunt & Detragiache, 1998) and developing countries like Tunisia (Nouaili, Abaoub & Anis, 2015).

3. Research methodology

3.1 Research approach

The study applied a multivariate analysis approach to the examination of the drivers of bank performance in emerging markets amid the Covid 19-pandemic. The approach was applied over a cross-section of data collected from 7 private deposit banks to analyses the multiple influences posed by market share, size of the banks, income diversity, loans to total assets and the prevalence of Covid-19 on the banks' NIM (Jobson, 2012). Additionally, other empirical studies voice their support for multivariate analysis methods citing that they are effective in analyzing patterns of data (Rencher, 2005; Timm, 2002).

Meanwhile, the decision to extend bank performance studies to Turkey as an emerging market follows interesting patterns showing that the pandemic has stimulated significant changes in bank performance drivers (Dunbar, 2022; Korzeb & Niedziółka, 2020). With a limited number of studies analyzing trends in the banking sector, especially private deposit banks as studies are confined to commercial banks (Yesmine & Bhuiyah, 2015), Asian countries (Saona,& Azad, 2018) and developed countries (Demirgüç-Kunt & Detragiache, 1998) and developing countries like Tunisia (Nouaili, Abaoub & Anis, 2015), such a study has been highly called upon. This is amid a time when monetary authorities are striving to stabilize, develop, innovate and boost the performance and operational capacity of the financial sector following drawbacks posed by the pandemic (Dunbar, 2022; Korzeb & Niedziółka, 2020; Ordonez-Ponce et al., 2022). As a result, panel data models in the form of a Fixed Effect Model (FEM) and Random Effect Model (REM) were applied to a cross-section of 7 private deposit banks in Turkey.

3.2 Data analysis procedures

Unit root tests were applied prior to estimating the panel data models so as to determine if the variables are stationary (Pesaran, 2012) intending to ensure that no spurious results will be obtained (De Blander & Dhaene, 2012). The applied unit root tests comprised the Augmented Dickey-Fuller (ADF), Phillips Perron (PP) and Levin Chu t-tests. After having determined the variables' unit roots, the study proceeded to estimate the FEM and REM based on the established ideas suggestions that the banks' profitability (BP) as measured by Net Interest Margin (NIM) is a function of income diversity (ID), loans to total assets (NL/TA), inflation (INFL) measured using the consumer price index, the exchange rate of the Turkish Lira against the US dollar (ER) and the Covid-19 dummy variable (COVD). This can be expressed in a functional form as follows;

NIM = F(ID, NL/TA, INFL, ER, COVD) ……. (1).

The variables were converted to logarithms before estimating the FEM and REM to deal with the problems of outliers and avoid heterogeneity issues (Hsia, 2014; Sarafidis & Wansbeek, 2012). Regression analysis precepts encompassing a constant (α), coefficients ($\beta 1$- $\beta 5$), and an error term (μ) resulting in the following regression model;

$LNIM = \alpha + \beta 1LID + \beta 2LNL/TA + \beta 3LINFL + \beta 4LER + \beta 5COVD + \mu$ ……. (2).

3.3 Model validity and fitness test procedures

Questionnaires were administered to 350 bank customers of the top-three 2021-rated banks in Erbil. The After having estimated the FEM and REM, the study further proceeded to ascertain whether the two models were robust and free from errors or misspecification bias. As a result, the serial correlation test diagnostic test was deployed to ensure that the error terms were not correlated (Sarafidis & Wansbeek, 2012). This was accomplished by ensuring that the computed Durbin Watson value is close to 2 (Sarafidis & Wansbeek, 2012) and exceeds both the lower and upper values provided in the Durbin Watson table (Turner, 2020). Sarafidis and Wansbeek (2012) consider that values below 2 and excessively above 2 indicate the presence of negative and positive serial correlation, respectively.

Subsequently, the Hausman test was applied to test which of the two models between the FEM and REM was reliable and valid in examining the drivers of bank performance in emerging markets amid the Covid 19-pandemic (Amini et al., 2012). That is, test the null hypothesis (H0) asserting that the random effect model is more appropriate for examining drivers of bank performance in emerging markets amid the Covid 19-

pandemic. Given that the FEM was determined as valid and reliable for answering the proposed research questions, the study opted to test the validity of the FEM using the fixed effects redundancy test, which tests the FEM for misspecification or redundancy (Hsia, 2014). The decision was to accept the FEM is non-redundant when the probability value is significant at 5% (Hsia, 2014).

3.4 Definition of variables and data sources

Variables listed in Table 1 were used to estimate the panel data models. Additionally, Table 1 provides a detailed description of the variable type, name., definition and expected effects are provided in Table 1. The data was collected from 7 commercial banks listed on the ASE and spanned from the year 2011 to 2021.

Variable type	Variable name	Description	Expected effect
Dependent	Net Interest Margin (NIM)	A bank performance indicator was calculated by subtracting interest expenses from net interest income divided by total assets.	N/A
Independent	Income diversity (ID)	To measure each bank's income diversification, the Herfindahl Hirschman Index (HHI) for all banks was calculated by considering the shares of net interest income and non-interest income in total net operating income	(+)
	Loans to total assets (NL/TA),	The ratio of total loans issued by the banks divided by total assets.	(+/-)
	Inflation (INFL)	Reflects the size of the banks as measured by total assets (Abzakh and Al-Ataibi (2011	(-)
	Exchange rate (ER)	The value of the Turkish Lira against the US dollar.	(+)
	Covid-19 (COVD).	A dummy variable with values of "1" for 2019, 2020 and 2021 during Covid-19, "0" Otherwise	(-)

Table 1: Definition of variables

4. Results

4.1 Stationarity tests

Preliminary examinations made from the PP, ADF and Levin, Lin & Chu t. unit root tests conducted using EViews 11 shows that all the variables were stationary at both levels and the first difference. This denotes that there were no possible heterogeneity issues causing the results to be spurious (Greene, 2003). As a result, the study proceeded to determine which model will be applied to answer the proposed research questions. Using different stationarity tests like the PP, ADF and Levin, Lin & Chu t. is instrumental as it validates the preciseness of the established findings. Besides, studies recommend applying at least two stationarity tests citing limitations and the ability to adjust for degrees of freedom when computing changes in variance (De Blander & Dhaene, 2012; De Blander & Dhaene, 2012).

Table 1: Stationarity tests results

@ Level						
	PP		ADF		Levin, Lin & Chu t.	
Variable	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.
LINFL	38.50	0.00	19.66	0.35	-14.61	0.00
COVD	51.07	0.00	28.09	0.06	-9.35	0.00
LER	36.33	0.01	18.33	0. 43	-4.01	0.00
NL/TA	40.31	0.00	21.84	0.00	-4.59	0.00
LID	42.34	0.00	17.32	0.37	-3.10	0.00
LNIM	61.84	0.00	34.85	0.00	-8.22	0.00
@ 1st difference						
INFL	68.52	0.00	40.74	0.00	-12.16	0.00
COVD	83.23	0.00	54.20	0.00	-21.53	0.00
LER	50.80	0.00	28.51	0.00	-9.29	0.00
LNL/TA	70.32	0.00	35.37	0.01	-8.27	0.00
LID	55.61	0.00	38.43	0.00	-17.59	0.00
LNIM	84.60	0.00	57.40	0.00	-21.23	0.00

Table 2 Hausman results depict that the Hausman value of 20.44 is significant at 5% and the null hypothesis asserting that the REM is more appropriate for answering the proposed research questions was rejected. This entails that there were cases of reported misspecification issues inherent within the REM (Hsia, 2014). Therefore, the FEM was considered appropriate for answering the stated research questions.

Table 2. Hausman test

	Stat.	Df.	Sig.
χ^2	20.44	5	0.004

Initiatives undertaken to verify is the FEM is robust and reliable in estimating the established connections between bank performance and ID, NL/TA, INFL, ER, COVD uncovered $\chi 2$ value of 24.84 which was significant at 1% as shown in Table 3. Thus, the FEM was well posed to offer robust insights about the drivers of bank performance in emerging markets amid the Covid 19-pandemic.

Table 3. Redundant fixed effects tests

	Stat.	Df.	Sig.
Cross section F	4.03	(7, 59)	0.01
χ^2	24.84	7	0.00

The next step was to use the Durbin Watson test statistic to test the FEM for serial correlation. The FEM produced a DW value of 2.20 that was compared against lower and upper DW statistics values as shown in Table 4. The results show that the DW value of 2.20 exceeded both the lower and upper DW values leading to conclusions being made that no serial correlation issues were affecting the FEM (Sarafidis & Wansbeek, 2012; Turner, 2020).

Table 5. Serial correlation test

	FEM	
Description	DWL	DWU
	1.45	1.64
DW estimation values	2.20	

After having confirmed that the estimated FEM is robust, reliable and free from serial correlation problems, the study proceeded to analyses the established FEM results presented in Table 6. The results reaffirm that inflation has insignificantly negative effects of 0.64 on the banks' NIM. The results corroborate with Ozatac and Taspınar's (2020) findings asserting that inflation reduces the value of the banks' assets, especially those with fixed interest rates and thus causing NIM to fall. In another instance, the adverse effects of the pandemic on banks' performance were validated through significantly negative effects of 0.76 as previously suggested by prior studies (Dunbar, 2022; Korzeb & Niedziółka, 2020; Ordonez-Ponce et al., 2022). The findings reveal that the depreciation of the Turkish lira against the US dollar exchange rate poses significant adverse effects on the banks' performance of 2.18. This aligns with Isaac's (2015) established remarks denoting the existence of various risks linked to exchange risk such as transaction risk, conversion risk, credit risk, interest rate risk, and inflation risk, reducing the profitability of the banks.

Table 6: Fixed effect model (FEM) results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFL	-0.64	0.38	1.91	0.06
COVD	-0.76	0.23	3.19	0.00
LER	-2.18	0.76	3.87	0.00
LNL/TA	0.46	0.44	2.31	0.02
LID	1.55	0.56	-4.74	0.00
C	2.03	5.21	4.98	0.00
R2 = 0.91	Adjust. R2 = 0.89	F-stat.= 48.12	Prob. F-stat. = 0.00	DW stat. = 2.20

The study upholds the significant positive contributions of NL/TA and ID of 0.46 and 1.55 to the banks' performance. This mirrors Nouaili's (2015) related suggestions on increasing income-generating activities but has not been explored during the course of the pandemic affecting banking activities (Dunbar, 2022; Korzeb & Niedziółka, 2020; Ordonez-Ponce et al., 2022). Nonetheless, the variables ID, NL/TA, INFL, ER, COVD can be said to be having high and significant explanatory power on the private banks' NIM as denoted by a high R-square value of 91%. This denotes that 91% of the changes in the private banks' NIM are explained by ID, NL/TA, INFL, ER, COVD whereas the remaining 9% is accountable by other variables not included in the model. Furthermore, a smaller difference of 0.02 between R-square and adjusted R-square connotes that there were no misspecification issues observed with the estimated FEM. On the other hand, the F-statistic value of 48.12 is significant at 1%. Therefore, the computed results are highly reliable and can be safely used for policy formulation and strategic decision-making purposes.

5. Discussion of findings

In light of the established findings, the effects of inflation on banks during the pandemic are still being felt as before the pandemic as noted by prior studies (Boyd, Levine & Smith, 2001; Katırcıoglu, Ozata, & Taspınar, 2020; Umar, Maijama'a & Adamu, 2014). Besides, the adverse effects of inflation have long been upheld as studies like Katırcıoglu, Ozatac and Taspınar (2020) cite reduces the value of fixed-bearing interests thereby reducing NIM. From another angle of analysis, Walsh (2009) previously suggested that bank customers are forced to withdraw their savings from banks so as to avert a reduction in their savings' purchasing power. Again, this substantially reduces the banks' earning capacity. As a result, the long suggested inflationary targeting initiatives (Walsh, 2009) together with other monetary and fiscal policy measures (da Silva & Vieira, 2017; Zaytsev, 2020) are called for.

Given that the study has established that the pandemic adversely affected the private banks' performance, Dunbar's (2022) propositions about the pandemic reducing both consumers' and corporations' abilities to secure funding from banks due to a decline in their ability to meet banks' lending requirements. The resultant effects are negatively reflected on banks' NIM following a reduction in possible interest payments accruing from loans. Korzeb and Niedziółka (2020) cite operational challenges posed by the pandemic restricting banks' capacity to issue additional loans while Ordonez-Ponce et al. (2022) note a reduction in banks' investment in profitable assets and problems. Overally, these issues consequently trigger a reduction in banks' NIM.

Following attempts to uncover how exchange rate changes during the pandemic have affected banks' performance, the

study validates the existence of negative effects spanning from the Turkish Lira exchange rate against the US dollar to NIM of -2.18. Isaac (2015) observed similar effects on banks' performance in Nigeria citing the existence of exchange risks as the major cause of such negative effects. This also concurs with Osundina et al.'s (2016) findings holding transaction risk and interest rate risk as accountable for adverse changes in bank performance caused by a depreciating exchange rate. Furthermore, significantly huge negative effects of more than 1% were observed by Taiwo and Adesola (2013) and a decline in bank performance was attributed to other forms of risks comprising conversion risk, credit risk, interest rate risk, and inflation risk, reducing the profitability of the banks. This places a huge demand for banks to adopt effective risk management strategies during the Covid-19 pandemic

Lastly, changes in NL/TA and ID bank-specific determinants contributed to the sound improvement of the banks' performance. The positive relationship between income diversity and bank performance mirrors resource-based theory and the risk-reduction hypothesis's propositions asserting that the relationship is positive and spans from income diversity to bank performance (Brahmana et al., 2018; Herciu, 2017). The possible reasons could be that the banks were earning income from other sources and were making effective use of their liquidity and customers were reluct6ant to default on their loans so as to avoid undesirable consequences. These novel suggestions had been academically sidelined despite significant attempts made to explore interactive connections between bank performance and the Covid-19 pandemic (Dunbar, 2022; Korzeb & Niedziółka, 2020; Ordonez-Ponce et al., 2022).

6. Conclusions

The study aimed to determine and examine the impact of the drivers of bank performance in emerging markets amid the Covid 19-pandemic. This followed a series of practical and academic observations denoting that the pandemic triggered severe and diverse changes in bank performance determinants in emerging markets. The significance and implications of this study were highly called for as the study's policy implications are attached to financial sector stability, growth and development, and innovation as well as economic and social growth, and development.

With specific importance being attached to how income diversity, loans to total assets, inflation, the exchange rate of the Turkish Lira against the US dollar and Covid-19 affected the performance of banks in emerging markets, highly significant explanatory connections with the banks' NIM were established. Hence, this denotes that the pandemic has significantly altered bank performance determinants. Therefore, the findings caution banks managers to revise their banking strategies so as to avert making losses during the Covid-19 era. Hence, the findings contribute to efforts aimed at boosting financial sector stability, growth and development, and innovation as well as economic and social growth, and development.

Meanwhile, the study validates that inflation, a depreciating exchange rate and the Covid-19 pandemic reduce banks' interesting earning activities and income. Therefore, the suggested practical measures include a set of (1) inflation targeting policies that have been lonely suggested, (2) sound and complementary monetary and fiscal policies and (3) solid risk and liquidity management practices by banks to reduce risks and increased banks' income generating sources and inflows whilst keeping risk exposure relatively low. This exhibits the study' policy and managerial implications. Regarding the study's theoretical implications, the importance of revisiting risk management theoretical prepositions and how they can incorporate liquidity and asset management strategies during and after a crisis such as Covid-19 is displayed.

The study does offer significant contributions to existing studies in related areas. Foremost, it enhances understanding concerning the effective deployment of solid risk management strategies in countering and harnessing the effects of the pandemic affecting banking activities and operations. The practical implications are two folds, firstly the findings place a demand for inflationary targeting as has been previously advocated by related studies as well as placing huge importance on monetary and fiscal policies. Thus, the study's policy implications are also attached to financial sector stability, growth and development, and innovation as well as economic and social growth, and development. Secondly, the findings enhance awareness among bank managers of the importance of diversifying and increasing their income sources amid the rise in challenges posed by the pandemic. Such initiatives are highly welcome as they play pivotal roles in boosting banks' performance and enhancing their value by triggering increases in share prices.

This study is not void of limitations. As such, Moreover, it only focused exclusively on unravelling the interrelations between income diversity, loans to total assets, inflation, the exchange rate of the Turkish Lira against the US dollar and Covid-19, and NIM. Consequently, it overlooked changes in ROA and ROE as measures of bank performance and such factors must be integrated to examine related issues in future studies. Additionally, the examined interactions were conducted in the context of private banks in Turkey and hence, the findings cannot be generalized to developing and developed economies like the USA. Additionally, comparing changes in bank performance between private banks and other forms of banking institutions would enhance the study's scope and ability to retrieve more robust and significant practical inferences. Thus, places a demand for future studies to compare changes in bank performance between various banking institutions as well as in non-emerging economies.

7. REFERENCES

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