Fintech, economic resilience, and the COVID-19 pandemic

- When COVID-19 hit and the world retreated into a global financial crisis, some countries were able to rebound – but not all recovered equally.

- Professor Xin Chang, Associate Professor Cindy Deng, and colleagues at Singapore's Centre for Sustainable Finance Innovation, Nanyang Technological University, investigated Fintech's role in post-COVID economic recovery.

- Fintech – using technology to deliver financial services – revolutionises financial activities by enabling swift, effortless, and cost-effective execution of transactions using computers and smartphones.

- Fintech sustains economic recovery and resilience through stimulating financing and investing activities and facilitating business and financial transactions amid the pandemic.

Financial technology, or Fintech, describes the delivery of financial services using technology. Over the past decade, Fintech has been attracting attention from businesses, consumers, investors, and regulators. Specialised software and algorithms allow Fintech users to manage their financial operations, processes, and lives through computers and smartphones easier, quicker, and cheaper. Fintech appears to be on an endless upward trend, with analysts projecting a CAGR (compound annual growth rate) of 26.2% until 2030.

The COVID-19 pandemic hit during this period and the economy plummeted into the worst recession since the Great Depression. Businesses closed and jobs were lost, plunging millions into poverty. Just as rapidly as the world retreated into a global financial crisis, some countries were able to rebound. But why is it that not all countries recovered equally?

To find out more about this disparity, Professors Xin Chang and Cindy Deng and their team at the Centre for Sustainable Finance Innovation at Nanyang Technological University, Singapore, have developed a measure of economic resilience that captures the speed and strength of economic resistance and recovery of countries responding to the pandemic shock. As well as discovering how quickly an economy recovered, they investigate to what extent Fintech has contributed.

Quantifying growth

The research team explored technological, social, political, economic, and healthcare factors across 86 countries. The researchers investigated whether the various factors had a positive or negative effect on economic recovery to find out

if Fintech played an important role in the economic recovery of a country. They used GDP growth and unemployment rates to examine the effect of Fintech on shaping a country's economic resilience.

The increase in demand for Fintech was not surprising since the use of contactless payment methods helped reduce the spread of COVID-19. To determine the growth in Fintech use, the research team analysed the Google search volumes of Fintech-related terms to ascertain global trends.

Fintech and economic recovery

Chang, Deng and their colleagues' results revealed that developing countries and those countries with an underdeveloped Fintech industry saw more significant surges of demand for Fintech during the pandemic. Stronger Fintech development was observed to be positively linked to GDP growth and negatively associated with unemployment rates.

Regardless of the effects of COVID-19, those countries with better developed Fintech before the pandemic experienced higher GDP growth. The team observed that economic development, better education, lower average population age, and less reliance on tourism had positive impacts on GDP growth. Countries with stronger Fintech before COVID-19 were also shown to have better employment recovery with more resilient employment levels. Furthermore, the researchers found that a country's GDP per capita before the pandemic, the maturity of their digital infrastructure, population size, and the rigour of their social distancing policies had more positive influence on employment rate changes than Fintech. In terms of statistical significance, Fintech development before COVID-19 is the most important factor among all 16 country-level factors when explaining the

> **The increase in demand for Fintech was not surprising since the use of contactless payment methods helped reduce the spread of COVID-19.**
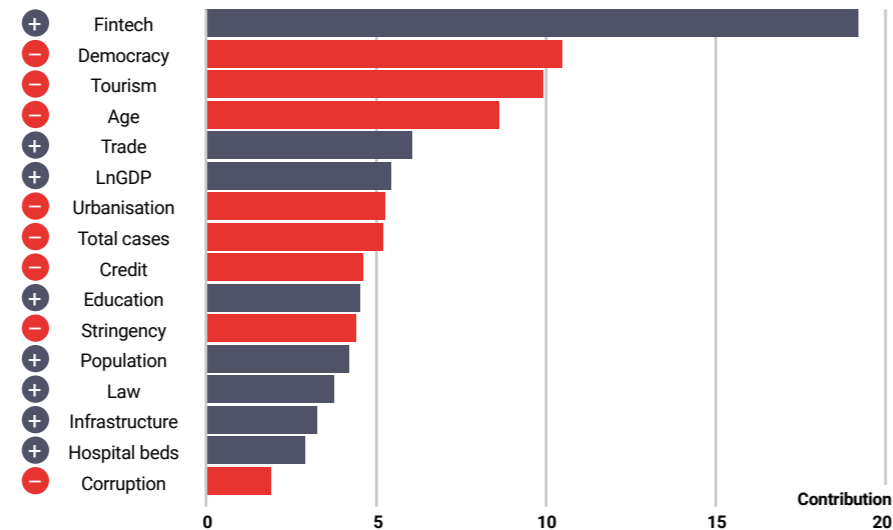
cross-country differences in GDP growth during the pandemic.

A new economic resilience measure

The research team developed an innovative economic resilience measure that captures the speed and strength of a country's economic resistance and their recovery following the pandemic shock. They analysed economic resilience using changes in GDP growth and changes in unemployment rate and modelled the simulated changes over time. Both analyses resulted in curves. They applied the model to each country, taking the baseline as the GDP growth or unemployment rate before the pandemic. They termed the contraction period as the time taken to reach 'rock bottom', the lowest point on the curve. The recovery period described the time taken to rebound and was defined as six months after pre-pandemic levels are achieved. During this six-month period, a country's economic growth could raise their recovery beyond pre-pandemic levels. Adding the area between the curve and the baseline during the contraction and recovery periods gives a country's resilience value.

Rock bottom and recovery

The team's analysis found that, on average, it took three months for a country to reach its lowest GDP growth rate and between seven and eight months to reach its lowest employment rate. Moreover, countries with a higher economic resilience value recovered to their pre-pandemic levels more quickly. In terms of the economic resilience measure, Ireland, Vietnam, Turkey, China, and Kenya demonstrated relatively stronger

Country-level factors' contributions to the cross-country variations in GDP growth during the pandemic. This figure ranks 16 factors based on their contributions to the cross-country variations in GDP growth, which are computed using the Shapley−Owen R² decomposition analysis. The sum of the contributions is 100%. The signs in parentheses indicate the positive or negative effects of factors on GDP growth amid the pandemic.

> **Fintech can serve as an essential enabler and accelerator of economic growth, contributing to economic stability and resilience.**

GDP growth resilience. Unemployment rate resilience, however, displayed different patterns with Mongolia, Italy, France, Greece, and Kenya performing relatively better.

Impacts on economic resilience

So, what factors might be behind these values? The researchers found that mobile payments had a positive effect on both GDP growth rates and employment rates. Contactless payments have remodelled consumer habits and fast-tracked the development of the contactless economy. Digital investments also had a positive impact on GDP growth rates, whereas digital banking had a positive effect on unemployment rate changes.

Analysis of Google search volume data revealed that searches for terms relating to Fintech peaked following the outbreak of the pandemic – and have remained consistent ever since. The researchers also found that the demand for Fintech in South-East Asia was representative of the global trends with a 50% increase in demand at the outbreak of the pandemic. In line with the global trend, the interest surrounding mobile payments increased to 80% during the same period, confirming that mobile payments led the overall demand for Fintech services. The team concludes, 'Our analysis reveals that Fintech can serve as an essential enabler and accelerator of economic growth, contributing to economic stability and resilience from the global health crisis.'

GDP resilience around the world. This map depicts the global distribution of GDP resilience amid COVID-19. The figures under country codes represent the country's level of economic resilience based on the TLMS model. The resilience increases as the colour changes from green to red.

What initially sparked your interest in the role of Fintech during the pandemic?

The emergence of the pandemic has caused a significant shift in our daily lives, including the way we conduct transactions. With social distancing measures in place, individuals have increasingly turned to contactless payment and e-commerce to obtain their daily necessities. Additionally, the importance of telecommunication infrastructure has heightened to facilitate long-distance communication for remote work during lockdowns.

Nonetheless, the level of development in financial technology and telecommunications infrastructure varies across different countries and regions. This has raised the question of whether these factors contribute to economic resilience. To investigate this issue, we have initiated an empirical study by collecting relevant data.

What has been the most satisfying or surprising aspect of this research for you?

Our study has yielded satisfying results that align with our hypotheses. Specifically, we have found that the development of Fintech has a significant positive impact on economic resilience during the COVID-19 pandemic. This is attributed to Fintech's ability to stimulate financing and investment activities among businesses, as well as facilitate business transactions through digital payments.

Interestingly, we have not found any evidence suggesting that telecommunication infrastructure contributed to GDP growth during this period. While digital technologies have the potential to boost regional economies, they can also pose threats and disrupt other industries. This multiplicity of impacting mechanisms makes it difficult to establish a clear relationship between telecommunication infrastructure and GDP growth. However, we caution that the negative relationship we have observed may only reflect the short-term effects of the COVID crisis.

How do you plan to take this work further?

We plan to conduct a follow-up study at a micro level to delve deeper into the ways in which Fintech affects different industries and enterprises.

When COVID-19 hit and the world retreated into a global financial crisis, some countries were able to rebound – but not all recovered equally.

Details

e: changxin@ntu.edu.sg
w: personal.ntu.edu.sg/changxin

e: xin.deng@ntu.edu.sg
w: dr.ntu.edu.sg/cris/rp/rp01341
w: www.ntu.edu.sg/csfi

Bio

Professor Xin (Simba) Chang is a professor of Finance and Associate Dean (Research). Dr Xin (Cindy) Deng is the associate professor of Finance (Practice) at Nanyang Business School, Nanyang Technological University. Professors Chang and Deng are co-directors of the Centre for Sustainable Finance Innovation (CSFI), which spearheads first-rate research and practical education on sustainable finance and financial innovations. Deng is also an Academic Committee mem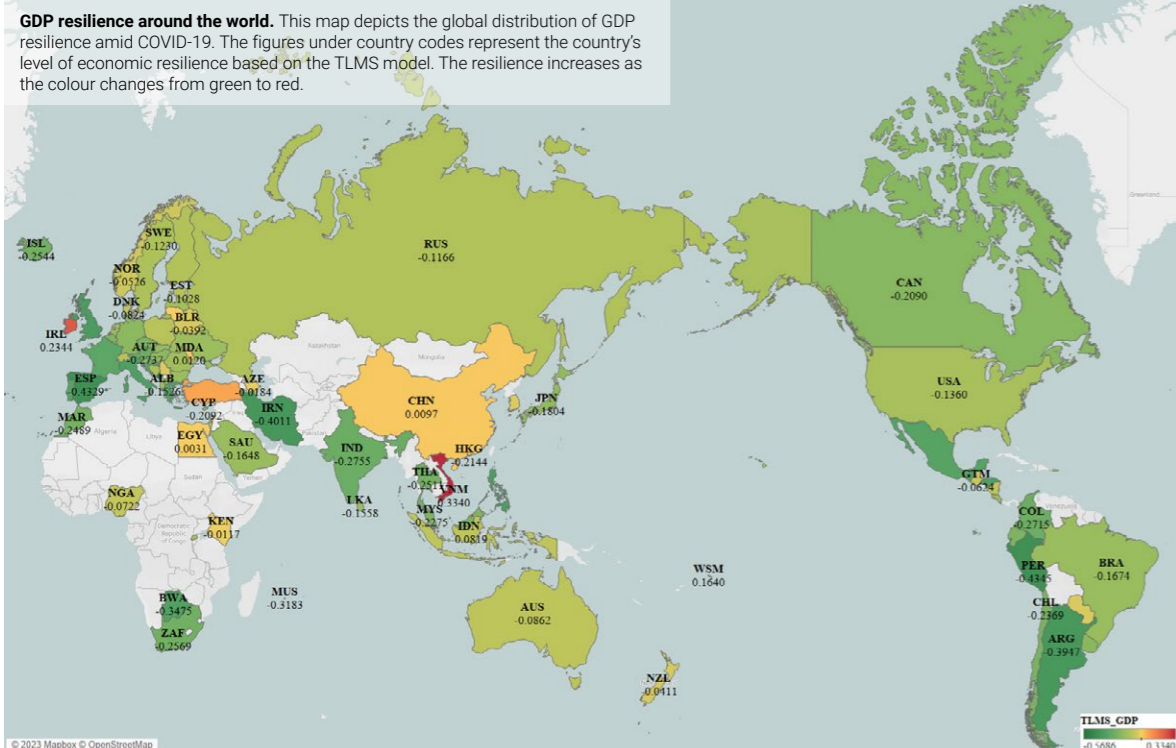ber of the Global Fintech Institute.