

**The impact of monetary policy -using Credit card- on inflation,
economic growth, Total loans, liquidity and profitability. Evidence from
Egypt for the period of (2011-2021)**

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Abstract

The paper explained the relationship between the using of credit card at the monetary policy and the impact on inflation, economic growth, Total loans, liquidity and profitability. the methodology in the evaluation of data from 2011-2021 using SPSS that Evidence from Egypt with quantities case study had been explained in the conduct of the research and collecting main data to measure the effect of the using of credit card on the system in Egypt through inflation, economic growth, Total loans, liquidity and profitability. Some of the findings of the study are: (1) With these evaluation of the effect of credit card on inflation, economic growth, Total loans, liquidity and profitability ,we find that the credit cards had an impact on all these indicators.

Jel classification :C82,E01,E51,F62,G21,J21

Key words: credit card, profitability ,income, interest rate, inflation

ملخص

أوضحت الورقة العلاقة بين استخدام بطاقة الائتمان في السياسة النقدية وأثرها على التضخم والنمو الاقتصادي وإجمالي القروض والسيولة والربحية. وتتبع الدراسة منهجية تحليل بيانات باستخدام SPSS وتم شرح الأدلة من مصر للفترة (٢٠١١-٢٠٢١) مع دراسة حالة الكميات في إجراء البحث وجمع البيانات الرئيسية لقياس تأثير استخدام بطاقة الائتمان على النظام في مصر من خلال التضخم والنمو الاقتصادي وإجمالي القروض والسيولة والربحية. ومن نتائج الدراسة ما يلي: (١) مع هذا التقييم لتأثير بطاقة الائتمان على التضخم والنمو الاقتصادي وإجمالي القروض والسيولة والربحية ، نجد أن بطاقات الائتمان كان لها تأثير على جميع هذه المؤشرات.

الكلمات المفتاحية: بطاقة الائتمان ، الربحية ، الدخل ، معدل الفائدة ، التضخم

1.1 introduction to problem

The use of credit card was spend at the customer with an effect on macroeconomic conditions. The central bank can affect the level of consumption through interest rate policy with transmission of monetary policy through two channels one of them for lending and the other for credit .credit channel can increase with international external financing. the exception of credit cards from the monetary policy .the key of income is control the credit card channel and the interest rate also effect on the credit channel.The days of paying cash and writing checks for purchases are long gone. Most clients become now more likely to use credit cards and also some businesses, need to know the measuring of the losses and profit from using credit cards.

However, the profitability can be broken down based on the two main functions of credit cards: a transaction function and a credit function. This division is significant because it affect the basic sources of revenue. The basic source of revenue for the first function is interchange,” which is the network fee paid by the acquiring bank (the merchant's bank) to the issuing bank (the cardholder's bank).⁴ For the credit function, interest income is the main source of revenue.” (Adams, Robert, 2022). There are also another source of revenue for the credit card which is the fees of usage

1.2 A Literature Review section:

Jinan lin(2020), examined the information of credit card augmented division through macroeconomic , it used the correlations analysis by 2007-2009, it found that broad division monetary aggregates gave better measures of the monetary policy services., the bank of England provided division monetary aggregates for UK and the central bank of Poland , as the same situation the European central bank of japan even it wasnot available for public.

Otmar issing (2000), explained the relation between the using of the new technologies in payment and the structure of the market , that will be effected by the trend of macroeconomic through monetary policy , the using of the credit card was the innovation of the few years in banking industries and changing the habit of customers.

Freedman (2000),it is an implement of using electronic card at the monetary policy , it is a service of central bank, it is a development of the network

money . the effect of short term rate of interest , that will maintain the effect of aggregate demand and inflation.

David B Gross,Nicholas Sonlesless(2000),discussed the change in credit supply using data from 24-36 months of credit cards issuers, the relation between the interest rate and the credit card limitation to rationalize the effect on consumption, the finding was in the limitation of credit cards that can have less assets , it will effect strongly in the light of interest rate changing .

John Hawkins(2001), analyze the e finance changed the financial system , its operation was effected by the monetary policy, that is for the facilities of central bank using the tools of interest rate at the main markets, that will have an impact on the inflation and the economy as whole , that can changed rapidly through the development of using credit cards , it will led to stability for the macroeconomic trend.

Irina A Telyukova, Randall Wright(2008),many individuals use the credit card in purchasing , it is a puzzle to give the increasing of interest rate on credit card while it is decreasing in the bank account in the monetary economics, it is developing model for the long term understanding of the challenge. The institution used the credit card to have liquidity in hand

Mohamed Al Laham,Haroon AL Tarawneh,Najwan Abdellat(2009), in the last years the interest rate was a tools in the implementing of the electronic money , it is easy and low cost , it is a record of money , it is with the use of network , it is important for the future of the currency , it is limit the demand for central money to change the operation with closer condition of fiscal and monetary policy. the use of credit card limit the ability of the central bank to control the money supply, decrease the level of reserve and decrease the international monetary control .

Robert J Lahm Jr, Charles RB Stowe, Robert B carton, Louis E Buck (2011), the lack of capital was the reason for small business to prefer credit card, it is a minimum cost in a difficult environment that creating job growth . the bank of America for small business rising the level of interest rate based on the credit card and limit the amount to cut the risk at a high rate of interest , the use of the credit card at small business covering 48.1% of personal debt at firms against 30.1% with personal credit cards.

LB Ajayi (2014), explained the need for public customer to implement the credit card system as a program to easy the evolve process , it used a sample of 370 questionnaire with statistical test , it is applied on (5000) guaranty trust bank (GT Bank), it is result in the effect of the policy after developing the banking system .

Opovska kammar Neda (2014)although the electronic money was existed in many markets but the use of it still limited at a low level , the central bank increased the number of credit cards but the spread of it is limited to accept it .the implement was closely and carefully , the use of e money is very linked with the credit card as it is similar transaction , implementing at the global trend but with different as it cannot be considered as a deposit or credits with interest .

May ajain theong , Ahmad farid osman,su fei yap (2018),Malaysia considered as a high country in having debts to GDP in Asia , the most of it related to mortgage activity , it is increasing rapidly, global and domestic factors affect on the nonperforming loans with a long term modeling , the financial issues at global trend affect the credit cards.

Prabheesh, KP and Rahman R Eki(2019),Indonesia used credit cards over the last decade with increasing in its using all over the period of 2006-2018 with (338) million users , it is witnessed the growth of its value to reach 24.5% on 2018 compared with only 7.5 %on 2011 , it was effected by the economic growth and strong role of credit cards in consumption for using it for purchasing with a weak lending channel for monetary policy.

Luwis E.Arango(2021), it showed that the monetary policy and interest rate affect the credit card limits and had an impact on the value of purchases and the credit card targeted the income of low and middle level with a role on dimensions to support the financial institution.

Luis E. Arango, integri K.Quevedo (2022), explained the value of purachases and the level of the income to measure the imact of liquidity constraints that effect on purachases , the reaearch used a sample of (516.625) credit card data from 2010-2015 with the evaluation of the income , the finding of liquidity that effect the using of credit card, the credit card was targeted the customers swith low and middle income in Bogotá.

Adams, Robert (2022) decompose credit card profitability into its main sources— the credit function, the transaction function, and fees—and

present three main findings. First, the find that, on average, the credit function makes up approximately 80 percent of the credit card profitability, while the transaction function is slightly negative. In addition, they found that fees encompass about 15 percent of credit card profitability.

Comment on the literature review:

the papers explained the relation between the using the credit cards and macroeconomic indicators as in the case of Jinan lin(2020),and the market as in Otmar issing (2000) , the credit card was linked also with interest rate in Freedman (2000), Irina A Telyukova, Randall Wright(2008) Mohamed Al Laham,Haroon AL Tarawneh,Najwan Abdellat(2009), Robert J Lahm Jr, Charles RB Stowe, Robert B carton, Louis E Buck (2011), Opovska kammar Neda (2014) Luwis E.Arango(2021),and the inflation rate as in John Hawkins(2001),while some other studies linked the credit card with GDP as May ajain theong , Ahmad farid osman,su fei yap (2018) or economic growth in Prabheesh, KP and Rahman R Eki(2019) or liquidity in Luis E. Arango, integri K.Quevedo (2022),or profitability in Adams, Robert (2022)and the banking system as in LB Ajayi (2014).

Hypotheses:

H0: there is no identifiable impact of monetary policy using Credit card on inflation, economic growth, Total loans, liquidity and profitability in Egypt

H1: there is a positive relationship between the monetary policy using Credit card and economic indicators as inflation, economic growth, Total loans, liquidity and profitability in Egypt

3-Methodology section

the methodology in the using data for Egypt from 2011-2021 using SPSS

3.1the economic indicators using (Figures, tables)

Table No(1): Domestic credit card growth rate by countries2023

Country	Rate of growth %	Country	Rate of growth %
Australia	9.4	Romania	11.7
Bulgaria	14	Russia	16.3
Colombia	14	span	2.7
Denmark	18	Sweden	28.7
Iceland	8.9	Switzerland	3.7
Indonesia	6.8	Slovakia	17.4
Egypt	15.1	Russia	16.3
Japan	1.4	Myanmar	16.4
Macau SAR, china	7.3	Montenegro	25.1

Source : www.ceicdata.com/en/indicator/egypt/domestic-credit-growth

Figure NO(1) domestic credit card growth rate by countries2023

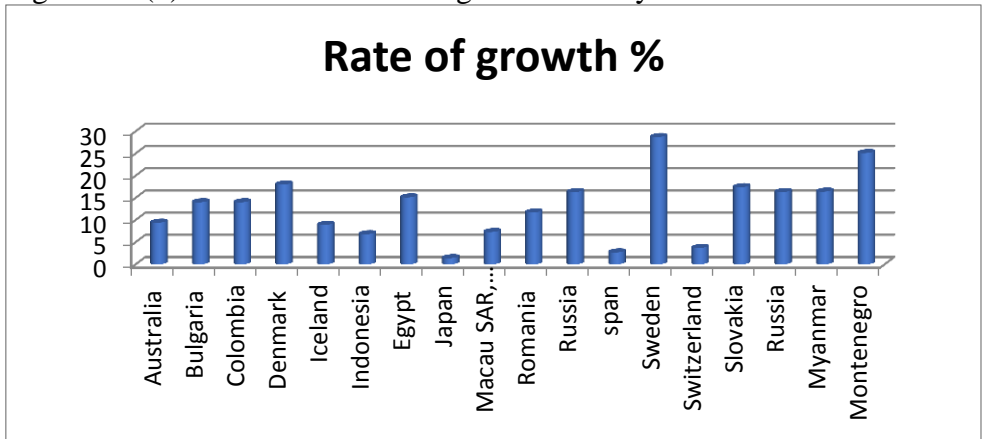


Table No(2)The distribution of the credit issues in Egypt 2021

characteristic	Share of cards%
Visa	47
Master card	52
others	1

Source: Seif AL Din Galal (2021),distribution of credit scheme in Egypt , E commerce, digital shopping behavior

(www.Statista.com/statistics/675371/ownership-of-credit-cards-globally-by-country).

Figure No (2) the distribution of credit in Egypt 2021

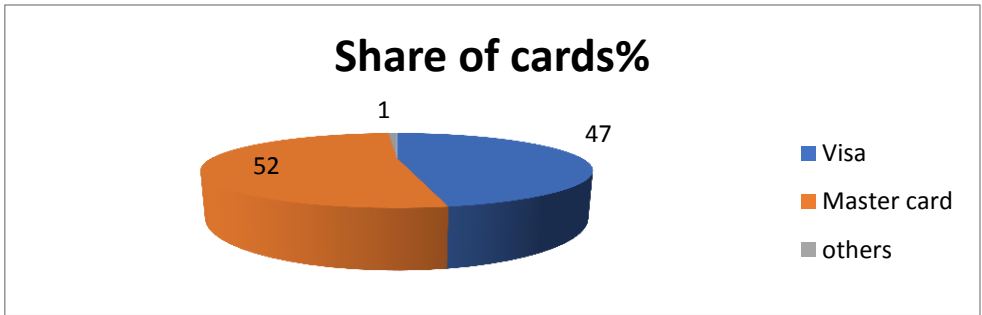


Table NO(3) Liquidity in foreign currency and liquidity ratio %

year	liquidity	Liquidity in foreign currency
2018	40.2	59.7
2019	46.4	74
2020	52.8	77.6
2021	45.5	27.2

Source: macroeconomic financial development(2023), stability report, central bank of Egypt.

Table NO(4) macroeconomic financial indicators

Year	Domestic public debt	Financial stability
2016	96.7	N/A
2017	91.3	N/A
2018	83.05	0.4
2019	80.5	0.51

2020	81	0.40
2021	84.9	0.51

Source: macroeconomic financial development(2023), stability report, central bank of Egypt.

*evaluation of number of cards (2023) , number of debit=credit cards and ATM pos machine, central bank of Egypt.

Table No(5) credit cards for top 10 banks and top 5 banks(million)

year	Top 10 banks credit cards	Top 5 banks credit cards
2018	3.8	3.3
2019	3.5	1.3
2020	1.3	2.6
2021	2.4	2.2

Source: evaluation of number of cards (2023) , number of debit=credit cards and ATM pos machine, central bank of Egypt.

3.2 - statistic evaluation using SPSS

Table NO(6) list of variables

Variable	Type of Variables	Proxies	Code	Measurement
Economic growth	Dependent	efficiency	CE	Credit card /economic growth
Inflation	Dependent	efficiency	CI	Credit card/inflation / GDP
Loans	Dependent	efficiency	CL	Credit card/total loan
Financial Stability	Dependent	profitability	CP	Credit card /profitability
		liquidity	CLQ	Credit card/liquidity
Credit card	Independent	(Dummy)	AS	1 or 0

Table NO(7) Credit cards, economic growth, inflation , profitability and liquidity

Years	Inflation rate	Total loan (trillion)	Profitability ratio %	Liquidity ratio%	Economic growth	Number of credit card in million (*)
2011	10.06	2.758	2.6	10	1.8	1.7
2012	7.11	2.902	13.9	44.5	2.2	1.02
2013	2.2	7.046	14.5	57.5	2.2	5.3
2014	9.47	3.651	18.9	65.7	2.7	3.15
2015	11	2.6	24.4	60.7	4.6	2.57
2016	10.2	3.2	30.9	69.5	4.3	3.8
2017	23.5	3.1	21.5	53.01	4.2	4.7
2018	20.9	1.7	19.2	40.2	5.3	6.8
2019	11.9	1.9	22.4	46.4	5.6	4.1
2020	5.7	2.2	14.9	52.8	3.6	8.8
2021	4.5	2.9	21.5	45.5	3.3	8.87

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years	Number of credit card/inflation	Number of credit card/total loan	Number of credit card/profitability%	Number of credit card/liquidity%	Number of credit card/economic growth
2011	16.90	61.64	65.38	17.00	94.44
2012	14.35	35.15	7.34	2.29	46.36
2013	240.91	75.22	36.55	9.22	240.91
2014	33.26	86.28	16.67	4.79	116.67
2015	23.36	98.85	10.53	4.23	55.87
2016	37.25	118.75	12.30	5.47	88.37
2017	20.00	151.61	21.86	8.87	111.90
2018	32.54	400.00	35.42	16.92	128.30
2019	34.45	215.79	18.30	8.84	73.21
2020	154.39	400.00	59.06	16.67	244.44
2021	197.11	305.86	41.26	19.49	268.79

Source:

Egypt Inflation rate percentage (2023) , ORECD I library organization (www.orecd-ilibrary.org)

Economic growth – annual % ,Egypt (2023), world bank organization(www.worldbank.org)

macroeconomic financial development(2023), stability report, central bank of Egypt

Financial stability report (2014-2016-2018-2020), banking supervision, central bank of Egypt.(www.cbe.org.eg)

Central bank o Egypt , annual report 2011/2012 (www.cbe.org)

Statistics:

This part of the study presents descriptive statistics for the independent and dependent study variables in order to Obtain general readings or descriptions of data and how it is organized, categorized and summarized as well present it clearly in the form of a table

Multivariate Tests^a

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.878	7.196 ^b	5.000	5.000	.025	.878
	Wilks' Lambda	.122	7.196 ^b	5.000	5.000	.025	.878
	Hotelling's Trace	7.196	7.196 ^b	5.000	5.000	.025	.878
	Roy's Largest Root	7.196	7.196 ^b	5.000	5.000	.025	.878

No.credit.cards	Pillai's Trace	.184	.225 ^b	5.000	5.000	.936	.184
	Wilks' Lambda	.816	.225 ^b	5.000	5.000	.936	.184
	Hotelling's Trace	.225	.225 ^b	5.000	5.000	.936	.184
	Roy's Largest Root	.225	.225 ^b	5.000	5.000	.936	.184

We can see from the table that we have a **Sig(in red)**. value of .936, which means $p > .0005$. Therefore, we can conclude that this number of credit cards was not affecting all variables under studies.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Inflation rate	2.818 ^a	1	2.818	.061	.811	.007
	Total loan (trillion)	.091 ^b	1	.091	.040	.846	.004
	Profitability.Ratio	17.471 ^c	1	17.471	.310	.591	.033
	Liquidity.Ratio	41.959 ^d	1	41.959	.149	.708	.016
	Economic.Growth	1.293 ^e	1	1.293	.750	.409	.077
Intercept	Inflation rate	333.955	1	333.955	7.204	.025	.445
	Total loan (trillion)	26.623	1	26.623	11.718	.008	.566
	Profitability.Ratio	667.595	1	667.595	11.833	.007	.568
	Liquidity.Ratio	5328.021	1	5328.021	18.951	.002	.678
	Economic.Growth	22.457	1	22.457	13.036	.006	.592
No.credit.cards	Inflation rate	2.818	1	2.818	.061	.811	.007
	Total loan (trillion)	.091	1	.091	.040	.846	.004
	Profitability.Ratio	17.471	1	17.471	.310	.591	.033
	Liquidity.Ratio	41.959	1	41.959	.149	.708	.016

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	Economic.Growth	1.293	1	1.293	.750	.409	.077
Error	Inflation rate	417.220	9	46.358			
	Total loan (trillion)	20.448	9	2.272			
	Profitability.Ratio	507.758	9	56.418			
	Liquidity.Ratio	2530.326	9	281.147			
	Economic.Growth	15.504	9	1.723			
Total	Inflation rate	1654.727	11				
	Total loan (trillion)	125.364	11				
	Profitability.Ratio	4334.510	11				
	Liquidity.Ratio	29654.880	11				
	Economic.Growth	160.800	11				
Corrected Total	Inflation rate	420.038	10				
	Total loan (trillion)	20.539	10				
	Profitability.Ratio	525.229	10				
	Liquidity.Ratio	2572.284	10				
	Economic.Growth	16.796	10				

a. R Squared = .007 (Adjusted R Squared = -.104)

b. R Squared = .004 (Adjusted R Squared = -.106)

c. R Squared = .033 (Adjusted R Squared = -.074)

d. R Squared = .016 (Adjusted R Squared = -.093)

e. R Squared = .077 (Adjusted R Squared = -.026)

We can see from this table that number of credit cards has no statistically significant effect on both inflation, loans, profitability, liquidity and economic growth.

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval
						Lower Bound
Inflation rate	Intercept	11.524	4.294	2.684	.025	1.811
	No.credit.cards	-.201	.816	-.247	.811	-2.048
Total loan (trillion)	Intercept	3.254	.951	3.423	.008	1.104
	No.credit.cards	-.036	.181	-.200	.846	-.445
Profitability.Ratio	Intercept	16.294	4.737	3.440	.007	5.579
	No.credit.cards	.501	.901	.556	.591	-1.536
Liquidity.Ratio	Intercept	46.031	10.574	4.353	.002	22.111
	No.credit.cards	.777	2.011	.386	.708	-3.772
Economic.Growth	Intercept	2.988	.828	3.611	.006	1.116
	No.credit.cards	.136	.157	.866	.409	-.220

Results:

The findings of this study, as shown in the Tables above e, indicate that : there is no identifiable impact of monetary policy using Credit card on inflation, economic growth, Total loans, liquidity and profitability in Egypt , so we accept the alternative hypothesis

4-conclusion:

the paper accepted the alternative hypotheses of a positive relationship between the monetary policy and economic indicators, it explained the effect of monetary policy on credit card spending and found no relation with the high level of income to set more detailed data and evidence from credit card users , how to demographic and economic issues evaluate the effect of fiscal policy on using the credit card (francesco Grigoli and Damiano Sandri (2022), there is an identifiable impact of monetary policy in the light of the rate of inflation to reflect prices with the measuring of the growth rate of the economic ,then total loan then the cash with liquidity and the Egyptian profit.

5-Recommendations:

The recommendation in the following points:

The government should use the macroeconomic policy to promote for using the easy mechanism of credit cards and spread its operation.

It should encourage the development of the technology infrastructure to carry out the acceptance of the credit cards to increase the monetary policy using Credit card on inflation, economic growth, total loans, liquidity and profitability in Egypt.

The macroeconomic through the policy maker should come over the challenge of implement the credit cards using the cashless economy at the new trend

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