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Commercial Bank Credit and Manufacturing Sector Performance in Emerging Economies: Evidence from Nigeria 1985-2018

Yua Henry

Lecturer, Department of Banking and Finance,
Nigerian Army College of Environmental Science and Technology, Nigeria

Dr. Jocelyn U. Upaa

Lecturer, Department of Accounting, Benue State University,
Makurdi, Benue State, Nigeria

Adiga, D.L

Doctoral Student, Department of Banking and Finance,
Nnamdi Azikiwe University, Awka Anambra State, Nigeria

Haruna, H.A

Doctoral Student, Department of Banking and Finance,
Nnamdi Azikiwe University, Awka Anambra State, Nigeria

Abstract:

This study examined commercial banks' credit and manufacturing sector performance in emerging economies: evidence from Nigeria. The specific objectives of the study were to investigate the effect of commercial bank loans and advances (CBLA), commercial banks' lending rates (CBLR), inflation (INFL) and aggregate savings (ASAV) on manufacturing performance in the emerging economies. The study was anchored on loan pricing theory and the neo-classical theory of interest rate. The study used secondary data obtained from the Central Bank of Nigeria statistical bulletin and used for the analysis. The variables for the study were tested for unit root using the Augmented Dickey Fuller test and the test of Johansen cointegration within the framework of vector error correction was applied to test for the short-run and long-run effect. The findings of the study revealed that commercial banks' credit had significant effect on the manufacturing sector performance. The study concluded that commercial banks' credit enhanced manufacturing performance in emerging economies. This paper also suggests some measures in order to boost employment and manufacturing performance in Nigeria.

Keywords: Commercial banks loans, commercial banks' lending rate, manufacturing Performance

1. Introduction

The manufacturing sector remains a key driver of economic growth. Its performance is driven largely by monetary policy action, especially benchmark lending rate, loans and advances to the sector. Precisely, an appropriate lending rate remains vital for achieving improved manufacturing sector performance in the emerging economies. High lending rate increases cost of borrowing, retards domestic investment, diminish aggregate demand, increase unemployment, weaken economic growth and discourages manufacturer from commercial banks' loans (Okafor, Ogbonna & Anaemena, 2020).

Manufacturing sector plays a vital role in a modern economy and has many dynamic benefits essential for economic transformation. The emerging economies are not an exception as the sector is responsible for the production of goods and sustainable growth. Manufacturing sector has been treated as a leading sector for most of the developed economy. It always has shown contribution towards boosting GDP, creation of employment, improving per capita income etc. It also broadens the way to improve the economy with a significant faster way by creating a connection among many other sectors. As per Anyanwu (2010), manufacturing sector significantly improves Gross Domestic Product (GDP). Nigeria, being a rising economy also has put its efforts for using substitution strategy to enhance its manufacturing sector. Light industry and assembly related manufacturing initiatives were prime among its up to 1970. Turneries tobacco processing, textiles, beverages and petroleum products were the main players for this industry. Third National Development Plan (1975-1980) had shifted this orientation to the heavy industry. With the policy of expanding, finished goods had been increased (Ariyo, 2015). In this scenario, more technology-based developments have been noticed in the productive sector, which had driven the low level of production to a more automated and proficient mass production system. In spite of this, socio-economically constraints had been seen severely. The major factor is current economic planning and policy instruments (Ogar, 2014). Apart from deposit money banks' credits, the Federal Government's

Appropriation Bill had helped to catch GDP of at least 5%. There has been a growing concern on the decline of the output of the manufacturing sector in emerging economies in recent times, despite the government's several strategies to improve the fortunes of the sector. This worry is understandable in view of the fact that it has been generally acclaimed, through the Kaldor's first law, that manufacturing sector is regarded as the engine of growth of any economy (Libanio, 2017). In spite of continuous policy strategy to attract credits to the manufacturing sector, the Nigerian and other emerging economies manufacturing enterprises have remain unattractive for commercial banks' credits at low lending rate (Ogar, Nkamare, & Effiong, 2014). For instance, as indicated in central bank of Nigeria (CBN report, 2019), almost throughout the regulatory era, commercial banks loans and advances to the manufacturing sector deviated persistently from prescribed minima. Accordingly, the manufacturing sector in the emerging economies is faced with the problem of accessibility of funds for productive investment at low lending rate (Edirisuriya, 2016). Could it be that, its pitiable performance in recent years is as a result of starvation of funds by commercial banks?

Thus, it has become pertinent to examine the effect of commercial bank credit on manufacturing sector performance in emerging economies. Hence, the main problem investigated in this study is to ascertain the extent to which commercial banks loans and advances at low lending rate significantly predict the aggregate performance of the manufacturing sector in the emerging economies. The remainder of this study is organized as follows: section two discussed theoretical framework and empirical literature, followed by section three which discussed the performance of manufacturing sector in Nigeria, section four is the methodology, section five houses the results and discussion and section six is the conclusions and recommendations.

2. Theoretical Framework and Empirical Literature

2.1 Theoretical Framework

Theoretically, there exists a relationship between banks loans and advances and manufacturing performance. This is explained by the loan pricing theory and neo-classical theory of interest rate. We explain each theory below.

2.1.1. Loan Pricing Theory

This theory state that banks cannot always set high interest rates. Banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz and Weiss, 1981). Adverse Selection is the problem created by asymmetrical information before the transaction occurs, it take place when the potential borrowers who are the most likely to produce an undesirable (adverse) outcome- the bad credit risks- are the ones who most actively seek out a loan and are thus most likely to be selected hence adverse selection makes it more likely that loans might be made to bad credit risks, lenders may decide not to make any loans even though there are good credit risks in the market place (Magaji, 2017). Moral hazard is the problem created by asymmetrical information after the transaction occurs, it is the risk that the borrower might engage in activities that are immoral from the lenders point of view, and because they make it less likely that the loan will be paid back (Ajayi, 1981). If banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behavior or so-called borrower moral hazard since they are likely to take on highly risky projects or investments (Chodecai, 2004). From the reasoning of Stiglitz and Weiss, it is usual that in some cases we may found that the interest rate set by banks is not commensurate with the risk of the borrowers.

2.1.2. The Neo-Classical Theory of Interest Rate

The neo-classical or the loanable fund theory of interest was first propounded by the Swedish economist Wicksell and later developed and supported by several leading American and Swedish economists including professor Robertson, Bertil Ohlin, Lindhal and Myrdal. However, the theory in its present form is associated with Professor Robertson. This theory expresses the rate of interest as a function of the demand and supply of loanable funds.

This theory is an improvement over the old classical theory of interest. Actually, bank loans represent important funds, which are available on payment of interest by the borrower. Likewise, loaned wealth can also become available for purpose of investment. Dis-invested funds available to the borrowers. Since loanable funds theory is more comprehensive, it is often referred to as real as well as monetary theory of interest. This theory is just the one of the two general approaches that have been followed in developing the modern monetary theory of the rate of interest. The loanable funds theory provides a link between deposit money bank credits and industrial output, because the theory buttresses that borrowing by business for investment is determined by the cost of credit (interest rate).

In line with the loan pricing theory, interest rate set by banks as cost of credit facility to customers should be commensurate with the risk of the borrower. This will place the financial institutions in a better position to perform its traditional function of financial intermediation. The attendant benefit of this is increased credits disbursement to all the productive sectors of the economy. In emerging economies, the manufacturing sector suffers the paucity of capital. Thus, the free flow of credits to the sector will tend to enhance its performance.

2.2. Empirical Literature

Stylized facts from previous studies linked commercial banks credit to manufacturing performance in emerging economies: Okafor, Ogbonna and Anaemena (2020) Kumshin (2018), Ebele and Iorember (2016), Ogar, Nkamare and Effiong (2014), Ebi and Emmanuel (2014), Tomola, Adebisi and Olawale (2012), Tawose (2012), highlighted the significant association between commercial bank credit and manufacturing output in Nigeria. Ebele and Iorember (2016),

checked that inflation rate and interest rate have negative effect on manufacturing sector by using Cochrane-Orcutt method from 1980-2015.

Okafor, Ogbonna and Anaemena (2020) examined monetary policy and the industrial output of selected developing African economies and using ARDL regression, the study discovered that monetary policies have significant impact on industrial output of Nigeria, South Africa and Kenya. However, the study also showed panel results that revealed that monetary policy has insignificant influence on industrial output in Africa. Based on these varying findings, this study intends to ascertain the role of Domestic Money Bank credit on industrial output in Nigeria.

Andabai and Eze (2018) examined a causality investigation of bank credit and manufacturing sector growth in Nigeria for the period of 27-years, 1990- 2016. Secondary data were used and obtained from Central Bank of Nigeria Statistical Bulletin. Five variables were employed for this study. These are manufacturing Sector Output proxied for manufacturing Sector Growth as the dependent variable; whereas, Broad Money Supply, Credit to the Private Sector, Interest Rate and Inflation Rate as the explanatory variables. The stationarity test revealed that all the variables of the study are stationary at first difference. Johansen co-integration test showed the existence of at least one co-integrating relationship at 5% level of significance. Vector Error Correction Model discovered that bank credit had no short-run equilibrium momentous association with Nigerian manufacturing sector growth. The work suggested that for the economy to grow, the manufacturing sector should be encouraged in form of concessional and reduced interest rate. The study suggested that regulatory authorities should stabilize the interest rate which is capable of ensuring price stability and maintaining inflation to a single digit. This may build confidence in the banking institutions and will enable them to introduce innovations to boost manufacturing sector output in the economy. Ugwuanyi and Utazi (2017) used a time series data for the period 1980 – 2015 to check the correlation between bank credit and Nigerian manufacturing sector growth.

The ordinary least square (OLS) technique and autoregressive distributive lag (ARDL) were employed to obtain the numerical estimates of the coefficients of the equations. The augmented dickey-fuller (ADF) unit root test was used to check the stationarity of the variable. The variables are; manufacturing value added (MVA), lending interest rate (LINT), exchange rate (EXR) and bank deposits (BD). This study identified lending interest rate and exchange rate as the major constraints to manufacturing sector of Nigeria economy. The two variables negatively and significantly impacted on the economy with coefficients of -0.207070 and -0.030251, and t-statistic values of -4.943739 and -7.175989 respectively in the first model. Equally, in the second model the two variables negatively and significantly impacted on the economy with coefficients of -0.207186 and -0.030217, and t-statistic values of -4.871728 and -7.055189 respectively. This implies that for the growth of the manufacturing sector in Nigeria bank lending interest rate and exchange rate should be low to allow investors to source capital for investment and investors to obtain foreign exchange for importation of machines and other equipment's for manufacturing in the country. this study therefore, recommends that monetary authority in Nigeria should therefore reduce the lending interest rate at which commercial banks lend to themanufacturing sector. Also, devaluation of naira should not be encouraged since manufacturing sector depends on imported capital goods for production.Ogar, Nkamere and Effiong (2014) established a connection between interest rate and manufacturing sector performance for ten years duration on manufacturing sector in Nigeria. A regression-based model has been used for this study. Ebi and Emmanuel (2014) used Econometric Error Correction Model (ECM) to check the impacts of commercial bank credit. Tomola, Adebisi and Olawale (2012) used time series data covering a period of 36 years, to study the effect of bank lending and economic growth for Nigerian manufacturing sectors by using vector error correction model (VECM). Some other findings are

- Commercial bank credits positively associated with the manufacturing sub-sector in Nigeria.
- previous year bank credits to real estate and construction is a positive determinant of the current year real estate
- Interest rate was not an important determinant of industrial sector and industrial sub-sectors outputs

Simbo, Iwuji and Bagshaw (2012) examines the performance of the Nigerian manufacturing sector since independence in 1960 using such performance indices as percentage contribution to the Gross Domestic Product, index of manufactured products, percentage growth rate, manufacturing value added, employment growth rate, and percentage of capacity utilization within this period. Secondary sources like the Central Bank of Nigeria Statistical Bulletin, Annual Reports and Statements of Accounts as well as the Statistical Facts sheets of the National Bureau of Statistics and other publications were used in collecting the data. The main finding is that despite many policies and developmental initiatives undertaken by successive civilian and military administrations since independence, the Nigerian manufacturing sector has grossly underperformed in relation to its potentials. Daunting challenges facing the sector include unfavourable business environment, erratic power supply, poor and decaying physical infrastructures, multiple taxations, obsolete technology, high interest rates and inconsistency in government policies. The paper concludes by making recommendations for achieving a virile manufacturing sector.

Tawose (2012) investigates the effect of bank loans and advances on industrial performance in Nigeria between 1975 and 2009. Co-integration and error correction technique was adopted for the analysis. The results showed that industrial performance co-integrated with all the identified exploratory variables. Industrial sector as dependent variable is proxied by real GDP, while money deposit banks' loan and advances to the industrial sector, aggressive saving, interest rate, and inflation rate are independent variables. This suggest that the behavior of real GDP contributed by industrial sector in Nigeria is significantly explained by the deposit money bank loans and advances to industrial sector, aggregate saving, interest rate and inflation rate. The findings imply that every action towards infrastructural development, strengthening of deposit money banks, deregulation of interest rate, encouragement of saving among rural dwellers and reduction of inflation rate will boost the performance of industrial sector significantly.

3. The Performance of Manufacturing Sector in Nigeria

Perhaps owing to the complexities involved in constructing productivity index, there is little or no data on productivity levels in the manufacturing sector in particular (Ebele, 2015). Ad hoc studies conducted during 1989 indicated that, on the average, there was little rise in productivity (Enisan and Akinlo, 1996). In Oshoba's study (1989) on food and basic metal industries, only 30 per cent of respondents indicated they had rising productivity. About 11 per cent recorded no growth, while more than half, 57 per cent, recorded declining productivity levels. In the same vein, the Manufacturers Association of Nigeria (MAN) confirmed that the general trend in productivity in the industry was negative in 1989. Indications are that the situation has worsened since then.

In the absence of data on productivity in the sub-sector, data obtained from various issues of the Central Bank of Nigeria (CBN) Annual Reports and Federal Office of Statistics (FOS) statistical bulletin on other indicators of performance can be reviewed. These include manufacturing production annual growth rate, capacity utilization rate and the sub-sectors' share in the gross domestic product (GDP). 12.9 per cent growth rate has been noticed in the period 1966-75. In the period from 1976 to 1985, it had been able to achieve an annual average growth of 18.5 per cent. Ighosewe, & Akpokerere (2017), had mentioned about a negative growth rate, for the period 1993-98. Fall in the output growth had been noticed drastically from the early 1980s as companies are not able to import needed inputs. Introduction of SAP also not able to recover it. Capacity utilization rate followed the same downward trend, from an annual average of 53.6 per cent in the period 1981-85 to 41.1, 35.4 and 31.8 per cent during the periods 1986-90, 1991-95 and 1996-10. In addition, the sectors' share in the gross domestic product fell persistently, from 9.2 per cent in 1981-85 to 8.3 per cent for period 1986-90, 7.5 per cent in 1991-95 and 3.31 per cent in 1996-10 and -7 percent 2011-2019 (CBN, 2020).

This southwards performance trend is what necessitated in the first instance, the study and also the examination of how very relevant bank credits can get the sector out of the woods.

4. Methodology

This study adapts the model used by Ogar, Nkamare, and Effiong, (2014), with little modification to the model, where manufacturing performance is a function of commercial bank loans and advances, lending rates and the control variables aggregate savings (ASAV) and inflation (INFL). The model is expressed as follows:

$$MP = f(CBLA, LR, ASAV, INFL) \dots\dots\dots(1)$$

Where:

MP= manufacturing performance

CBLA = commercial banks' loans and advances

CBLR= commercial banks' lending rate

ASAV= aggregate savings and

INFL = inflation rate

The stochastic or explicit form of the model is expressed as;

$$MP = b_0 + b_1CBLA + b_2CBLR + b_3ASAV + b_4INFL + U \dots\dots\dots(2)$$

MP is the response variable which would be predicted by CBLA, CBLR, ASAV, INFL as predictors, b_0 is the intercept, b_1 - b_4 represents the unknown parameters or coefficients and U is the stochastic error.

On a priori, b_1 is expected to be positive because an increase in loans will lead to increase in the manufacturing output. ($b_1 > 0$). Similarly, b_3 is expected to be positive, hence an increase in broad money supply will lead to increase in manufacturing output. ($b_3 > 0$). On the other hand b_2 is expected to be negative. This is because increase in lending rate will discourage borrowing thereby leading to reduction in the manufacturing output ($b_2 < 0$). Similarly, b_4 is expected to be negative in that, increases in inflation potentially reduces the value of investable funds thereby leading to a reduction in the level of output.

5. Results and Discussions

The study examined the stationarity of the study by looking at the Augmented Dickey Fuller Unit root test of the study.

Augmented Dickey Fuller Statistics of the Variables					
Variables	ADF Statistics	1%	5%	10%	Decision
MP	-5.7512	-3.6537	-2.9571	-2.6174	1(1)
CBLA	-4.2194	-3.6537	-2.9571	-2.6174	1(1)
CBLR	-7.3475	-3.6537	-2.9571	-2.6174	1(1)
ASAV	-3.8096	-3.6537	-2.9571	-2.6174	1(1)
INFL	-6.6561	-3.6537	-2.9571	-2.6174	1(1)

Table 1: ADF Unit-Root Test Result for the Series

Source: Authors Computation Using Eviews 9.0

The table 1 displays the tests for stationarity properties of the series following the Augmented Dickey Fuller (ADF) statistics. From the table, it can be seen that all the variables passed the ADF test at first difference and at the same order of integration 1(1). For this reason, the null hypothesis of no stationarity is rejected for all the variables in favour of

the alternative hypothesis, that there is stationarity for all the variables used in the study. This therefore warrants the application of the Johansen cointegration to test for the long run relationship.

6. Cointegration Analysis

Given that all the variables of the study became stationary only after first difference and with uniform order of integration $I(1)$. The study adopts the Johansen Cointegration technique given the uniform order of integration and the results of the trace statistic and maximum eigenvalue extracted from the Johansen test are presented in tables 2 and 3 respectively.

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.727636	86.53954	76.97277	0.0078
At most 1	0.414846	44.91986	54.07904	0.2526
At most 2	0.304862	27.77171	35.19275	0.2516
At most 3	0.262293	16.13506	20.26184	0.1682
At most 4	0.181279	6.400373	9.164546	0.1620

Table 2: Johansen Unrestricted Cointegration Rank Test (Trace)

Trace Test Indicates 1 Cointegrating eqn (S) at the 0.05 Level

* Denotes Rejection of the Hypothesis at the 0.05 Level

**Mackinnon-Haug-Michelis (1999) P-Values

Source: Authors Computation Using Eviews 9.0

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.727636	41.61968	34.80587	0.0066
At most 1	0.414846	17.14815	28.58808	0.6483
At most 2	0.304862	11.63665	22.29962	0.6901
At most 3	0.262293	9.734692	15.89210	0.3591
At most 4	0.181279	6.400373	9.164546	0.1620

Table 3: Johansen Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Max-Eigenvalue Test Indicates 1 Cointegrating eqn (S) at the 0.05 Level

* Denotes Rejection of the Hypothesis at the 0.05 Level

**Mackinnon-Haug-Michelis (1999) P-Values

Source: Authors Computation Using Eviews 9.0

The results from both the Trace and the Maximum Eigenvalue tests showed that there is 1 cointegrating equation in the system. This means that the null hypothesis that there is none ($r = 0$) cointegrating equation is rejected. The implication of rejecting the null hypothesis at 0.05 significance level is that, there exists a long-run relationship among the variables. The conclusion drawn from these results is that there exists a unique long-run relationship between *MP*, *CBLA*, *CBLR*, *ASAV* and *INFL*.

Since there is one cointegrating vector, the interpretation of the long-run relationship can be obtained by normalizing the estimates of the unconstrained cointegrating vector. The parameters (i.e. long-run elasticities) of the cointegrating vector for the long-run manufacturing output are presented in the equation below:

$$MP = -0.19 + 1.45CBLA - 1.63CBLR + 1.97ASAV - 1.47INFL$$

$$(0.0174) \quad (0.2094) \quad (0.0677) \quad (0.4609)$$

$$[83.3333] \quad [7.7841] \quad [29.0989] \quad [3.1894]$$

The above normalized cointegrating equation showed that there is a long-run positive and negative relationship between the dependent variable, manufacturing performance (*MP*) and the independent variables. The result of the long run relationship showed that, commercial banks' loans and advances (*CBLA*) aggregate savings (*ASAV*) are positively related to manufacturing performance while commercial bank lending rate (*CBLR*) and inflation rate (*INFL*) are negatively related to manufacturing performance. The low standard errors of all the parameters indicate the significance level of the variables. The long run model indicates that, if all the independent variables are held constant, manufacturing performance will decrease by 0.19 units. That is to say that, the variables used in the model is growth leading. A unit change in commercial bank loans and advances (*CBLA*) and aggregate savings (*ASAV*) will increase manufacturing performance in the long run by 1.45 and 1.97 units respectively. Contrastingly, a unit change in commercial bank lending rate (*CBLR*) and inflation (*INFL*) will reduce manufacturing sector performance by 1.63 and 1.47 units respectively.

7. Vector Error Correction Model (VECM)

When co-integration has been employed, it is expected to complete the vector autoregression (*VAR*) process with an error correction model. The error correction model in this study assumes a year lag in the variables. The vector error correction (*VEC*) process helps to observe the convergence in the long run as earlier revealed by the co-integration test. The error correction term has the expected negative sign and is significant as shown in the short run equation below;

$$MO = 0.128 + 0.76MP_{t-1} + 0.84CBLA_{t-1} - 0.77CBLR_{t-1} + 0.86ASAV_{t-1} - 0.10INFL_{t-1} - 0.079ECM$$

(0.21142) (0.20795) (0.25579) (0.25680) (0.07333) (0.02492)
 [3.61418] [4.05035] [-3.02755] [3.36211] [-1.39276] [-3.16509]

$$\bar{R}^2 = 0.66 \quad F = 15.59$$

The analysis of the short run result above showed that, 66% of the total variation in the dependent variable (*MP*) is explained by the combined effect of the independent variables with other factors accounting for 34%. The *F* statistic, which is the measure of the overall significance, revealed a high level of significance due to the high value of the *F*-statistics – 15.59. The sum square of errors is low signifying that the errors are minimized. The low values of the standard errors together with the high values of the *t*-statistics for all the variables except inflation indicate statistical significance.

Finally, the speed of adjustment coefficient is 0.079. This indicates that, about 7.9% of the disequilibrium is corrected within one year since the study made use of annual data. From the estimated models for both the long-run and short-run, commercial banks loans and advances was found to have positive and statistically significant effect on manufacturing performance in emerging economies, implying that, as the rate of commercial banks loans and advances increase, more funds are made available for investors to invest thereby leading to increase in the sector's performance. This is in agreement with the studies of Okafor, Ogbonna and Anaemena (2020) who discovered a significant relationship both in the short run and long run between monetary policy and industrial output for Nigeria, South Africa and Kenya, Ogar, Nkamare and Effiong (2014), and Ebi and Emmanuel (2014). On the other hand, deposit banks' lending rate was found to have negative effect on manufacturing output in Nigeria for the period covered by the study. This finding conforms to the findings of Ebele and Iorember (2016) Tomola, Adebisi and Olawale (2012).

8. Conclusion and Recommendations

The study revealed that, commercial banks' loans and advances positively and significantly predicts manufacturing performance in Nigeria while commercial bank, bank lending rate negatively and significantly predict manufacturing performance in Nigeria during the study period. Sequel to the findings above, the study concludes that, commercial banks' loans and advances and commercial banks' lending rate significantly influence manufacturing performance in emerging economies (Nigeria) during the study period of 1985-2018. Hence, the study recommends that the Central Bank of Nigeria should ensure loan policy strongly support the manufacturing sector in order to boost performance and employment generation in Nigeria. This will entail collaboration with commercial banks to allocate more loanable funds to the manufacturing sector. Since commercial banks' lending rate has significantly negative effect on the manufacturing performance, the monetary policy of the central bank of Nigeria should be directed towards reduced commercial banks' lending rates that will encourage credit for productive investment. This would be done by ensuring that lending to the manufacturing sector is at rates that are self-liquidating.

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