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Analysis of the Impact of Covid-19 on Bank Income

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Abstract: The sudden COVID-19 has had a significant impact on many aspects of the financial industry, especially the banking industry. This paper will not only use multiple linear regression model to elaborate the COVID-19 and other factors on the income of major banks but also will concludes two solutions that is able to get around the decreasing bank earning from three other related articles.

Key words: COVID-19, Finance, Bank income, Multiple linear regression model

I. Introduction

Finance is the blood of the economy, and banks are the cornerstone of finance. Banks have always been the “ballast stone” for the healthy development of finance. The sudden Covid-19 has had a huge impact on personal life and has also pressed the pause button for social and economic development. How to restart economic development in the post-epidemic era has become a topic of widespread concern from all walks of life. As an important supporting industry for economic development, the development of banks is not only related to the industry itself, but also affects all aspects of the social economy. In this context, studying the impact of Covid-19 on banks and how banks can take measures to actively respond has important practical significance.

II. Literature review

Many scholars have done in-depth research on the impact of Covid-19 on bank. According to different research perspectives, this article divides the research of domestic scholars into the following two categories:

Some scholars analyze this issue from the perspective of the government. Zhiheng Luo (2020) found that the epidemic has impacted short-term economic trends, but will not affect medium- and long-term economic development trends; due to the impact of expectations, the epidemic has exacerbated economic fluctuations in the stock and bond market; The development of nascent business formats. Fengyin Zhi (2020) believes that the efforts made by the Central Bank, the China Banking Regulatory Commission, various banks, the Securities Regulatory Commission, and the insurance industry have strengthened financial services for the people affected by the epidemic and increased financial services for first-line enterprises and institutions in the prevention and control of the epidemic. Support and provide financial services to distressed enterprises and maintain the stability of the financial market [1].

Other scholars analyze this issue from the perspective of technological development. Shusong Ba (2020) analyzed the financial industry during the epidemic to maximize offline contacts and maintain normal business operations, and analyzed the opportunities brought by the epidemic to the financial industry, and found that the financial industry needs strict supervision. Pay attention to the safety and regulation of data use. Zhihong Zhao (2020) believes that commercial banks can introduce artificial intelligence to increase the control of intelligent risks; strive to make remote office a new trend rather than an emergency plan to deal with the epidemic.

III. Methodology and data

This article uses a multiple linear regression model to analyze the impact of Covid-19 on bank income. Multiple linear regression models are often used to analyze multivariate disturbance problems, that is, the explained variable in a problem is affected by changes in multiple independent variables. Bank income issues are typical of this type of problem, and bank income will be affected by Covid-19 and other factors. Under such circumstances, it is particularly important to establish a multiple linear regression model through econometric methods to accurately define the impact of Covid-19 on bank income. The specific model form is shown in equation (1).

$$y_i = \beta_0 + \beta_1 x_i + \beta_2 z_i + u \quad (1)$$

In equation (1), the dependent variable is bank income, which brings in the bank's total income, interest income, commission income, and investment income, respectively. The independent variable is a dummy variable of Covid-19. The coefficient represents the impact of Covid-19 on bank income. In this paper, the control variable is added to equation (1) to represent the bank's assets and liabilities, and the coefficient represents the impact of assets and liabilities on bank income. In the estimation process of the model, this paper uses the least square method in the mathematical optimization technique to find the best function match of the parameters by minimizing the square sum of the error. The least squares method can be used to easily obtain the parameters to be estimated, and minimize the sum of squared errors between the obtained parameters and the actual parameters. According to the Gauss-Markov theorem, given the assumption of classical linear regression, the least squares estimator is a linear unbiased estimator with the smallest variance. Therefore, when the classical assumption holds, there is no need to look for other unbiased estimators, and none of them will be better than ordinary least squares estimators. That is to say, if there is a good linear unbiased estimator, the variance of this estimator is at most as small as the variance of the ordinary least squares estimator, and will not be less than the variance of the ordinary least squares estimator.

The data used in this article comes from the data of 365 Chinese A-share banks in the Cathay Pacific Data Service Center, and the time span is from 2019 to 2020. The CSMAR economic and financial research database is based on the needs of academic research, and draws on the professional standards of the University of Chicago CRSP, Standard & Poor's Compustat, New York Stock Exchange TAQ, I/B/E/S, Thomson and other internationally renowned databases, combined with China's actual conditions. Economic and financial database developed by national conditions. After 18 years of continuous accumulation and improvement, the CSMAR database has covered 18 major series such as factor research, character characteristics, green economy, stocks, and companies, including more than 130 databases, more than 4,000 tables, and more than 40,000 fields. The coverage of the data is relatively wide, and the information and content contained can meet the requirements of the analysis of this article.

IV. Results

The results of the multiple linear regression model are shown in the table below.

Table 1 Multiple linear regression model results

	(1)	(2)	(3)	(4)
VARIABLES	income	interest	commission	investment
covid19	-669.7***	-527.2***	-126.0***	-10.60
	(140.5)	(108.2)	(33.76)	(6.547)
asset	-0.263***	-0.328***	0.0201	-0.000598
	(0.0805)	(0.0620)	(0.0193)	(0.00375)

debt	0.330***	0.390***	-0.0128	0.00123
	(0.0868)	(0.0668)	(0.0208)	(0.00404)
Constant	276.5***	213.6***	45.24*	15.37***
	(101.6)	(78.19)	(24.40)	(4.731)
Observations	484	484	484	484
R-squared	0.880	0.882	0.816	0.338

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Columns (1)-(4) of the table respectively report the regression results of total bank income, interest income, commission income and investment income in the sample. The results of the multiple linear regression model show: First, Covid-19 has a significant negative impact on the total income of banks. From the average performance of banks across the country, the occurrence of Covid-19 has reduced the total income level of banks; secondly, the negative impact of Covid-19 on bank income is mainly reflected in the bank's interest income and commission income. This shows that after the outbreak of the epidemic, the number and scale of bank deposits and purchases of wealth management have decreased; finally, bank assets and liabilities will also have an impact on bank income, which is consistent with the results of traditional financial theory [2].

References:

[1] Zhiheng Luo.Impact and response of COVID-19 on economy, capital markets and national governance[J]. Financial and economic,2020,2(8-15).

[2] Seizing the opportunity brought by the COVID-19 to the financial technology-Shusong Ba