IMPACT OF FINTECH ON THE BANKING INDUSTRY AND VMG RESULTS

The Role of FinTech in Cashless Economy and Green Growth

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FinTech and Banking

- The banking sector, which has a long history of 400 years, has faced competition from 12-year-old FinTech (financial technology) companies. It is expected that customers and households will benefit the most from this competition. However, from an economic point of view, this competition is expected to be constructive rather than destructive, considering the output and employment created by the banking sector.

FinTech and Banking

The Bank Challengers: Fintech aiming to replace the banking infrastructure in their markets..Banks are lack of agility and innovative culture of fintech

The payments innovators : Fintech adressing how financial services are legging behind the needs of the rest of the digital economy

The champions of the unbanked: Fintech using technology to reduce the huge number of unbanked people across the globe

The social banks : Fintech using social media to redesign the way we bank

The infrastructure builders: Fintechs aiming to use technology to change banking from inside

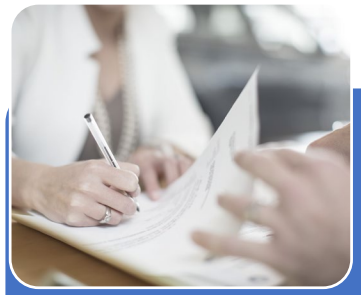
- FinTech Vs Banking

Open banking makes customer data portable ,it allows bank customers to share their transaction history with other financial institution

FinTech companies distribution cost lower than banks..(websites and smartphone apps)..Banks have physical branch. API allows Fintech to Access customer data stored in banking system

Fintech harness their customers personal data to provide personalized financial services.. Unlike Banks back Office processes paper based

FinTech Vs Banks



- Banks have large customer bases.Most innovative financial solutions are worthless without customers.

- Banks have large capital

Banks have regulatory expertise

Starling (Zero Branches)

- Digital-first banking. branchless and paperless from the very beginning, transforming the way people traditionally manage their money.Bill splitting tools (restaurants) personal budgeting tools

- The greener way to pay. In March 2021, personal and business account cards became the first UK Mastercard debit cards to be made from recycled plastic. It is only bank in British history that’s been founded by a woman.

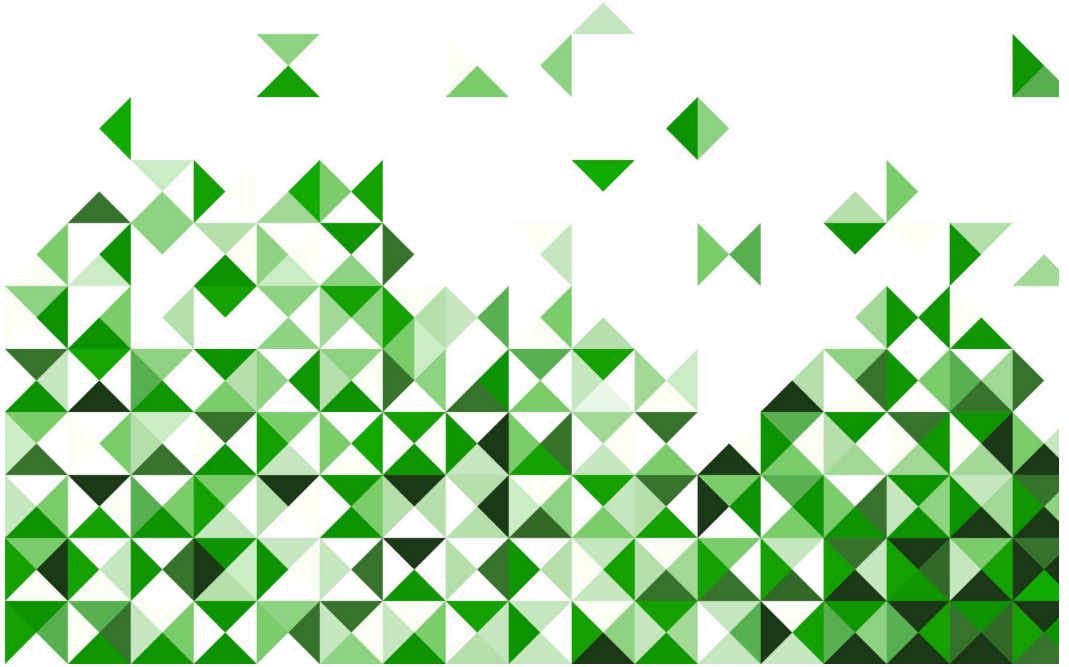
Tandem
Flexible
mortgage solutions.

- Tandem UK’s greener digital bank and to help customers make greener financial choices.

- Green Mortgage product offers a rate reduction of up to 0.3% for new customers whose home has an energy efficiency (EPC) rating of A, B or C.

VMG RESULTS
The Role of FinTech in Cashless Economy and Green Growth

- The main purpose of this paper to analysis relationship between cashless economy and green growth within the framework of future of money. Green growth has become the important strategy of many countries in the world, and studies have examined the factors of green growth also there are few literatures devoted to impact of cashless economy on green growth. Panel data analysis is applied to assess impact of cashless economy on green growth by selected countries in the years between 2012-2019.



CASHLESS ECONOMY

- Cashless transfers between banking accounts, the deployment of ATMs, and the use of credit and debit cards took early advantage of mainframe computers and telecommunication networks. Cashless mobile or online payments were made possible by the internet, mobile networks, smartphones, and the development and diffusion of application programming interfaces (APIs)

Cashless Economy

- The COVID-19 pandemic has further incentivized customers' shift away from traditional branches to using digital channels. According to BCG (Boston Consulting Group)'s most recent retail-banking survey (Brackert et al., 2021), an average of 13% of respondents in 16 major markets used online banking for the first time during the pandemic (12% for mobile).

Advantage of the Cashless Economy

- cashless transactions make life more convenient for consumers and stimulate consumption. For example, public transportation is much easier to use with prepaid transportation cards; tourists spend more when they have payment options other than cash.
- Second, cashless transactions lead to improved productivity in small and medium enterprises. For understaffed small and mid-sized restaurants and stores, closing the cash register is a laborand time-intensive task. Cashless payments can ease some of that burden.
- Finally, cashless payments yield data about the purchase history of individuals that is increasingly leveraged by a range of promising services. Overseas e-commerce platforms like Amazon and Alibaba actively collect “big data” about the online purchases and behavior of individual customers. They then analyze that data and use it to provide shoppers with customized and convenient services.

Cashless Economy Advantages

. First , digital innovation facilitates broader access to financial services. Previously unbanked persons are now able to utilise banking services due to greater convenience and affordability. This means that banking digitalisation has facilitated broader financial inclusion.

Second , creating more efficient business processes by lowering operating costs. A digitalised payment system can create products and offer services with greater cost efficiency, thereby lowering the costs passed on to the consumer. In addition, the use of technology has expanded the variety and choice of services available to consumers.

Third , potential security gains through technology. Most banking activities can be automated through the use of technology. Business services and monitoring are also more convenient and secure because the bank can monitor all activities with ease.

Green economy and Cashless

- In this paper cashless society will be evaluated perspectives from green growth. Green growth aims to improve human well being and social equity. Fintech (financial technologies) and cashless economy can be developed to achieve this goal. Green economic growth can contribute to eradicate poverty. Some sectors which have potential to stimulus green economic growth can invest on ecofriendly production and payments for ecosystem. The transition to a green economy and green finance will vary among countries also it depends on each country's physical and human capital stock and level of development. Digital money, cashless economy and green finance promote green economic growth. Technological innovation in the ICT and the Fintech sector leads to money more digital. These digital forms of money create more efficient and green economies

Data

- This paper outlines relationship between green growth and cashless economy. In empirical section, panel data analysis, the impact of cashless economy on green growth will be applied to the selected countries in the years between 2012-2019. This paper examines the relationship between green growth and cashless economy. Panel data analysis will be used to assess the impact of cashless economy on green growth via selected countries in the years between 2012-2019. Argentina, Australia, Brazil, Canada, China, Hong Kong, India, Indonesia, Japan, Korea, Mexico, Russia, Saudi Arabia, Singapore, South Africa, Sweden, Switzerland, Turkey and United Kingdom. The random effect method will be used in panel data to analyze cashless economy impact on green growth. When the ui's are supposed random variables and uncorrelated with the Xi variables, most of the methods used is the random effects method (Baltagi,1995).

- Yit □Xitβ □□ □uit (1)
-

Model

- $Yit = X\mathbf{it}\boldsymbol{\beta} + \mu i + uit \qquad (2)$
-
- If there is a correlation between X variables and μ, Fixed Effects estimator is consistent (Wooldridge,2002). The fixed effect method will be used in panel data to analyze cashless economy impact on green growth . Banknotes and coins in circulation and number of credit cards per inhabitant will be independent variable in panel data analysis as a proxy of cashless economy. Green growth indicators Production-based CO2 productivity will be independent variable as well. GDP per capita will be used as dependent variable in panel data model.
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Table 1. Indicators in model

Variables	Definitions
GDP	Real GDP per capita
CO_2	Production-based CO_2 productivity, GDP per unit of energy-related CO2 emissions
CARD	Number of cards per inhabitant includes with a cash function, debit function and credit function
CASH	Banknotes and coins in circulation Value as a percentage of narrow money

model

$$GDP_{it} = CARD_{\mathbf{it}}\boldsymbol{\beta} + CASH_{\mathbf{it}}\boldsymbol{\beta} + CO_{2\ \mathbf{it}}\boldsymbol{\beta} + \mu_i + u_{it} \qquad (2)$$

Variables and Methodology

- Banknotes and coins in circulation and number of credit cards per inhabitant will be independent variable in panel data analysis as a proxy of cashless economy. Green growth indicators Production-based CO2 productivity will be independent variable as well. GDP per capita will be used as dependent variable in panel data model
- In the study, random and fixed effects panel data models were estimated with dependent and independent variables definition summarized in table 1. When the two models are compared using the Hausman test, the random effects model is consistent if there is no unit effect correlation with the explanatory variables, according to the alternative hypothesis. In the fixed effects panel data application, the natural, geographical and population differences among the countries covered in the model are taken into account, while the change in the time dimension of these differences is ignored. In addition, the estimators of the random effects model are biased and inconsistent when unobserved within-group effects are correlated with explanatory variables (Asteriou and Hall, 2021). The Hausman test, which is summarized below, was applied in order to choose between the random or fixed effects model in panel data analysis.

Table 2. Fixed and Random Effect Models, Hausman Test Statistics

Cross-section random effects test comparisons:				
chi2(3) = 0.16 Prob>chi2 = 0.9844	Regression Model	Regression Model	Hausman Test	
Variables	**Fixed Effect Model (b)**	**Random Effect Model (B)**	(b-B) Difference	S.E. sqrt(diag(V_b-V_
CO_2 Poductivity	0.762	0.755	0.000	0.002
Number of cards per inhabitant	0.087	0.086	0.001	0.003
Banknotes and coins in circulation	-0.017	-0.017	9.20e06	0.0004
cons	9.994	10.001		

Table 3. Autocorrelation Test for Random Effect Model

- Durbin Watson and Baltagi-Wu tests are used in the autocorrelation test in the random effects model. Although critical values are not given in the literature, if the test statistic is less than 2, it is interpreted that the autocorrelation is important (Baltagi & Wu, 1999). Since the values are less than 2 according to the test outputs (Table 3), we observe that there is an autocorrelation problem in the random effects model. In addition, the null hypothesis of both tests, namely that there is no first-order serial correlation, is rejected. In this case, it can be interpreted that there is an autocorrelation in our model.

Wald chi2(4)=396.29
Prob>chi2=0.0000

Baltagi-Wu LBI	1.094
Durbin Watson	1.057

Tablo 4. Testing Heteroscedasticity

- In the random effects model, the existence of heteroscedasticity according to the units in the error residues is tested with the Levene, Brown and Forsythe test (Brown and Forsythe,1974; Levene, 1960). According to the test results obtained, the H0 hypothesis is rejected and it is concluded that the variance varies according to the units, that is, there is heteroscedasticity (Table 4).

W0 =	8.1226326	df(16, 119)
	Pr >F	=0.00000000
W50 =	7.8783613	df(16, 119)
	Pr >F	=0.00000000
W10 =	8.1226326	df(16, 119)
	Pr >F	=0.00000000

Table 5. Cross sectional dependence, Pesaran CD and Frees' Test

- Finally, the Pesaran CD test was applied in the measurement of the correlation between units in the random effects model, when the time dimension (T) is small and the cross-section dimension (N) is large (Pesaran, 2004). According to the test results, the null hypothesis of H0 is rejected and therefore it is understood that there is a correlation between the units. On the other hand, Frees' (1995, 2004) test was also used for strengthening the correlation between units. According to this; The fact that the statistical value of Frees' test is greater than the critical values corresponding to all probability values (1, 5%, 10%), indicates that there is a correlation problem between units (horizontal section dependence) in the model. The test results are shown in table 5.

Pesaran's test of cross sectional independence = 0.777, Pr = 0.4370

Frees' test of cross sectional independence= 4.792

Frees' Test critical values

alpha = 0.10 : 0.316

alpha = 0.05 : 0.432

alpha = 0.01 : 0.660

3.3. Random Effects Estimator (Heteroskedasticity-Robust Standard Errors)

- According to z statistics calculated with robust standard errors, the effect of CO2 productivity and number of cards per inhabitant on economic growth is positive and significant. Banknotes and coins in circulation effect on economic growth is negative and statistically significant. Wald test is significant and R2 is around 62%. It is found that the regression coefficient of CO2 productivity and number of cards per inhabitant are significantly positive, indicating that the cashless economy and carbon neutral production has a significant promoting effect on economic growth. Secondly It is found that the cash level of population variable (Banknotes and coins in circulation) passes the significance test of 10% confidence level, and the negative effect of economic growth.

Wald chi2= 30.44
prob>chi2 =0.000

R^2 =0.624

Variables	Coef.	std error	z st	p >z	%95	
CO_2 Poductivity	0.027	0.0071	3.84	0.000	0.01349	0.04165
Number of cards per inhabitant	0 .058	0.0162	3.63	0.000	0.02710	0.09072
Banknotes and coins in circulation	-0.008	0.0042	-1.91	0.056	-0.01655	0.00020
Constant	10.124	0.2171	46.63	0.000	9.699	10.550

Conclusion

- Cashless economy have many tools that provide additional practical opportunities for households, firms and society. From the economic point of view, cashless economy has the advantage of improving financial inclusion providing low cost for money transfers and its potential for increasing financial literacy. Cashless economy is more beneficial for governments in terms of transforming economy to registered and enable them collecting more taxes. Also, private firms can collect data about their customer thanks to cashless transactions.

- In this study, panel data analysis is applied to assess impact of cashless economy and CO2 productivity on green growth by selected countries in the years between 2012-2019. In summary we might say that cashless economy and CO2 productivity positively effects economic growth thus promotes green economic growth. These empirical findings are very correlated the facts that producing coins and paper money leads to the CO2 emissions. Cashless economy is better for environment and when people prefer digital payments, they will not need to carry cash and coins in their wallets. Covid 19 changed people payment behaviours. During the Covid 19 people preferred the contactless payment to avoid human contact. Amount of digital and cashless payments has increased during the pandemic in many countries.

- Finally, we have noted that cashless economy supports green economic growth and enables us to manage inflation better. Moving to cashless economy would give economy administration more flexibility during the financial crises. As for society the task of cashless economy and prevention of environment is crucial. This research results could be used in the promoting cashless economy with application of NFC, contactless payment, and mobile payments in the wide areas in society.

COST 19130 DRAFT ENVIRONMENTAL AWARENESS PRIOR-SURVEY

1. Do you have any information about Green FinTech, ESG or Green Finance?

2. Are you a member of non-governmental organizations (NGOs) related to environmental studies?

3. Do you have any idea about a sustainable environment?

4. Do you think there is a correlation between global warming and environmental degradation?

5. Do you know about the Kyoto protocol or the Paris Agreemnet?

6. Are you aware of EU (European Union) environmental policies?

7. Can you list 3 of the basic principles of EU environmental policy?

8. Have you ever taken an environmental education/course at the university?

9. Is there a facility for recycling wastewater on the campus/city/office where you carry out your education or activity?

10. Is there any power plant related to renewable energy in the campus or office where you carry out your education or activity?

11. Is it suitable to walk / cycle instead of using cars / public transportation while going to close distances in your city?

12. Are there cycling practices in your university or office?

13. Does your university or office provide online service instead of printing a document to avoid paper waste?

14. Are recycling bins used in your university or office?

15. If a choice is made between two similar products in your country, is the one that is less harmful to humans and nature always preferred?

16. Are environmental activities carried out in your university or office?

17. Are there any courses, projects, or seminars that will raise environmental awareness in your university?

18. Is the use of deodorants and other sprays that are thought to be harmful to the ozone layer in your country?

19. Is attention paid to water use during personal care (bathing, shaving, tooth brushing, etc.) in the dormitory/home where you carry out your activity?

20. In your country, are there any efforts to reduce the flow rate of tap water to save water?

21. Are water-saving methods/energy efficient electronic products preferred in your country?