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Effect of Fintech Services Applications on Inflation and Unemployment in Pakistan

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ABSTRACT

Fintech is essentially the use of technology to deliver modern and innovative financial services. In Pakistan's fintech journey, the launch of branchless banking services like Easypaisa and JazzCash marked a significant turning point. Fintech can be broadly defined as mobile money, online digital transactions and payments, and digital methods of making and receiving payments. Therefore, this study aims to explore that how two important economic factors that is inflation and unemployment effected by the application of fintech in Pakistan. To examine this question, data was collected from 2014 to 2023 using online databases in Pakistan and the World Bank's official website. In order to investigate the connections between fintech, inflation, and unemployment, the study mostly takes a quantitative method, mainly depending on statistical analysis and numerical data. The study methodically investigates how developments in financial technology may affect important economic outcomes using time series data methodologies and regression models.

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Introduction:

In many nations, digitization is one of the primary forces behind economic growth (Gonzalez Fernandez et al., 2020). Fintech is the use of technology to deliver updated and new financial services. These types of innovative financial technologies (Fintech) have emerged in the world. Fintech is transforming financial services and products, and is emerging as a global economic powerhouse due to its innovative use of technology. Through improvements in data analytics,

mobile assembly, and evidentiary technology, fintech transformed international money management and commerce. Traditional banks have historically controlled Pakistan's financial industry, and financial services are not readily accessible particularly in rural and poor areas. Many individuals were not yet banked and had to save, borrow, and transfer money through unofficial means. However, with the introduction of mobile technology and the growing variety of smartphones. In Pakistan's fintech journey, the launch of branchless banking services like Easypaisa and JazzCash marked a significant turning point. Without a typical bank account, these services let users to transfer money, pay bills, and open mobile wallets. Peer-to-peer lending platforms, online investing platforms, payment gateways, and mobile banking apps are just a few of the solutions that have since been added to the fintech ecosystem. Governments, corporations, and financial institutions in Pakistan need to comprehend the adoption of fintech and economic development (Zaidi & Shah, 2023). Fintech may be used by Pakistani stakeholders to solve regional issues and to increase job creation, poverty alleviation, and sustainable development. Pakistan's Fintech experience could be useful to other developing nations looking to leverage tech-driven innovation for equitable development and prosperity (Iftikhar, 2022). Pakistan's dynamic information and communication technologies (I.C.T) and Fintech infrastructure is essential to the country's economic expansion. Pakistan is positioning itself for Fintech to upend the financial industry and promote inclusive growth through its investments in I.C.T infrastructure, such as internet access, digital payment systems, and mobile penetration.

Although fintech has long been popular in the financial sector abroad, it has grown significantly in Pakistan in recent years as well. Fintech can play a significant role in a nation like Pakistan, where the majority of the population lacks the ability to access financial services and is without a bank account. The Pakistani government has also taken a number of steps to encourage and expand the use of fintech. The government and the State Bank of Pakistan have collaborated and started a number of initiatives. Some estimates predict that Pakistan's digital financial services industry would have grown to a valuation of $36 billion by 2025. Due to the approximately 4 million jobs that would be created and the 7% GDP gain, this will also assist lower unemployment rates.

Despite the body of research that has been extended largely in the past decade, there is still a debate on the effects of fintech. it is typically not connected to a cohesive study agenda. Important questions and significant gaps still exist. For this reason, this research proposes to examine how

Fintech affect unemployment and inflation in Pakistan from 2014 to 2023. Furthermore, this study adds to the body of research showing that we cannot fully benefit from Fintech's ability to lower unemployment and inflation unless we actively engage in digital transactions. Governments would need to encourage people to use phones, expand their internet usage, and—above all—engage in active digital commerce. Stated differently, encouraging double-sense transactions guarantees that the economic cycle is followed. Besides, modern technology does not entail the substitution of machinery for people in the labor market. For this reason, if employees need to acquire new skills due to current technological advancements, industry analysts think the analysis will probably enhance human capacities. Therefore, the results would be better if humans and machines collaborated. To put it briefly, Fintech has changed the nature of work tasks in addition to eliminating some employment and opening up new ones Romdhane, Kammoun, & Loukil, (2024). We look at the macroeconomic ramifications of the FinTech sector's disruptive nature, primarily in relation to lowering domestic prices and enhancing access to financial services. The unemployment rate and Pakistan's inflation rate are two macroeconomic variables that we use as proxies for the macroeconomy. Fintech's contribution to stabilizing inflation rates has been validated by a number of earlier research (Romdhane et al, 2023; Mittal, et., al 2023). Other research, however, offers conflicting results, indicating that the existence of Fintech could make inflation rates worse. Anggraini and Agustin's (2022) study discovered that through the intervening variable of money velocity, a rise in credit card transactions will promote inflation.

1. Literature Review:

2.1 Relationship between fintech and inflation

Some studies looked at how Fintech affected inflation in addition to the conventional primary drivers of inflation that is as follows. In the backdrop of the political unrest in the Middle East and North Africa (MENA) region over three years i.e. 2011, 2014, & 2017. Kammoun et al., (2020) looked at how Fintech affected economic performance and found that its lending practices increased inflation. Since fintech directly influences consumer choice and has a significant effect on inflation in a country, especially in China and Malaysia. This is because of the ease of transactions, online chat, account balance checking, and money transfer. Furthermore, Agarwal (2014) discovered through his research that Bitcoin could lower the cost of government revenue generation when inflation is taken into account. A balance where a digital currency has a positive

value can be established by these technologies. Various bankers lost their jobs following the financial crisis and secured new jobs to remain competitive in their fields with innovative products and services (Mumtaz & Zachary, 2020). FinTech's effects on the Indonesian currency rate and inflation rate were examined by Narayan & Sahminan (2018) and their empirical findings showed that FinTech can lower down the inflation and increase the value of the rupee relative to the US currency. Jagtiani (2018) investigated the effects of the Fintech lending platform also consumer credit access and discovered that lending clubs' consumer lending operations have expanded into markets that may not be well-served by conventional banks, such as those with a low ratio of bank branches to population and a high level of market concentration. We should carefully examine the connection between Fintech and unemployment as more and more individuals throughout the world engage in the digital economy. corresponding to this Mittal et al. (2023) investigated the relationship between financial inclusion, Fintech, and the efficacy of monetary policy in India and included that in the both short- and long- time duration there existed a positive correlation between financial inclusion, Fintech, and inflation as a stand-in for the effectiveness of monetary policy. However, when the cost of the capital impact is included in the model, the correlation between Fintech and inflation becomes negative.

H1: Fintech as the Digital Payments and peer-to-peer (P2P) lending process, could spread inflation significantly.

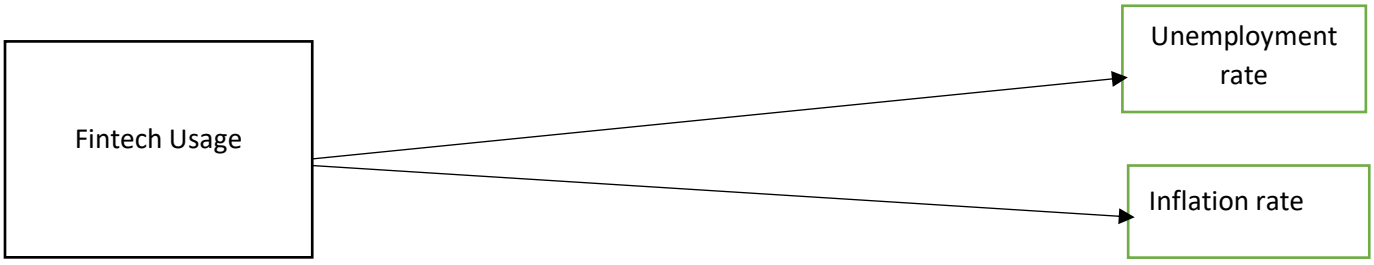
2.2 Relationship between fintech and unemployment

Variables like unemployment benefitsand unionization rates are frequently included in studies of the factors that contribute to unemployment in the literature. These studies do, however, differ in a number of ways. Recently, some scholars have profited from innovation by investigating the relationship between unemployment and emerging technologies, such as Fintech. The current banks may see a significant decline in employment. Over 1.8 million workers in US and European banks could lose their jobs in the next ten years, per a report by Fong, (2017). Significant employment losses and changes are anticipated to occur in all sectors and levels, particularly in areas that we previously believed to be safe, according to the IMF (2018). Furthermore, they verified that domestic employment and income development had generally benefited from automation and the growing usage of robots. Acemoglu and Restrepo (2020) verified that the growing number of robots in the industrial sector is associated with increased local productivity,

employment, and earnings based on data from Japanese territories. On the other hand, Morikawa (2014) demonstrates that Japan's labor crisis is causing the quality of services to decline. He pointed out that the industry's most negatively impacted include utilities, convenience stores, hospitals, restaurants, elementary and college schools, and parcel delivery services. Moreover, results of Romdhane, Kammoun, & Loukil (2024) demonstrated that, absent active use of these tools, there is a consistently large and positive correlation between the advancement of financial technologies and the decline of unemployment and inflation. A new force behind economic growth is digital finance. Governors should therefore build their digital infrastructure, particularly for businesses, by expanding their information and communication technology in addition to improving their economies. By concentrating on the transmission channel, it was discovered that FinTech lessens the adverse effects of economic uncertainty on household consumption by easing credit constraints and fostering entrepreneurship and potential for employment. Furthermore, the findings of the Daud, M. et al. (2024) investigation suggested that FinTech has contributed to labor-creating impacts, which suggests that it generates job prospects. Employment dynamics are shaped by labor market regulation, with some areas needing strict restriction and others possibly benefitting from deregulation. Also, it will make it possible to fully utilize FinTech's ability to provide job possibilities while skillfully controlling risks and assisting workers in making a just and accessible transition to the digital age.

H2: Fintech has the negative impact on unemployment rate through new investment opportunities.

Conceptual Framework



Empirical model:

$$INF_{it} = \alpha 0 + \beta 1 Fintech_{it} + \varepsilon_{it}$$

$$UE_{it} = \alpha 0 + \beta 1 Fintech_{it} + \varepsilon_{it}$$

Where:

INF_{it} = Inflation

UE_{it} = Unemployment

$Fintech_{it}$ = Financial technology

2. Data and methodology

The purpose of the empirical study is to verify the accuracy of the hypothesis on the role of digital transformation in the financial sector and the connection between Fintech and economic progress, as quantified by unemployment and inflation. Fintech is roughly defined as mobile money, online digital transactions and payments, and digital payment making and receiving. In particular, we examine the two most widely used metrics: inflation as determined by Pakistan's annual consumer price index and unemployment as determined by the country's yearly rate of total unemployment. To dealt with, we gathered the data of inflation, unemployment from the website of world bank i.e. from the year 2014 to 2023 i.e. and data of Fintech taken form taken from the online database in Pakistan i.e statista.com.

In order to have a better understanding of the current level of Fintech inclusion in Pakistan, we begin with a descriptive analysis. By examining a few statistical markers (mean, standard deviation, minimum, and maximum), we provide variable explanations in Table 1

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Inflation	10	2.529328	30.768128	10.31038158	8.757811498
Fintech	10	.500000	6.000000	2.44000000	1.971012148
Unemployment	10	1.827000	6.338000	4.33320000	1.594040624
Valid N (listwise)	10				

3. Empirical Results

3.1. Correlations

Table 2: Correlations

		Fintech	Inflation	Unemployment
Pearson Correlation	Fintech	1.000	.705	.603
	Inflation	.705	1.000	.545
	Unemployment	.603	.545	1.000
Sig. (1-tailed)	Fintech	.	.000	.003
	Inflation	.000	.	.051
	Unemployment	.003	.051	.
N	Fintech	10	10	10
	Inflation	10	10	10
	Unemployment	10	10	10

Table 2 presents the Pearson correlation matrix; this enables the connection between the three crucial elements to be identified beforehand. There is a significant positive correlation between unemployment, inflation, and fintech. Furthermore, multicollinearity is not caused by an elevated correlation between the independent and dependent variables (Brooks, 2008). Furthermore, when the correlation coefficient is higher than 0.80 or 0.90, multicollinearity is present (Field, 2013). As a result, Table 2 shows that every coefficient is below this crucial value. Consequently, multicollinearity does not affect the model.

4.2 Ordinary Least square Regression

This study employed the ordinary panel-least squares regression approach for panel data analysis in order to assess the hypothesis regarding the effect of fintech on unemployment and inflation.

Table:3

D.V: Inflation
Method: Panel Least Squares
Sample: 2014 2023
Periods included: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.721520	0.200795	-8.573515	0.0000
Fintech	0.011888	0.058144	0.141376	0.3459

Period fixed (dummy variables)

R-squared	0.110589	Hannan-Quinn criter	3.510459
Adjusted R-squared	0.079813	Schwarz criterion	3.591915
S.E. of regression	1.337935	Akaike info criterion	3.456110
Sum squared resid	517.3305		
Log likelihood	-507.4165	.	
F-statistic	3.593404		
Prob(F-statistic)	0.000162		

Table 3 proved that hypothesis Fintech as the medium of Digital payment and peer-to-peer lending process could spread the inflation is rejected. Other studies also confirm our results i.e. According to Mawejje and Lakuma (2017) & Nampewo and Opolot (2016), active Fintech use lowers inflation. They discovered that when mobile money does not boost value-added, money speed increases. Interest rates may be impacted by mobile money since it encourages commercial banks to extend credit. Sahminan (2018) which discovered that while digitization lowers costs, it has a significant impact on reducing inflation. However, Loukil et al. (2021) verified that mobile money helps MENA countries deal with rising inflation. Since mobile money improves economic efficiency by lowering transaction costs and facilitating better resource and credit allocation, it will boost overall economic activity.

Table:4

D.V: Un-employment
Method: Panel Least Squares
Sample: 2014 2023
Periods included: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.135147	0.096670	-22.08703	0.0000
UE	0.270151	0.080598	3.351834	0.0001

Effects Specification

Period fixed (dummy variables)

R-squared	0.139950	Hannan-Quinn criter	3.476890

Adjusted R-squared	0.110191	Schwarz criterion	3.558346
S.E. of regression	1.315666	Akaike info criterion	3.422540
Sum squared resid	500.2522		
Log likelihood	-502.3811.		
F-statistic	4.702705		
Prob(F-statistic)	0.000003		

Table 4 proved that hypothesis H2 i.e. Fintech has the negative impact on unemployment rate through new investment opportunities is accepted. implies that until these financial innovations, such as conducting digital transactions, are actively used, the unemployment rate will drop considerably. In line with our findings as a greenfield sector that supports the growth of new, creative ideas and start-ups, fintech facilitates the creation of jobs and, as a result, helps to lower the unemployment rate. Kammoun et al. (2020validated our findings and discovered that anytime Fintech grows, financial and investment independence thrives and grows. This directly affects recruiting, particularly for recent grads. According to Nepote, Ruberti, and Tran (2018), technical advancements based on application breakthroughs like Fintech encourage investment and, as a result, reduce unemployment rates.

4.3 Summary of Results

Table5: OLS Regression:

Hypothesis	Co-efficient	t-statistics	Prob.	Result
H1: Fintech as the medium of Digital payment could spread inflation significantly.	**0.011**	**0.141**	**.345**	**Reject**
H2: Fintech has the negative impact on unemployment rate through new investment opportunities.	**0.270**	**3.352**	**0.001**	**Accept**

4. Conclusion:

The role of fintech in influencing the financial and economic environment is growing. There are hazards associated with this disruptive innovation. Compared to traditional financial service providers, it offers customers financial services more conveniently and affordably by utilizing technology-integrated business methods. Although local restrictions and the popularity of mobile phones have contributed to the development of fintech, a fully inclusive environment is still a long way off. This paper's primary goal is to evaluate the viability of the financial sector's assumed role in digital transformation and the connection between Fintech and economic progress, as measured by unemployment and inflation between 2014 and 2023.

It appeared that the active usage of Fintech through two-way transactions (buy and sale) resolved by the digital payment made or received has a lowering influence on inflation with respect to the traditional causes of inflation. However, passive use the straightforward act of purchasing or consuming, such making a payment online has a positive and substantial effect on inflation. This includes the adoption of debit cards and digital payments. We prove that without actively making digital transactions, we cannot get up to Fintech's advantage in terms of inflation and unemployment reduction. And hence, this study also found that Fintech has the negative impact on unemployment rate through new investment opportunities. Governments would have to promote phone use, increase internet usage, and, most importantly, actively participate in digital commerce. Furthermore, robots are not going to replace humans in the workforce as a result of modern technology. For this reason, if employees need to acquire new skills due to current technological advancements, industry analysts think the analysis will probably enhance human capacities. Thus, we might conclude that the best outcomes would be achieved if humans and machines collaborated. Academics, researchers, and policymakers can use this study to help them develop a regulatory framework for cryptocurrencies, including Fintech incentives, that takes into account the production gap, monetary policy, demand for money, and income speed. Therefore, in order to enhance their digital infrastructure, particularly for enterprises, Pakistani government authorities should boost their economies and increase their information and communication technology.

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