

# ***Research on the Application of FinTech in Handling Shortcomings of Traditional Economics in a Highly Uncertain Environment***

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**Abstract:** In recent years, from the sweeping global COVID-19 pandemic to the escalating geopolitical conflicts, the vulnerability of traditional economic policy tools has been repeatedly exposed. Although monetary and fiscal policies carry the responsibility of stabilising economies, they often fail to swiftly reach the most vulnerable populations due to transmission delays and limitations in execution scope when faced with sudden upheavals. Against this backdrop, this study poses a central question: Can Financial Technology (FinTech) become a new pathway to bridge the gaps left by traditional tools? By reviewing existing research and analysing representative cases, the study explores innovative practices such as AI-driven credit scoring, decentralised finance (DeFi), stablecoins, and digital wallets, aiming to reveal their actual performance and intrinsic bottlenecks during crises. The article's findings indicate that although FinTech continues to be constrained by technological barriers, privacy risks, and lagging regulation, it has demonstrated unique and significant value in expanding financial service coverage, enabling precise fiscal interventions, and improving the efficiency of capital flows. Ultimately, the author argues that to enhance policy resilience, future systems must proactively integrate FinTech, particularly in emerging markets and countries with fragile institutions, where such transformation may be critical to survival.

**Keywords:** Financial technology, Policy innovation, Macroeconomic uncertainty, Fiscal digitalisation, Algorithmic governance

## **1. Introduction**

As the world steps into an era of high interconnectivity yet pervasive uncertainty in the 21st century, the policy tools relied upon by traditional economics are encountering unprecedented challenges. From the global outbreak of COVID-19 in 2020 to the eruption of the Russia-Ukraine war in 2022, alongside the United States' financial sanctions against countries such as Iran and Russia, these major events have highlighted the delays, rigidity, and even "failure" of monetary and fiscal policies in responding to systemic risks. Scholars like Blanchard [1] and Christiano et al. [2] argue that traditional policy tools often fail in crises due to delayed implementation and inadequate coverage of vulnerable populations.

Traditional monetary policy relies on central banks adjusting interest rates or money supply to intervene in markets. However, when the financial system is damaged and transmission mechanisms are blocked, the effectiveness of such adjustments significantly diminishes. Fiscal policy, which tries

to help during tough times by increasing spending or providing subsidies, often has a hard time using resources well, improving efficiency, and reaching the right vulnerable groups because of gaps in information and administrative issues. As pointed out by Blanchard [3], these inefficiencies are particularly evident when direct assistance is needed but delayed. More worryingly, traditional policy models generally presuppose sound governance structures and normally functioning financial systems — assumptions increasingly invalidated by frequent warfare, disasters, and sanction blockades in today's world.

Meanwhile, Financial Technology (FinTech) has emerged forcefully. Leveraging emerging technologies such as artificial intelligence, big data, blockchain, and cloud computing, FinTech is subtly reshaping access to financial services, risk management systems, and resource allocation logic. Existing studies have indicated that FinTech exhibits the potential to substitute traditional tools at multiple levels: it enhances accessibility and inclusiveness of financial services, optimises fiscal subsidy efficiency, and, to some extent, offers an independent response to systemic shocks, circumventing reliance on traditional banking systems. Existing studies, such as those by Bazarbash [4] and Maree et al. [5], have shown that FinTech can replace traditional tools in some cases, such as enhancing financial inclusion and facilitating faster policy transmission. Against this backdrop, from the perspective of policy economics, this paper systematically explores whether FinTech can effectively bridge the deficiencies of traditional economic policy tools under conditions of high uncertainty. This study aims to address the following key questions:

1. How can FinTech achieve functional substitution when traditional policies fail?
2. Which technological pathways (such as AI credit scoring, digital wallets, stablecoins) have proven effective in crisis practice?
3. What policy and ethical dilemmas currently confront FinTech, and what boundaries urgently require clarification?

## **2. Literature review**

### **2.1. The mechanisms and limitations of traditional economic policy tools**

Within the traditional macroeconomic framework, monetary and fiscal policies are regarded as the two core instruments for managing economic fluctuations. The former typically influences market liquidity and credit supply by adjusting interest rates or conducting open market operations, while the latter regulates aggregate demand through government expenditure and tax adjustments. In most economics textbooks, these policy tools are described as “automatic stabilisers.”

However, a substantial gap exists between idealised theory and practical application. These instruments often suffer from significant lags, complex transmission chains, and structural blind spots. Christiano et al. [6] noted that in contexts of massive credit contraction or financial panic, traditional interest rate tools frequently fail to effectively stimulate investment and consumption. During the pandemic, Blanchard [7] also highlighted that although fiscal subsidies were deployed rapidly, their disbursement efficiency and targeting precision were limited, struggling to reach the most in-need groups. Traditional policy tools often fail to provide a "safety net" function, especially for financially excluded populations who lack credit histories or basic financial access.

### **2.2. The rise of FinTech in economic governance**

In recent years, FinTech's reach has expanded beyond micro-level services such as payments, credit, and wealth, into supporting macroeconomic policy initiatives. Manyika et al. [8] argued that the widespread adoption of digital financial tools has opened new channels of financial access for low-income groups in developing countries, becoming an important supplement where traditional policy tools fail.

Bazarbash [9] further pointed out that by incorporating AI and machine learning technologies, credit approval processes can more accurately assess repayment capacity among individuals without formal credit histories, addressing the "thin file" gaps inherent in traditional credit models. Chen et al. [10], through case studies, found that during the COVID-19 pandemic, governments partnering with FinTech platforms achieved rapid and efficient subsidy distribution via digital wallets, significantly improving policy transmission efficiency and fairness.

Meanwhile, the rise of decentralised finance (DeFi) and stablecoins offers new pathways for capital movement across restricted or sanctioned environments. They suggested that payment networks using blockchain could help create clearing systems that are not controlled by the US dollar, which would reduce the negative effects related to the dominance of the US dollar.

### **2.3. Controversies and challenges of FinTech as a policy tool**

Despite its potential, the instrumentalisation of FinTech faces considerable controversy. Zhang and Zhou [11] emphasised that algorithmic bias in AI models can misjudge and exclude marginalised groups, contradicting the inclusive aims of financial services. Kurshan et al. [12] warned that most FinTech platforms currently lack robust capabilities to manage systemic and moral risks, and that a deep disconnect persists between their commercial logic and public policy objectives.

In terms of regulation, traditional financial supervisory frameworks lag behind technological innovation, particularly in decentralised finance and cross-border data flows, where unified rules and effective accountability mechanisms are lacking. This weakens the legitimacy foundation for employing FinTech as a macro policy tool.

## **3. The potential advantage of FinTech in addressing the shortcomings of traditional economics**

### **3.1. FinTech as an alternative infrastructure for policy transmission**

Traditional policy tools typically operate through embedded infrastructures such as banks, credit systems, and social security networks. However, in extreme circumstances like wars, natural disasters, or financial blockades, these infrastructures often become partially paralysed, obstructing policy transmission. In contrast, FinTech can quickly handle payments, loans, and subsidy distribution even in tough situations because it doesn't depend completely on the traditional financial system, making it a new way to share policies outside of the usual system. After the outbreak of war, Ukraine's government and NGOs widely accepted cryptocurrency donations, bypassing traditional banking processes and significantly improving humanitarian aid timeliness (Maree et al.[13]). During the pandemic in India, the Jan Dhan digital account system linked with the Aadhaar biometric ID enabled precise emergency subsidies to women in rural areas via mobile banking, breaking the "last mile" bottleneck (Chen et al.[14]). Iran's central bank explored issuing the "PayMon" digital currency to bypass the SWIFT system for cross-border payments, although the overall effectiveness remains limited, showcasing the potential for infrastructure independence.

### **3.2. FinTech compensating for the deficiencies of traditional credit mechanisms**

Traditional banking relies on stable credit histories and collateral mechanisms for lending decisions. However, among low-income groups, SMEs, informal workers, and migrants, credit histories are often lacking, leading to widespread financial exclusion. FinTech, through big data analytics and AI technologies, has developed "alternative credit scoring systems," significantly expanding the reach of credit services. Reported that machine learning models can effectively assess repayment capacity for individuals without formal credit histories, improving financial inclusion while lowering default

risks. In practice, platforms such as Ant Financial's "Sesame Credit" and Kenya's M-Shwari system integrate e-commerce data, communication records, and geolocation information into credit evaluations, breaking through the limitations of traditional models. During the pandemic, the widespread application of AI in microloan platforms significantly accelerated credit approvals, easing liquidity pressures, and supplementing emergency financial systems in several countries.

### **3.3. FinTech offering precision and real-time advantages in emergency fiscal policies**

Compared to traditional fiscal subsidy processes that rely on paper applications, offline registration, and bank transfers, FinTech platforms enable programmable fiscal management and automatic identification and targeting of recipient populations. This feature is particularly vital during sudden public emergencies, substantially enhancing the precision and timeliness of fiscal interventions.

Typical practices include: Some US state governments, during the pandemic, partnered with third-party payment platforms such as Venmo and Cash App to swiftly disburse relief funds to the unemployed, greatly reducing approval and arrival times. In China and South Korea, during pandemic control stages, targeted consumer vouchers were issued through combined "health code + digital wallet" systems to stimulate internal demand precisely. Decentralised finance platforms also supported condition-triggered automatic release of aid funds, offering exploratory models for future automated fiscal expenditure systems.

## **4. Discussion**

### **4.1. The feasibility logic of FinTech as a policy tool**

Based on the findings from the previous sections, we identify three key mechanisms through which FinTech can compensate for the failures of traditional economic policy tools in highly uncertain environments. Firstly, FinTech can achieve functional substitution by reducing reliance on traditional banking and clearing systems. Through technologies such as blockchain and digital wallets, FinTech enables the independent operation of capital channels even when traditional infrastructures are compromised by sanctions or systemic collapse. Secondly, FinTech leverages data-driven intelligence mechanisms, using artificial intelligence and big data to break away from traditional credit assessment models. This allows for real-time behavioural analysis that can provide precise services to previously excluded groups, thus expanding the reach of policy tools to a broader population. Thirdly, FinTech facilitates the programmability of fiscal policy. By using smart contracts and platform rules, it enables programmable fiscal disbursement and the automatic triggering of assistance conditions. This mechanism enhances the precision, responsiveness, and flexibility of fiscal policy instruments, thus improving the effectiveness of emergency economic interventions.

### **4.2. Preconditions and institutional conditions for application**

Despite the clear advantages, the successful deployment of FinTech as a policy tool is contingent upon several external preconditions and institutional factors. Firstly, there must be a robust technological infrastructure in place, including high smartphone penetration, widespread mobile internet coverage, and strong digital identity systems, such as India's Aadhaar. Secondly, a comprehensive data governance framework is essential. This framework must clearly define data ownership, establish effective privacy protection mechanisms, and regulate data-sharing practices. Thirdly, platform trust and public recognition are pivotal to the success of FinTech tools. The public's acceptance of AI-based credit scoring and their confidence in public-private partnerships will directly affect the effectiveness of FinTech-driven policy applications. Finally, legal and regulatory support is crucial. FinTech tools require statutory legitimacy and regulatory frameworks that are adaptable

enough to accommodate innovative digital policies. Without such support, FinTech products could be marginalised during the policy transition process.

### 4.3. Risks and controversies reflection

While FinTech shows considerable promise as a policy tool, several risks and controversies must be addressed. Firstly, the issue of algorithmic bias and digital discrimination cannot be ignored. AI models often rely on historical data, which may unintentionally perpetuate structural inequalities, leading to inaccurate assessments or exclusion of marginalised groups. Secondly, there is a risk of platform concentration. If the financial services ecosystem becomes overly dependent on a few major tech platforms (such as Ant Group, Meta, or Google), this could lead to systemic vulnerabilities due to a lack of redundancy mechanisms. Thirdly, regulatory lag remains a significant challenge. Particularly in areas such as cross-border payments and decentralised finance, there is a lack of coordinated global regulations. This makes it difficult to execute policy interventions in these areas. Finally, the tension between commercial and public policy objectives is an important concern. Many FinTech platforms are driven by profit motives, which can lead to selective service provision and potential data misuse. This creates a conflict with the goals of fairness and inclusiveness inherent in public policy objectives.

### 4.4. Research contributions and innovations

This paper makes several important contributions to the literature on FinTech and economic policy. Firstly, it systematically explores FinTech's role at the macro policy level, offering a comprehensive analysis of its functional attributes. This approach moves beyond the traditional micro-level perspective, where FinTech is often seen only as a tool for financial services. Secondly, this study introduces the concept of "institutional activation," which suggests that the realisation of FinTech's potential as a policy tool depends on specific external institutional conditions. This adds depth to the theoretical framework for understanding policy translation. Lastly, the paper highlights the importance of ethical boundaries, digital governance, and system resilience in the development of FinTech-based policy tools. It proposes a future research agenda focused on creating sustainable, responsible digital policy systems.

## 5. Conclusion

This paper, set against the backdrop of a "highly uncertain environment," systematically explores whether FinTech can serve as a substitute or supplement for traditional economic policy tools when they fail. Through documentary analysis and case studies, the following key conclusions are drawn: Firstly, traditional policy tools face significant limitations. They exhibit considerable lags and failure risks during crises, especially with respect to policy transmission efficiency, targeting precision, and coverage breadth. Secondly, FinTech operates through mechanisms such as disintermediation, data-driven intelligence, and programmability. These mechanisms enable FinTech to establish an independent fiscal and financial emergency system, thereby enhancing the overall resilience of policy frameworks. Thirdly, in practical scenarios such as pandemic relief, sanction circumvention, and inclusive credit provision, FinTech has shown significant potential to substitute traditional policy functions across various countries and regions.

Nevertheless, the successful instrumentalisation of FinTech depends on solid technological foundations, sound platform governance systems, clear legal support, and broad-based user trust.

Furthermore, caution must be exercised regarding risks such as algorithmic discrimination, platform monopolisation, and regulatory lag. FinTech has the potential to become a significant "policy complement mechanism" in both present and future economic policy systems, according to

the paper's overall conclusion. However, realising this potential hinges on the institutional embedding of governance structures and the delicate design of ethical frameworks, thereby promoting FinTech's transformation towards "public-oriented financial technology."

It should be noted that this study primarily adopts qualitative methods, lacking quantitative empirical modelling, which could be a focus for future research. Additionally, the research samples are predominantly drawn from developing economies and crisis regions; future comparative studies on mature institutional markets could enhance the universality and applicability of conclusions. Lastly, this paper's discussion of FinTech's technical details and algorithm transparency is relatively macro-level; future studies could delve deeper into technical ethics and algorithm governance.

Building on the findings of this study, future research could explore the following areas. Firstly, future research should focus on institutionalising digital fiscal mechanisms. This involves investigating the feasibility of designing national-level fiscal distribution systems that are based on smart contracts and digital identity authentication technologies. Secondly, constructing AI-supported "intelligent monetary policy regulation systems" is an important area for future research. This research should explore both the theoretical frameworks and the technological pathways for their effective implementation. Thirdly, global digital financial governance needs to be promoted. This includes the reconstruction of global regulatory frameworks, with a particular focus on institutional coordination mechanisms for cross-border data compliance, platform regulation, and the establishment of technical standards. Finally, it is essential to accelerate the establishment of ethical governance frameworks for FinTech. These frameworks should centre on principles of algorithm transparency, fairness, and accountability, ensuring that FinTech can develop sustainably within public policy applications.

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