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Sectoral Counter-Cyclical Approach to Financial Risk Management Based on CSR for Sustainable Development of Companies

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Abstract: This research determines the contribution of Corporate Social Responsibility (CSR) to reducing financial risks and, consequently, to the sustainable development of companies in different sectors of the economy and at different phases of the economic cycle (using Russia as an example). The informational and empirical base comprises data on the dynamics of stock prices of sectoral indices of the Moscow Exchange's total return "gross" (in Russian rubles): oil and gas, electricity, telecommunications, metals and mining, finance, consumer sector (retail trade), chemicals and petrochemicals, and transportation, as well as the "Responsibility and Openness" index in 2019 (before the crises), in 2020 (COVID-19 crisis), 2022 (sanction crisis), and 2024 (Russia's economic growth). Economic–mathematical models, compiled through regression analysis, showed that the contribution of CSR to reducing the financial risks of companies is highly differentiated among economic sectors and phases of the economic cycle. The research presents a new sectoral perspective on counter-cyclical management of the financial risks of companies through CSR, enabling a deeper study of the cause-and-effect relationships of such management for the sustainable development of companies from different economic sectors. This is the theoretical significance of this research, its novelty, and its contribution to the literature. The research has practical significance, revealing previously unknown best practices for the sustainable development of companies from different economic sectors of Russia across different phases of the economic cycle. The systematized experience will be useful for forecasting the financial risks of companies during future economic crises in Russia and improving the practice of planning and organizing the financial risk management of Russian companies through CSR. The authors' conclusions have managerial significance because they will help enhance the flexibility and efficiency of corporate financial risk management by considering the sectoral specifics and cyclical nature of the economy when implementing CSR.

Keywords: financial risks; risk management; CSR; counter-cyclical management; sustainable development of companies

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1. Introduction

From the economic perspective, the sustainable development of companies is the stability of their functioning at all phases of the economic cycle, including in the conditions of economic crises. The exacerbation of risks is one of the main attributes of any crisis (Gupta et al. 2024). During an economic crisis, the activities of economic entities are largely determined by financial risks, which generally represent a broad spectrum of negative financial phenomena (Shaikh and Khan 2025). Small and medium-sized enterprises often receive the most support from the state, expressed through simplified tax systems that reduce the tax burden and simplify financial accounting, as well as through the provision of anti-crisis subsidies. This support helps mitigate the impact of financial risks on the activities of small and medium-sized businesses during economic crises.

In contrast, large businesses, especially companies with publicly traded shares, must independently manage increased financial risks during economic crises. For these companies, the primary manifestation of financial risk is the decline in stock value on the market—this definition of financial risk is used in the present scientific material (Azar-Ibrahim et al. 2025). The methods of managing financial risks for companies are quite diverse. Therefore, from a scientific standpoint, to organize these methods, it is appropriate to distinguish between two alternative approaches to managing the financial risks of companies.

The first approach involves cost reduction. The basic premise of this approach is the assumption that the potential for revenue generation and, consequently, the return on investment is limited during an economic crisis. Thus, without the ability to attract additional investments through stock issuance, companies initiate an anti-crisis corporate savings program to maintain profitability: saving on raw materials and supplies, human resources, innovations and technologies, etc.

Numerous practical applications of this approach have led to significant scientific criticism, pointing out that cost reduction generates a short-term effect, helping the company survive the crisis but limiting its post-crisis recovery potential due to the loss of top talent, diminished competitive advantages from abandoning innovations, and loss of stakeholder trust due to the rollback of environmental initiatives. Recent experiences from the latest international economic crises have provided convincing evidence that the second approach to managing companies' financial risks—through corporate social responsibility (CSR)—is more promising.

This modern approach is based on the opposite assumption that during an economic crisis, the potential for growth and any income is determined by the loyalty of stakeholders to the company's activities. Therefore, to reduce financial risks, companies need to manage stakeholder loyalty, enhancing and strengthening it. CSR plays a central role in this process as a highly effective method of managing loyalty and, consequently, financial risk management for companies (Cardillo and Basso 2025). The advantage of CSR is that it makes it possible to reduce financial risks in both phases of the economic cycle—during the crisis phase and the growth phase (Ali et al. 2024).

The problem lies in the uncertainty regarding the differences in CSR's contribution to reducing financial risks of companies in different sectors of the economy at different phases of the economic cycle. Without a clear understanding of the magnitude of CSR's contribution, it is impossible to build highly effective corporate financial risk management strategies. Addressing this problem is crucial because it hinders the sustainable development of companies. This has defined the goal of the present article, which is to determine the contribution of CSR to reducing financial risks and, consequently, to sustainable development in different sectors of the economy and at different phases of the economic cycle (using Russia as an example).

The novelty of this research lies in a new sectoral perspective on the counter-cyclical management of financial risks of companies through CSR, which reveals previously unknown features of sustainable development of companies from various economic sectors at different phases of the economic cycle. Russia is the first country to overcome challenges from Western sanctions, which makes its experience especially useful for research (Duong et al. 2024).

In the research part of this paper, to determine the influence of CSR on the financial risks of companies by the sectors of the Russian economy, we perform regression modeling of the significance of values of sectoral indices on the Moscow Exchange index—MOEX Index (2024g) "Responsibility and openness": MRRT. The paper uses the authors' definition of CSR as the volume of companies' expenditures for responsible business, which is measured from the position of the MRRT profitability index.

The contribution of CSR to reducing financial risks and its different values in four economic and time periods are revealed: (1) 2019 (before the crisis phenomena during the upward wave of the economic cycle in Russia); (2) 2020 (the COVID-19 crisis); (3) 2022 (the sanctions crisis); (4) 2024 (the growth of the Russian economy).

To take into account the influence of international economic sanctions as a factor of financial risk to business activity in modern economic conditions, we compiled a forecast of the CSR of Russian companies (MRRT index) for 2025 and compiled alternative scenarios of changes in financial risks by the sectors of the Russian economy for 2025.

2. Literature Review

2.1. Financial Risks as a Challenge for the Sustainable Development of Companies

This research focuses on the financial risks of companies (large businesses with publicly traded shares), understood as the reduction in market value of these companies' stocks, based on the works of Hajek and Munk (2024) and Wang et al. (2024). The subject of this research is the management of financial risks of companies, defined as the process of implementing managerial measures aimed at reducing financial risks (Sajjad et al. 2024; Zarova and Tursunov 2022).

This research adopts a two-phase model of the economic cycle, comprising a growth (expansion) phase and a crisis (recession) phase. According to Gibbens et al. (2024) and Rogachev et al. (2018), the sustainable development of companies is understood as the successful management of their financial risks, ensuring stability or growth in their stock market valuations.

A literature review conducted by Fan and Gao (2024) and Yang (2024) indicates that the return on CSR in the form of reduced financial risks is specific to each country. Therefore, to obtain the most accurate and detailed results explaining the cause-and-effect relationships between companies' CSR and their financial risks, this research is conducted using the example of Russia.

Russia's experience is notable because Russian companies have faced two significant crises in recent years: the COVID-19 crisis in 2020 and the sanctions crisis in 2022. Every crisis is accompanied by a sharp increase in financial risks. Russian companies demonstrated high resilience to both crises, as evidenced by their transition to economic growth in 2021 and in 2023–2024. This makes the experience of Russian companies in managing financial risks valuable for companies in other countries.

2.2. Managing the Financial Risks of Companies Through CSR

The theoretical foundation of this research is the scientific concept of managing the financial risks of companies through CSR (Karbekova et al. 2023). The economic essence of

managing financial risks through CSR lies in the fact that CSR increases stakeholder loyalty towards companies and their activities (Kitsai et al. 2023; Samieva et al. 2023).

The conceptual basis of this research consists of the works of such scholars as Doho et al. (2023), Kamath et al. (2024), Kumaran (2023), and Lekha Shree and Kanniammal (2023), in which sectorial stock indices, which unify the values of market indicators of the companies from general sectors, are used to study the economy of sectors and to compare the sectors.

Thanks to higher loyalty, companies can increase sales volumes even during an economic crisis, maintain sales volumes while raising prices due to CSR efforts, and attract additional investments for development through stock market issuance. In each industry, the nature of CSR as a method of managing financial risks is specific:

- In the oil and gas industry, managing financial risks through CSR involves organizing oil well drilling and gas field development with a high level of safety for workers' health and the environment (Alekseev et al. 2019);
- In the electric power industry, managing financial risks through CSR involves developing clean energy to support the decarbonization of the economy (Velinov et al. 2020);
- In the telecommunications industry, managing financial risks through CSR involves creating knowledge-intensive jobs for digital professionals and developing telecommunications infrastructure to reduce the digital divide, for example, by providing low-income consumers with affordable access to telecommunications (Arkin et al. 2020);
- In the metals and mining industry, managing financial risks through CSR involves organizing environmentally friendly extraction processes and preserving natural resources (metal ores) for future generations (Karlibaeva and Nyangarika 2023);
- In the financial sector, managing financial risks through CSR involves developing climate finance, enhancing cybersecurity and the reliability of financial services, and maintaining jobs despite the automation of financial services (Kantor et al. 2023);
- In the consumer sector (retail trade), managing financial risks through CSR involves strengthening quality guarantees for retail products, increasing their availability and convenience of purchase through the development of e-commerce (Abdurakhmanova et al. 2021; Turginbayeva et al. 2020);
- In the chemical and petrochemical industry, managing financial risks through CSR involves organizing remote employment for workers in hazardous industries, installing more advanced treatment facilities in chemical plants, and reducing production and consumption waste of chemical products (Ye and Dela 2023);
- In the transport industry, managing financial risks through CSR involves reducing the cost of transport and logistics services, improving the quality and convenience of these services, and making them accessible even to residents of previously hard-to-reach areas, such as rural locations, thereby developing transport infrastructure (Sultanova and Babakhanova 2023).

Certain issues of counter-cyclical management of companies, in particular, to raise their resilience to economic crises through financial risk management, were studied in the works of Safón and Iborra (2023), Sandoval et al. (2022), Thiemann (2022), and Wang et al. (2023). The cited literature lacks scientific evidence of differences in CSR's contribution to reducing companies' financial risks across different phases of the economic cycle. Therefore, in the existing literature, managing companies' financial risks for the sustainable development of economic sectors through CSR is not considered to be tied to the economic cycle.

2.3. The State of CSR in Russia

In the business environment of modern Russia, significant attention is paid to CSR, according to the progressive global trends and based on the leading experience of the world market leaders. This is manifested especially clearly among large companies, which stock is traded in the stock exchange and which activities are performed in the national Russian and international economic space, due to which many of these companies are transnational. It should be noted that production departments of Russian companies are located in the territory of Russia.

The high level of Russian companies' involvement with the leading global initiatives in the sphere of manifestation of CSR is demonstrated by the fact that most of these companies officially state—on their websites—their adherence to CSR and sustainable development. Russian companies annually publish (voluntarily and widely) on their official websites the corporate reporting on CSR and sustainable development, including detailed information on the implementation of each of the 17 Sustainable Development Goals of the UN (Gyiazov et al. 2023).

A specific feature of the CSR practice in the business environment of modern Russia is that measures that are implemented by Russian companies involve the manifestation of CSR for the economic system of Russia. This significantly differentiates the Russian practice of CSR from a range of foreign, including developed, countries, in the business environment of which a widespread aspect is companies' manifesting CSR not only for the economic systems of the countries of their main offices' location but also countries of the location of their production branches (these are usually developing countries (Fedchenko et al. 2024).

Due to this, CSR in international practice generates a global effect, which is manifested indirectly and remotely in the economic systems of countries of the location of main offices of the companies that manifest CSR. In Russian practice, CSR ensures the national (at the scale of the country) and local (at the scale of region, city, or village, i.e., an individual territory) effect (Karpova and Pogodina 2024).

A widespread aspect in the Russian business environment is the implementation of measures, and publication of plans and reports on CSR and sustainable development not only for the company on the whole with the provision of generalized and aggregated data and conclusions but also for each production department of the company with detailed and explicit data with the disclosure of the contribution of CSR to improvement of the quality of life, economic development, and improvement of the state of the environment of the territory in which production is carried out (Galkin 2024). The measures of manifestation of CSR that are most widespread in the business environment of modern Russia are as follows:

- Social measures, which include the creation of additional jobs, raising wages compared to average wages in the region, corporate training, and additional life and health insurance for employees (Ryazantsev et al. 2024);
- Economic measures, which include investments in the development of local infrastructure, digital modernisation, import substitution, preservation of price stability in the conditions of inflation, and tax payments in local budgets (Batashova et al. 2024);
- Environmental measures, which include the creation of green jobs, placement of investments in the greening of territories, reduction in natural resources spending, energy saving, reduction in production waste, start of the circular use of natural resources, transition to environmentally friendly (biodegradable) packaging, and environmentally safe transportation of products (Vitsko et al. 2024).

An overview of CSR practices, implemented in Russia's business environment, and reports on CSR and sustainable development, published by Russian companies, showed that

these practices are strongly differentiated not only among sectors but within any general sector. Therefore, Russian companies' expenditures for CSR are a universal means of measuring and comparing CSR practices in Russia's business environment (Kuksov 2022).

The most reliable indicator of the scale of these expenditures within each sector of the Russian economy is the corresponding index of profitability. In particular, this is the index of the Moscow Exchange—MOEX Index (2024g) "Responsibility and openness": MRRT. Based on this, we formulated the authors' definition of CSR as the volume of companies' expenditures for responsible business in support of an increase in the quality of life, economic development, and improvement of the state of the environment of the territory of the company's location, measured from the positions of the MRRT profitability index.

The advantage of the authors' definition is that it allows—with high precision—measuring the level of CSR of companies in various sectors of the Russian economy and using financial measuring of CSR, which takes it closer to financial risks companies which can also be measured in each sector of the Russian economy with the help of the corresponding sectoral profitability indices of companies. The authors' definition allows for the systemic study of how Russian companies manage financial risks and practices of CSR with the help of profitability indices of companies.

3. Gap Analysis

The conducted content analysis of the published scientific literature on the considered topic shows that this research problem is sufficiently studied. Numerous scientific works extensively reveal the theory and practice of managing the financial risks of companies through CSR. However, the specifics of managing financial risks through CSR in different economic sectors remain unknown. This represents a gap in the literature and raises the following research question:

RQ: "What is the contribution of CSR to reducing financial risks in various economic sectors at different phases of the economic cycle?".

Based on available scientific publications that disclose the specifics of managing companies' financial risks through CSR in different economic sectors, particularly in Ai et al. (2024), Gao (2024), and Raimi et al. (2024), this research proposes the hypothesis H, which states that the contribution of CSR to reducing companies' financial risks is highly differentiated among economic sectors and the phases of the economic cycle. To test the proposed hypothesis, the research examines the experience of managing financial risks of Russian companies through CSR in different economic sectors and at various phases of the economic cycle within its two-phase model.

4. Results

To determine the impact of CSR on the financial risks of companies by industries in Russia, the authors conducted a regression analysis of the data in Table A2. The obtained results are reflected in Tables 1–4, where multiple R shows the determination of each dependent variable with independent variable MRRT; significance F reflects the level of significance at which the results of the regression analysis are reliable and correct; F-observed shows the factual value of F during the F-test on the reliability of the results of the regression analysis; coefficients are coefficients of regression; standard error shows errors of the regression models; and t-State shows factual value of t during the *t*-test on the reliability of the results of the regression analysis.

Table 1. Results of the regression analysis in 2019.

Indicators		MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR
Multiple R		0.9680	0.9381	0.9333	0.9012	0.9679	0.7499	0.8237	0.7483
Significance F		2.9436×10^{-147}	2.0248×10^{-113}	1.2×10^{-109}	7.69×10^{-90}	4.2577×10^{-147}	2.57207×10^{-45}	1.43×10^{-61}	4.9×10^{-45}
F-observed		3597.4376	1775.1138	1635.6196	1046.2501	3585.7469	310.9457	510.7959	307.9999
Coefficients	a	−3841.9588	−266.7926	−696.4171	3149.8212	−290.8516	4524.4384	6999.4721	680.8269
	MRRT	6.4151	1.2286	1.7241	2.9289	3.8183	1.2179	6.3355	0.6096
Standard error	a	232.9030	63.4995	92.8304	197.1730	138.8483	150.3902	610.4136	75.6406
	MRRT	0.1070	0.0292	0.0426	0.0905	0.0638	0.0691	0.2803	0.0347
t-Stat	a	−16.4960	−4.2015	−7.5020	15.9749	−2.0947	30.0847	11.4668	9.0008
	MRRT	59.9786	42.1321	40.4428	32.3458	59.8811	17.6337	22.6008	17.5499

Source: calculated and compiled by the authors.

Table 2. Results of regression analysis for 2020.

Indicator		MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR
Multiple R		0.9321	0.7068	0.4222	0.3264	0.6716	0.3758	0.2206	0.7560
Significance F		2.43×10^{-111}	3.72×10^{-39}	3.16×10^{-12}	1.29×10^{-7}	3.82×10^{-34}	8.30×10^{-10}	0.0004	1.535×10^{-47}
Observed F		1641.2982	247.5840	53.7879	29.5658	203.7253	40.7892	12.6889	330.7649
Coefficients	a	−1516.2993	824.0550	2455.8347	5926.6541	−1669.9188	2272.5401	20,976.3526	−223.1091
	MRRT	5.1207	0.9651	0.7104	3.1771	4.8979	2.8852	1.8942	0.9465
Standard error	a	284.5904	138.1025	218.1014	1315.5832	772.6401	1017.1570	1197.2674	117.1797
	MRRT	0.1264	0.0613	0.0969	0.5843	0.3432	0.4518	0.5317	0.0520
t-statistic	a	−5.3280	5.9670	11.2601	4.5050	−2.1613	2.2342	17.5202	−1.9040
	MRRT	40.5129	15.7348	7.3340	5.4374	14.2732	6.3866	3.5622	18.1869

Source: calculated and compiled by the authors.

Table 3. Results of regression analysis for 2022.

Indicator		MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR
Multiple R		0.9587	0.8494	0.5053	0.9347	0.9390	0.8561	0.4652	0.9805
Significance F		1.32×10^{-127}	8.86×10^{-66}	1.95×10^{-16}	2.76×10^{-105}	1.27×10^{-108}	7.01×10^{-68}	7.33×10^{-14}	1.75×10^{-164}
Observed F		2614.7542	595.8221	78.8420	1589.9516	1715.6225	631.2587	63.5303	5721.6725
Coefficients	a	3114.8040	1215.9815	2722.9867	−3275.7411	−3397.8040	2790.5066	66,668.0524	−4.3705
	MRRT	3.5571	0.5403	0.4270	8.0743	6.3290	2.7764	−4.9891	0.6676
Standard error	a	141.7648	45.1125	97.9909	412.6654	311.3934	225.1941	1275.6025	17.9869
	MRRT	0.0696	0.0221	0.0481	0.2025	0.1528	0.1105	0.6259	0.0088
t-statistics	a	21.9716	26.9544	27.7881	−7.9380	−10.9116	12.3916	52.2640	−0.2430
	MRRT	51.1347	24.4095	8.8793	39.8742	41.4201	25.1249	−7.9706	75.6417

Source: calculated and compiled by the authors.

Table 4. Results of regression analysis for 2024.

Indicator		MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR
Multiple R		0.9177	0.7336	0.8297	0.8402	0.6030	0.9087	0.3512	0.6789
Significance F		3.81×10^{-53}	3.23×10^{-23}	3.29×10^{-34}	8.01×10^{-36}	3.17×10^{-14}	2.06×10^{-50}	4.18×10^{-5}	6.88×10^{-19}
Observed F		682.6172	149.1277	282.7742	307.2545	73.1209	606.8537	18.0121	109.4414
Coefficients	a	1965.5639	1260.5276	−1999.6414	−333.2809	9560.7505	−2343.7590	41,293.7937	822.8065
	MRRT	6.1255	0.8604	2.9469	6.3961	2.4703	6.2593	13.0524	0.8623
Standard error	a	588.4781	176.8382	439.8689	915.8853	725.1085	637.7685	7719.4580	206.8878
	MRRT	0.2345	0.0705	0.1752	0.3649	0.2889	0.2541	3.0755	0.0824
t-statistic	a	3.3401	7.1281	−4.5460	−0.3639	13.1853	−3.6749	5.3493	3.9771
	MRRT	26.1269	12.2118	16.8159	17.5287	8.5511	24.6344	4.2441	10.4614

Source: calculated and compiled by the authors.

Results of the analysis from Table 1 show that before the crisis phenomena at the upward wave of the economic cycle in Russia, financial risks of companies were closely and strongly with CSR in all considered sectors of the Russian economy, including oil and gas (correlation: 96.80%), finance (96.79%), electric energy (93.81%), telecommunications (93.33%), metals and mining (90.12%), consumer sector (74.99%), chemical and petrochemicals (82.37%), and transport (74.83%).

The arithmetic mean of the correlation coefficients equals 87.88%, which is a sign of a very close connection between the financial risks of Russian companies and their CSR in 2019, before the crisis phenomena during the upward wave of the economic cycle in Russia. The following regression model (system of regression equations) of the dependence of sectorial indices on CSR in 2019, i.e., before the crisis phenomena and during the upward wave of the economic cycle in Russia, was obtained.

$$\begin{cases} \text{MEOGTR} = -3841.9588 + 6.4151\text{MRRT}; \\ \text{MEEUTR} = -266.7926 + 1.2286\text{MRRT}; \\ \text{METLTR} = -696.4171 + 1.7241\text{MRRT}; \\ \text{MEMMTR} = 3149.8212 + 2.9289\text{MRRT}; \\ \text{MEFNTR} = -2908.516 + 3.8183\text{MRRT}; \\ \text{MECNTR} = 4524.4384 + 1.2179\text{MRRT}; \\ \text{MECHTR} = 6999.4721 + 6.3355\text{MRRT}; \\ \text{METNTR} = 680.8269 + 0.6096\text{MRRT}. \end{cases} \quad (1)$$

Model (1) shows that growth of expenditures for CSR by RUB 1 in the conditions of the COVID-19 crisis in 2020 lead to a decrease in financial risks of Russian companies in the sphere of oil and gas of RUB 6.4151, in the sphere of electric energy—RUB 1.2286, in the sphere of telecommunications—RUB 1.7241, in the sphere of metals and mining—RUB 2.9289, in the sphere of finance—RUB 3.8183, in the consumer sector—RUB 1.2179, in the sphere of chemicals and petrochemicals—RUB 6.3355, and in the sphere of transport—RUB 0.6096. The F-test and *t*-test were passed for all regression equations in the model (1), which confirms their reliability and high quality.

The conducted stationarity test (augmented Dickey–Fuller test, ADF) showed that variables in all regression equations in the model (1) are stationary. Residual analysis (calculations according to the Durbin–Watson coefficient: Durbin–Watson test) was conducted according to the statistics of residuals, collected in Table A3, and showed the following results:

- In the equation for MEOGTR, d = 752,280.8/14,415,761.5 = 0.0522;
- In the equation for MEEUTR, d = 116,871.3/1,071,588.5 = 0.1091;
- In the equation for METLTR, d = 177,770.8/2,290,170.1 = 0.0776;
- In the equation for MEMMTR, d = 685,485.7/10,331,955.0 = 0.0663;
- In the equation for MEFNTR, d = 728,376.1/5,123,522.8 = 0.1422;
- In the equation for MECNTR, d = 433,671.2/6,010,721.4 = 0.0721;
- In the equation for MECHTR, d = 5,947,387.9/99,022,936.8 = 0.0601;
- In the equation for METNTR, d = 87,707.6/1,520,538.80 = 0577.

Since the test statistics in all cases did not exceed the critical value (at the level of significance of 0.01 at n = 244 and m = 1), there is no correlation of residuals, i.e., the residuals are independent. Therefore, the assumption is confirmed, and the Durbin–Watson test was successfully passed for the model (1). In aggregate, the conducted tests show the correctness of the model (1).

According to the analysis in Table 2, during the COVID-19 crisis in 2020, the financial risks of companies were most closely and strongly associated with CSR in the following

sectors of the Russian economy: oil and gas (correlation: 93.21%), transportation (75.60%), and electric power (70.68%). A moderate connection between the financial risks of companies and their CSR was observed in the finance (67.16%), telecommunications (42.22%), consumer sector (37.58%), metals and mining (32.64%), and chemicals and petrochemicals sectors (22.06%).

The arithmetic mean of the correlation coefficients was 55.14%, indicating a fairly strong relationship between the financial risks of Russian companies and their CSR in 2020 during the COVID-19 crisis. The following regression model (regression equation system) was derived to express the dependence of sectoral indices on CSR in 2020 (i.e., under the conditions of the COVID-19 crisis in Russia):

$$\begin{cases} \text{MEOGTR} = -1516.2993 + 5.1207\text{MRRT}; \\ \text{MEEUTR} = 824.0550 + 0.9651\text{MRRT}; \\ \text{METLTR} = 2455.8347 + 0.7104\text{MRRT}; \\ \text{MEMMTR} = 5926.6541 + 3.1771\text{MRRT}; \\ \text{MEFNTR} = -1669.9188 + 4.8979\text{MRRT}; \\ \text{MECNTR} = 2272.5401 + 2.8852\text{MRRT}; \\ \text{MECHTR} = 20,976.3526 + 1.8942\text{MRRT}; \\ \text{METNTR} = -223.1091 + 0.9465\text{MRRT}. \end{cases} \quad (2)$$

Model (2) indicates that with an increase in CSR expenditure by 1 ruble during the COVID-19 crisis in 2020, the financial risks of Russian companies decreased by RUB 5.1207 in the oil and gas sector, by RUB 0.9651 in the electric power sector, by RUB 0.7104 in the telecommunications sector, by RUB 3.1771 in the metals and mining sector, by RUB 4.8979 in the finance sector, by RUB 2.8852 in the consumer sector, by RUB 1.8942 in the chemicals and petrochemicals sector, and by RUB 0.9465 in the transportation sector. Fisher's F-test and Student's *t*-test were passed for all regression equations in the model (2), confirming their reliability and high quality.

The conducted stationarity test (augmented Dickey–Fuller test, ADF) showed that variables in all regression equations in the model (2) are stationary. Residual analysis (calculations according to the Durbin–Watson coefficient: Durbin–Watson test) was conducted according to the statistics of residuals, collected in Table A4, and showed the following results:

- In the equation for MEOGTR, d = 894,335.0/32,965,482.0 = 0.0271;
- In the equation for MEEUTR, d = 207,655.1/7,762,864.4 = 0.0267;
- In the equation for METLTR, d = 309,059.0/19,361,368.6 = 0.0160;
- In the equation for MEMMTR, d = 4,534,133.7/704,458,766.6 = 0.0064;
- In the equation for MEFNTR, d = 3,532,639.1/242,981,642.0 = 0.0145;
- In the equation for MECNTR, d = 1,926,712.8/421,109,421.8 = 0.0046;
- In the equation for MECHTR, d = 10,147,837.7/583,446,800.9 = 0.0174;
- In the equation for METNTR, d = 206,205.7/5,588,871.0 = 0.0369.

Since test statistics in all cases did not exceed the critical value (at the level of significance of 0.01 at n = 250 and m = 1), the correlation of residuals is absent, i.e., residuals are independent. Therefore, the assumption is confirmed, and the Durbin–Watson test was successfully passed for the model (2). In aggregate, the conducted tests point to the correctness of the model (2).

The results of the analysis in Table 3 indicate that during the sanctions crisis in 2022, the financial risks of companies were most closely and strongly associated with CSR in the following sectors of the Russian economy: transportation (98.05%), oil and gas (correlation: 95.87%), finance (93.90%), and metals and mining (93.47%). A moderate

connection between companies' financial risks and their CSR was observed in the consumer sector (85.61%), electric power (84.94%), telecommunications (50.53%), and chemicals and petrochemicals (46.52%).

The arithmetic mean of the correlation coefficients during the sanctions crisis in 2022 was 81.11%, indicating an increased correlation between the financial risks of Russian companies and their CSR compared to the COVID-19 crisis in 2020. The following regression model (regression equation system) was derived to express the dependence of sectoral indices on CSR in 2022 under the conditions of the sanctions crisis in Russia:

$$\begin{cases} \text{MEOGTR} = 3114.8040 + 3.5571\text{MRRT}; \\ \text{MEEUTR} = 1215.9815 + 0.5403\text{MRRT}; \\ \text{METLTR} = 2722.9867 + 0.4270\text{MRRT}; \\ \text{MEMMTR} = -3275.7411 + 8.0743\text{MRRT}; \\ \text{MEFNTR} = -3397.8040 + 6.3290\text{MRRT}; \\ \text{MECNTR} = 2790.5066 + 2.7764\text{MRRT}; \\ \text{MECHTR} = 66,668.0524 - 4.9891\text{MRRT} \\ \text{METNTR} = -4.3705 + 0.6676\text{MRRT}. \end{cases} \quad (3)$$

Model (3) indicates that with an increase in CSR expenditure by 1 ruble during the sanctions crisis in 2022, the financial risks of Russian companies decreased by RUB 3.5571 in the oil and gas sector, by RUB 0.5403 in the electric power sector, by RUB 0.4270 in the telecommunications sector, by RUB 8.0743 in the metals and mining sector, by RUB 6.3290 in the finance sector, by RUB 2.7764 in the consumer sector, increased by RUB 4.9891 in the chemicals and petrochemicals sector, and decreased by RUB 0.6676 in the transportation sector. Fisher's F-test and Student's *t*-test were passed for all regression equations in the model (3), confirming their reliability and high quality.

The conducted stationarity test (augmented Dickey–Fuller test, ADF) showed that variables in all regression equations in the model (3) are stationary. Residual analysis (calculations according to the Durbin–Watson coefficient: Durbin–Watson test) was conducted according to the statistics of residuals, and collections in Table A5, and showed the following results:

- In the equation for MEOGTR, d = 2,893,469.5/40,340,900.1 = 0.0717;
- In the equation for MEEUTR, d = 353,611.3/4,085,107.0 = 0.0866;
- In the equation for METLTR, d = 1,511,454.4/19,274,395.5 = 0.0784;
- In the equation for MEMMTR, d = 10,504,632.2/341,826,058.0 = 0.0307;
- In the equation for MEFNTR, d = 6,690,311.7/194,638,088.3 = 0.0344;
- In the equation for MECNTR, d = 3,805,991.1/101,794,223.4 = 0.0374;
- In the equation for MECHTR, d = 1,123,228,498.1/3,266,176,986.7 = 0.3439;
- In the equation for METNTR, d = 124,922.0/649,411.3 = 0.1924.

Since test statistics in all cases did not exceed the critical value (at the level of significance of 0.01 at n = 232 and m = 1), the correlation of residuals is absent, i.e., the residuals are independent. Therefore, the assumption is confirmed, and the Durbin–Watson test was successfully passed for the model (3). In aggregate, the conducted tests point to the correctness of the model (3).

According to Table 4, during the growth of the Russian economy in 2024, the financial risks of companies were most closely and strongly associated with CSR in the following sectors: oil and gas (correlation: 91.77%), consumer sector (90.87%), metals and mining (84.02%), and telecommunications (82.97%). A moderate connection between companies' financial risks and their CSR was observed in the electric power (73.36%), transportation (67.89%), finance (60.30%), and chemicals and petrochemicals (35.12%) sectors.

The arithmetic mean of the correlation coefficients in Russia in 2024 was 73.29%, indicating a less tight connection between the financial risks of Russian companies and their CSR during the economic growth phase compared to the sanctions crisis in 2022 but a stronger connection compared to the COVID-19 crisis in 2020. The following regression model (regression equation system) was derived to express the dependence of sectoral indices on CSR in 2024, during the growth phase of the Russian economy:

$$\begin{cases} \text{MEOGTR} = 1965.5639 + 6.1255\text{MRRT}; \\ \text{MEEUTR} = 1260.5276 + 0.8604\text{MRRT}; \\ \text{METLTR} = -1999.6414 + 2.9469\text{MRRT}; \\ \text{MEMMTR} = -333.2809 + 6.3961\text{MRRT}; \\ \text{MEFNTR} = 9560.7505 + 2.4703\text{MRRT}; \\ \text{MECNTR} = -2343.7590 + 6.2593\text{MRRT}; \\ \text{MECHTR} = 412,393.7939 + 13.0524\text{MRRT}; \\ \text{METNTR} = 822.8065 + 0.8623\text{MRRT}. \end{cases} \quad (4)$$

Model (4) indicates that with an increase in CSR expenditure by RUB 1 in 2024, during the economic growth phase in Russia, the financial risks of Russian companies decreased by RUB 6.1255 in the oil and gas sector, by RUB 0.8604 in the electric power sector, by RUB 2.9469 in the telecommunications sector, by RUB 6.3961 in the metals and mining sector, by RUB 2.4703 in the finance sector, by RUB 6.2593 in the consumer sector, by RUB 13.0524 in the chemicals and petrochemicals sector, and by RUB 0.8623 in the transportation sector. Fisher's F-test and Student's *t*-test were passed for all regression equations in the model (4), confirming their reliability and high quality.

The conducted stationarity test (augmented Dickey–Fuller test, ADF) showed that variables in all regression equations in the model (4) are stationary. The residual analysis (calculations according to the Durbin–Watson coefficient: Durbin–Watson test) was conducted according to the statistics of residuals collected in Table A6 and showed the following results:

- In the equation for MEOGTR, d = 521,816.1/8,324,948.0 = 0.0627;
- In the equation for MEEUTR, d = 85,536.1/751,749.1 = 0.1138;
- In the equation for METLTR, d = 309,954.6/4,651,225.3 = 0.0666;
- In the equation for MEMMTR, d = 890,478.8/20,165,228.2 = 0.0442;
- In the equation for MEFNTR, d = 2,259,052.5/12,639,413.3 = 0.1787;
- In the equation for MECNTR, d = 893,446.2/9,777,932.3 = 0.0914;
- In the equation for MECHTR, d = 29,909,976.3/1,432,499,811.2 = 0.0209;
- In the equation for METNTR, d = 124,452.3/1,028,941.4 = 0.1210.

Since test statistics in all cases did not exceed the critical value (at the level of significance of 0.01 at n = 130 and m = 1), the correlation of residuals is absent, i.e., residuals are independent. Therefore, the assumption is confirmed, and the Durbin–Watson test was successfully passed for the model (4). In aggregate, the conducted tests point to the correctness of the model (4).

A systemic view of CSR's contribution to reducing the financial risks of companies across various economic sectors in Russia during different phases of the economic cycle is illustrated in Figure 1.

As shown in Figure 1, the contribution of CSR to reducing the financial risks of companies in Russia's oil and gas sector is greatest in 2024 (during the growth phase: RUB 6.1), though it is also significant in 2020 (RUB 5.1) and 2022 (RUB 3.6). In the electric power sector, the contribution of CSR to reducing financial risks of companies in Russia is greatest in 2020 (during the crisis phase: RUB 1.0) and is similarly moderate in 2022 (RUB 0.5) and 2024 (RUB 0.9).

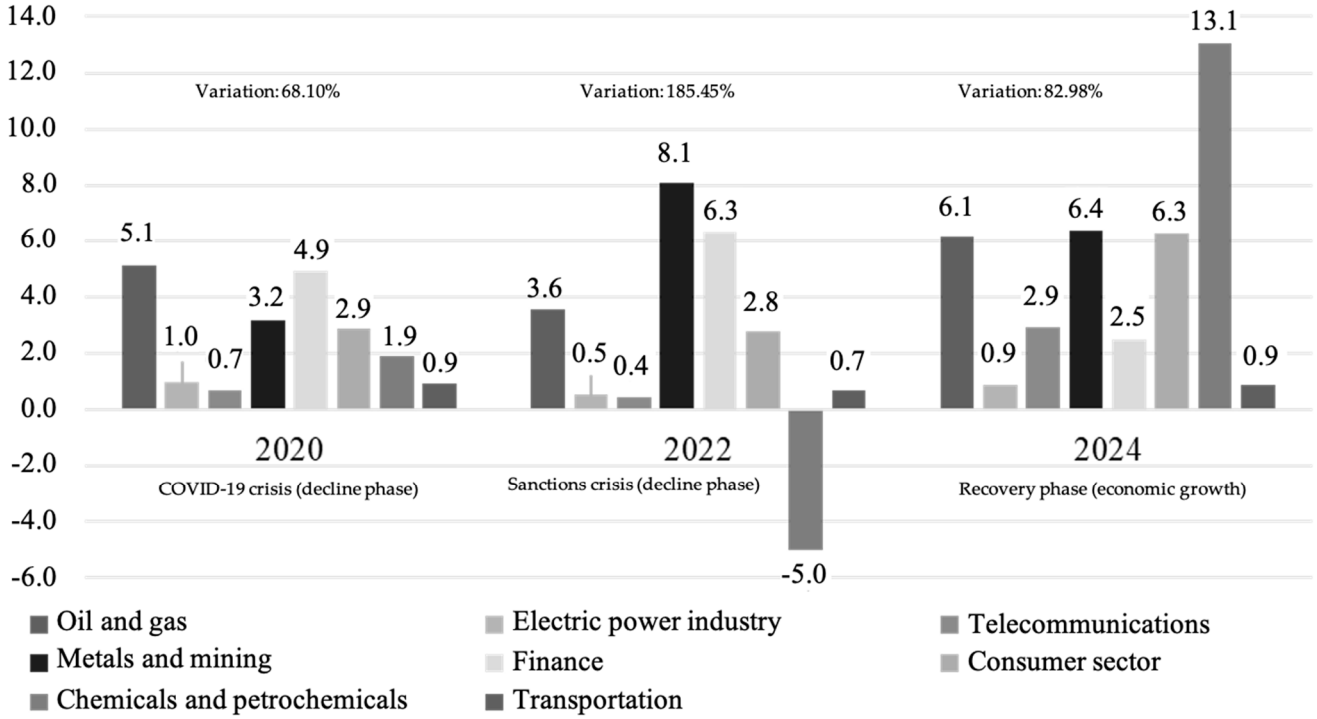


Figure 1. The contribution of CSR to the reduction in companies' financial risks by industries in Russia at different phases of the economic cycle (rubles). *Source*: calculated and developed by the authors.

In the telecommunications sector, the contribution of CSR to reducing the financial risks of companies in Russia is greatest in 2024 (financial risk during the growth phase: RUB 2.9) and is much weaker during the crisis phases in 2020 (RUB 0.7) and 2022 (RUB 0.4). In the metals and mining sector, the contribution of CSR to reducing the financial risks of companies in Russia is greatest in 2022 (financial risk during the sanctions crisis: RUB 8.1), though it is also significant in 2020 (financial risk during the crisis phase: RUB 3.2) and 2024 (financial risk during the growth phase: RUB 6.4).

In the finance sector, the contribution of CSR to reducing the financial risks of companies in Russia is greatest during the crisis phase—in 2022 (RUB 6.3) and 2020 (RUB 4.9). It is also significant during the growth phase in 2024 (RUB 2.5). In the consumer sector, the contribution of CSR to reducing the financial risks of companies in Russia is greatest in 2024 (financial risk during the growth phase: RUB 6.3). It is also significant in 2020 (RUB 2.9) and 2022 (RUB 2.8).

In the chemicals and petrochemicals sector, the contribution of CSR to reducing the financial risks of companies in Russia is greatest in 2024 (during the growth phase: RUB 13.1). However, it is less significant during the crisis phases—moderate in 2020 (RUB 1.9) and negative in 2022 (RUB −5.0). In the transportation sector, the contribution of CSR to reducing financial risks of companies in Russia is moderate and generally equivalent during the crisis phases—in 2020 (RUB 0.9) and 2022 (RUB 0.7). During the growth phase in 2024, it is also moderate (RUB 0.9).

The variation in the regression coefficients exceeded 50% in all three studied periods: 68.10% in 2020 (COVID-19 crisis), 185.45% in 2022 (sanctions crisis), and 82.98% in 2024 (economic growth in Russia). This proves hypothesis H and confirms that the contribution of CSR to reducing the financial risks of companies is highly differentiated across various sectors of the Russian economy and across the phases of the economic cycle.

To take into account the influence of international economic sanctions, as a risk factor (unpredictability of variability and uncertainty) of entrepreneurial activities in the modern economic conditions, a forecast of CSR of Russian companies (MRRT index) is compiled

for 2025. For this, given the arithmetic mean for the sample (130 observations) for 2024 (RUB 2508.2057) and standard deviation (RUB 95.7718), 100 random numbers were generated. They are given in Appendix A Table A7. The histogram of their normal distribution is presented in Figure 2.

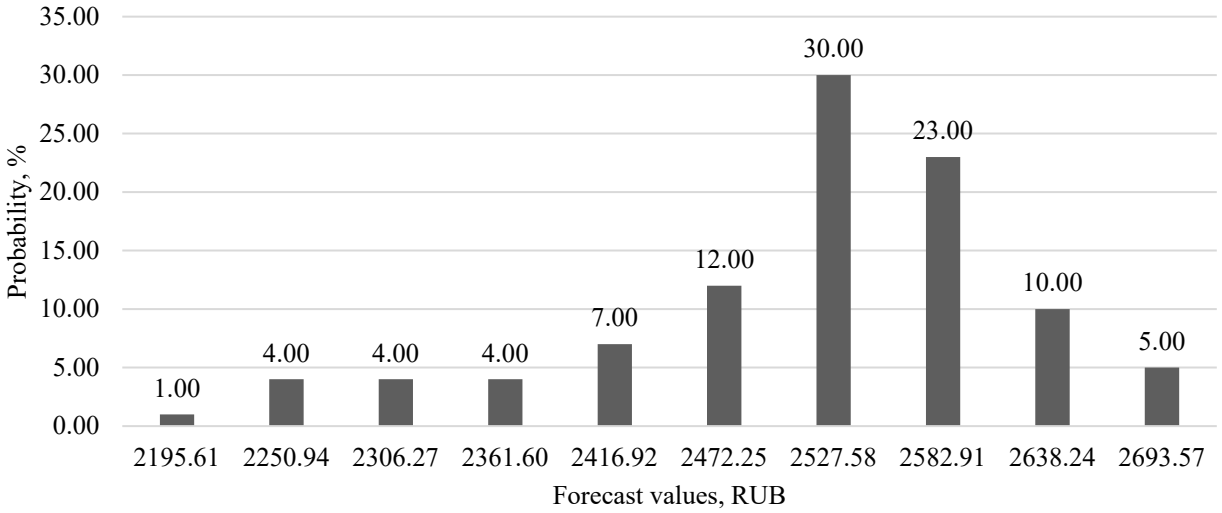


Figure 2. Forecast of CSR of Russian companies (MRRT index) for 2025. *Source:* calculated and compiled by the authors.

Forecast values of the MRRT index from Figure 2 were inserted, one by one, into the model (4), which allowed compiling two groups of alternative scenarios of changes in CSR of Russian companies by sectors of the Russian economy in 2025 (Table 5).

Table 5. Results of the scenario analysis: alternative forecasts for 2025.

Group of unlikely scenarios—their total probability: 1 + 4 + 4 + 4 + 7 = 20%											
Indices	Values in 2024	Probability: 1%		Probability: 4%		Probability: 4%		Probability: 4%		Probability: 7%	
		Values, RUB	Growth, %	Values, RUB	Growth, %	Values, RUB	Growth, %	Values, RUB	Growth, %	Values, RUB	Growth, %
MRRT	2508.21	2195.61	−12.46	2250.94	−10.26	2306.27	−8.05	2361.60	−5.85	2416.92	−3.64
MEOGTR	17,329.59	15,414.76	−11.05	15,753.68	−9.09	16,092.61	−7.14	16,431.53	−5.18	16,770.45	−3.23
MEEUTR	3418.48	3149.53	−7.87	3197.13	−6.47	3244.74	−5.08	3292.34	−3.69	3339.94	−2.30
METLTR	5391.80	4470.60	−17.09	4633.65	−14.06	4796.70	−11.04	4959.75	−8.01	5122.80	−4.99
MEMMTR	15,709.38	13,709.97	−12.73	14,063.86	−10.47	14,417.76	−8.22	14,771.65	−5.97	15,125.54	−3.72
MEFNTR	15,756.73	14,984.52	−4.90	15,121.20	−4.03	15,257.88	−3.17	15,394.56	−2.30	15,531.24	−1.43
MECNTR	13,355.93	11,399.27	−14.65	11,745.60	−12.06	12,091.92	−9.46	12,438.25	−6.87	12,784.58	−4.28
MECHTR	74,032.00	69,951.82	−5.51	70,674.01	−4.54	71,396.19	−3.56	72,118.38	−2.58	72,840.56	−1.61
METNTR	2985.58	2716.04	−9.03	2763.75	−7.43	2811.46	−5.83	2859.16	−4.23	2906.87	−2.64
Group of highly probable scenarios—their total probability: 12 + 30 + 23 + 10 + 5 = 80%											
Indices	Values in 2024	Probability: 12%		Probability: 30%		Probability: 23%		Probability: 10%		Probability: 5%	
		Values, RUB	Growth, %	Values, RUB	Growth, %	Values, RUB	Growth, %	Values, RUB	Growth, %	Values, RUB	Growth, %
MRRT	2508.21	2472.25	−1.43	2527.58	0.77	2582.91	2.98	2638.24	5.18	2693.57	7.39
MEOGTR	17,329.59	17,109.37	−1.27	17,448.29	0.68	17,787.21	2.64	18,126.13	4.60	18,465.05	6.55
MEEUTR	3418.48	3387.55	−0.90	3435.15	0.49	3482.75	1.88	3530.36	3.27	3577.96	4.67
METLTR	5391.80	5285.86	−1.96	5448.91	1.06	5611.96	4.08	5775.01	7.11	5938.06	10.13
MEMMTR	15,709.38	15,479.43	−1.46	15,833.32	0.79	16,187.21	3.04	16,541.10	5.29	16,894.99	7.55
MEFNTR	15,756.73	15,667.92	−0.56	15,804.60	0.30	15,941.28	1.17	16,077.96	2.04	16,214.63	2.91
MECNTR	13,355.93	13,130.90	−1.68	13,477.23	0.91	13,823.55	3.50	14,169.88	6.09	14,516.20	8.69
MECHTR	74,032.00	73,562.75	−0.63	74,284.93	0.34	75,007.12	1.32	75,729.30	2.29	76,451.49	3.27
METNTR	2985.58	2954.58	−1.04	3002.29	0.56	3050.00	2.16	3097.71	3.76	3145.42	5.35

Source: calculated and compiled by the authors.

As shown in Table 5, in the group of unlikely scenarios (their total probability equals 20%), the most probable (7%) scenario is the one involving the reduction in Russian companies' expenditures for CSR by 3.64% in 2025 (down to RUB 2416.92) This will lead to a significant growth of financial risks of Russian companies: in the oil and gas sphere—by 3.23% (MEOGTR = RUB 16,770.45), in the sphere of electric energy—by 2.30% (MEEUTR = RUB 3339.94), in the sphere of telecommunications—by 4.99% (METLTR = RUB 5122.80), in the sphere of metals and mining—by 3.72% (MEMMTR = RUB 15,125.54), in the sphere of finance—by 1.43% (MEFNTR = RUB 15,531.24), in the consumer sector—by 4.28% (MECNTR = RUB 12,784.58), in the sphere of chemical and petrochemicals—by 1.61% (MECHTR = RUB 72,840.56), and in the transport sphere—by 2.64% (METNTR = RUB 2906.87).

In the group of highly probable scenarios (their total probability equals 80%), the most probable (30%) scenario is the one involving an increase in the expenditures of Russian companies for CSR by 0.77% in 2025 (up to RUB 2527). This will lead to a reduction in financial risks of Russian companies: in the oil and gas sphere—by 0.68% (MEOGTR = RUB 17,448.29), in the sphere of electric energy—by 0.49% (MEEUTR = RUB 3435.15), in the sphere of telecommunications—by 1.06% (METLTR = RUB 5448.91), in the sphere of metals and mining—by 0.79% (MEMMTR = RUB 15,833.32 RUB), in the sphere of finance—by 0.30% (MEFNTR = RUB 15,804.60), in the consumer sector—by 0.91% (MECNTR = RUB 13,477.23), in the sphere of chemicals and petrochemicals—by 0.34% (MECHTR = RUB 74,284.93), and in the transport sphere—by 0.56% (METNTR = RUB 3002.29).

5. Materials and Methods

To reliably study the experience of Russian companies across different economic sectors, this research utilizes data on the dynamics of the gross total return indices (in Russian rubles) of sectoral stocks:

- MOEX Index (2024f) for oil and gas: MEOGTR;
- MOEX Index (2024c) for electric power: MEEUTR;
- MOEX Index (2024h) for telecommunications: METLTR;
- MOEX Index (2024e) for metals and mining: MEMMTR;
- MOEX Index (2024d) for finance: MEFNTR;
- MOEX Index (2024b) for the consumer sector: MECNTR;
- MOEX Index (2024a) for chemicals and petrochemicals: MECHTR;
- MOEX Index (2024i) for transportation: METNTR.

Financial risks of companies are measured using the values of these indices. The higher the index value, the lower the financial risks of the companies. Conversely, a decrease in the index values indicates an increase in financial risks. The sample of companies for the studied indices is presented in Table A1. The dynamics of the values of these indices are shown in Table A2.

The statistical data were collected through systematization of the daily value of the above stock indices and their unification into one table with data—a time row. Data reliability is confirmed by the fact that they were taken from the official website of the Moscow Exchange. An important value of the collected data for the research goals is explained by the fact that the statistics used fully conform to the authors' definition of CSR and ensure quantitative measurability of CSR and risks of companies, as well as their compatibility due to the common—financial—measuring.

To determine the impact of CSR on the financial risks of companies across Russian economic sectors, the authors applied regression analysis. The selected statistical method is suitable for the search for the answer to the research question posed and for data analysis, since it allows establishing not only interconnection (as the correlation method)

but also mutual dependence (through regression coefficients) of the indicators and, thus, mathematically describing the regularities of changes in the financial risks of Russian companies in the course of an increase in their expenditures for CSR.

This method models the regression dependence of the values of the indices above (dependent variables) on the MOEX Index (2024g) for "Responsibility and Openness": MRRT (independent variable). The research model is as follows:

$$ME = a + b \times MRRT \quad (5)$$

The reliability of the regression models is determined using Fisher's F-test, which shows the quality of the coefficient of determination, and Student's *t*-test, which reflects the reliability of regression coefficients. Correlation coefficients are also considered. The general adequacy of models consists of satisfying the Gauss-Markov conditions, which are set onto residuals (homoskedasticity and stationarity), which are also tested for robustness.

To have a clear idea of the correctness of the regression equations, we additionally conducted, first, stationarity analysis with the help of the augmented Dickey–Fuller test (ADF), which allows establishing whether variables show unit roots or are stationary. Stationarity is the fundamental assumption in time series analysis; as is known, a violation of this assumption may lead to imprecise and unreliable results.

Second, the residual test assesses the consent criterion and determines the potential problems with the model. The residual test is performed in this paper by studying residuals for autocorrelation with calculations according to the Durbin–Watson coefficient (Durbin–Watson test).

The values of the selected stock indices for this research are calculated from 2013 to 2024. To determine the most preferred periods for conducting this research, for the most complete accounting of the cyclicity factor, the authors refer to the dynamics of Russia's economic growth rates from 2013 to 2024 (Figure 3).

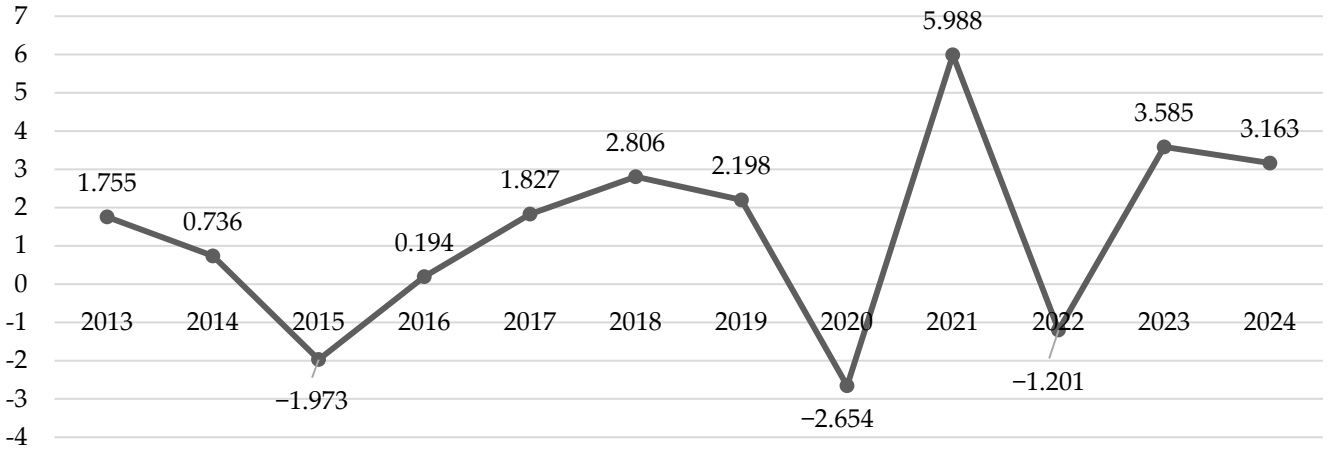


Figure 3. Gross domestic product in Russia from 2013 to 2024 (constant prices in per cent change). *Source*: developed by the authors based on the materials from the International Monetary Fund (2024).

According to Figure 3, a negative economic growth rate in Russia was observed in 2015. However, this was not an officially recognized international economic crisis. Given the remoteness of this period, it is not considered relevant for this research. In recent years, Russia experienced the COVID-19 crisis in 2020, when the GDP declined by −2.654%, and the sanctions crisis in 2022, when the GDP fell by −1.201%. It is also pertinent to consider the current experience of 2024 as a phase of economic growth for Russia: the World Bank predicts a GDP growth rate of 3.163% for Russia in 2024. To cover historical information, we additionally took into account the data for 2019, i.e., before the crisis phenomena on the upward wave of the economic cycle in Russia.

The contribution of CSR to reducing financial risks is measured by the regression coefficient b in the research model (1). The proposed hypothesis is tested using variance analysis. Hypothesis H is considered proven if the variance of the regression coefficients exceeds 50% in all three studied periods: 2020 (COVID-19 crisis), 2022 (sanctions crisis), and 2024 (economic growth of Russia).

To take into account the influence of international economic sanctions as a risk factor (unpredictability of variability and uncertainty) of entrepreneurial activities in modern economic conditions, a forecast of CSR of Russian companies (MRRT index) for 2025 is compiled. For this, given the arithmetic mean for the sample for 2024 and standard deviation, 100 random numbers are generated, and a histogram of their normal distribution is built. Given the probabilities, alternative scenarios are compiled by inserting forecast values into the regression model for 2024.

6. Discussion and Conclusions

The research contributes to the literature, including the works of Karbekova et al. (2023), Kitsai et al. (2023), and Samieva et al. (2023), by advancing the scientific concept of managing financial risks of companies through CSR, refining the specifics of this management across different economic sectors and at various phases of the economic cycle (in its two-phase model). The new scientific results obtained in this research are systematized and compared with the existing literature in Table 6.

Table 6. Contribution of the research to the scientific literature on corporate financial risk management through CSR.

Industry	Contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies in the industry		
	Contribution growth, %		Qualitative interpretation of the contribution
	2022/2020	2024/2020	
Oil and gas	−30.53	72.20	The contribution is greatest in the growth phase
Electric power	−44.01	59.22	The contribution is greatest in the COVID-19 crisis
Telecommunications	−39.90	590.21	The contribution is greatest in the growth phase
Metals and mining	154.14	−20.79	The contribution increases over time, regardless of the phase of the cycle
Finance	29.22	−60.97	The contribution is greatest in the context of the sanctions crisis
Consumer sector	−3.77	125.45	The contribution is most significant in the growth phase
Chemicals and petrochemicals	−363.39	−361.62	The contribution is greatest in the growth phase
Transportation	−29.47	29.16	The contribution is moderately pronounced and equal in both phases of the cycle

Source: developed by the authors.

As shown in Table 6, unlike Alekseev et al. (2019), the research substantiated that in the oil and gas sector, the contribution (regression coefficient) of CSR to the financial risk management and sustainable development of companies was greatest during the growth phase. It decreased by 30.53% in 2022 compared to 2020 but increased by 72.20% in 2024 compared to 2020.

In contrast to Velinov et al. (2020), the authors substantiated that in the electric power sector, the contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies was greatest during the COVID-19 crisis: it decreased by 44.01% in 2022 compared to 2020 but increased by 59.22% in 2024 compared to 2020.

Compared to Arkin et al. (2020), it is proven that in the telecommunications sector, the contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies was greatest during the growth phase: it decreased by 39.90% in 2022 compared to 2020 but sharply increased by 590.21% in 2024 compared to 2020.

Unlike Karlibaeva and Nyangarika (2023), the authors proved that in the metals and mining sector, the contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies increased over time, regardless of the cycle phase: it sharply increased by 154.14% in 2022 compared to 2020. However, it decreased by 20.79% in 2024 compared to 2020.

In contrast to Kantor et al. (2023), it is proven that in the finance sector, the contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies was most significant during the sanctions crisis: it increased by 29.22% in 2022 compared to 2020 but decreased by 60.97% in 2024 compared to 2020.

Compared to Abdurakhmanova et al. (2021) and Turginbayeva et al. (2020), it is substantiated that in the consumer sector, the contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies was greatest during the growth phase: it decreased by 3.77% in 2022 compared to 2020 but increased by 125.45% in 2024 compared to 2020.

In contrast to Ye and Dela (2023), the research proved that in the chemicals and petrochemicals sector, the contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies was greatest during the growth phase: it sharply decreased by 363.39% in 2022 compared to 2020 and by 361.62% in 2024 compared to 2020.

In contrast to Sultanova and Babakhanova (2023), the authors found that in the transportation sector, the contribution (regression coefficient) of CSR to financial risk management and sustainable development of companies was moderately expressed and equivalent in both phases of the cycle: it decreased by 29.47% in 2022 compared to 2020 but increased by 29.16% in 2024 compared to 2020.

The main conclusion of this article is that the contribution of CSR to reducing companies' financial risks is highly differentiated across economic sectors and phases of the economic cycle. As a result, the article proves hypothesis H, confirms the assumptions and continues the scientific discussion (Ai et al. 2024; Gao 2024; Raimi et al. 2024), provides an answer to the research question (RQ), and fills a gap in the literature. The theoretical significance of the results obtained in the article in continuation of the series of works by Safón and Iborra (2023), Sandoval et al. (2022), Thiemann (2022), and Wang et al. (2023) lies in revealing a new sectoral perspective on counter-cyclical managing companies' financial risks through CSR, which allowed for an in-depth study of the causal relationships of this management for the sustainable development of companies.

The practical significance is that the results obtained by the authors revealed previously unknown best practices for the sustainable development of companies from different Russian economic sectors under the conditions of COVID-19 (2020) and the sanctions crisis (2022), as well as during economic growth (2024). The systematized experience, presented in the form of economic–mathematical models, will be useful for forecasting companies' financial risks in future economic crises in Russia and for improving the practice of planning and organizing counter-cyclical management of Russian companies through CSR.

The managerial significance of the author's conclusions is that they will help to increase the flexibility and efficiency of corporate financial risk management by more fully accounting for sectoral specificity and economic cyclicity when implementing CSR. Implications for Russian companies are connected with the necessity to use not a general (which does not take into account sectoral specifics) but a sectoral counter-cyclical approach to financial risk management based on CSR for the sustainable development of companies.

A limitation of the results obtained is that they were obtained based on the data until 2024, while the revealed trend of an increase in the significance of CSR for reducing the financial risks of Russian companies in the course of aggravation of the world sanctions crisis allows expecting further growth of the contribution of CSR to reducing the financial risks of Russian companies in 2025.

The compiled authors' forecast and scenarios for 2025 are based on the 2024 experience, while, given the announced increase in international economic sanctions in 2025, the fight against financial risks might require from Russian companies much larger expenditures for CSR. That is why, to deal with the mentioned limitations, future research should collect and analyze newer data on MRRT and sectoral stock indices in Russia to specify changes in CSR's contribution to the financial risk management of Russian companies.

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Appendix A

Table A1. Sample of companies.

Index Name	Index Abbreviation	Number of Companies Included in the Index	Top 5 Companies Included in the Index
MOEX Oil and Gas Gross Total Return Index	MEOGTR	11	Rosneft (ROSN)
			Tatneft (TATNP)
			Tatneft (TATN)
			Russneft (RNFT)
			Bashneft (BANEP)
MOEX Electric Power Gross Total Return Index	MEEUTR	17	MosEnergo (MSNG)
			TGK-2 (TGKB)
			Rosseti Center (MRKC)
			DVEK
			Rosseti Severo Zapad (MRKZ)
MOEX Telecommunications Gross Total Return Index	METLTR	5	Tattelecom (TTLK)
			Moscow City Telephone Network (MGTSP)
			Rostelecom (RTKMP)
			MTS (MTSS)
			Rostelecom (RTKMP)
MOEX Metals and Mining Gross Total Return Index	MEMMTR	15	Raspadskaya (RASP)
			Mechel (MTLRP)
			Seligdar (SELG)
			VSMPO-AVISMA Corporation (VSMO)
			Mechel (MTLR)

Table A1. *Cont.*

Index Name	Index Abbreviation	Number of Companies Included in the Index	Top 5 Companies Included in the Index
MOEX Finance Gross Total Return Index	MEFNTR	12	MTS Bank (MBNK)
			MCB (CBOM)
			Zaimer (ZAYM)
			SFI (SFIN)
			TCS Group Holding (TCSG)
MOEX Consumer Sector Gross Total Return Index	MECNTR	15	EuroTrans (EUTR)
			SOLLERS (SVAV)
			EuroMedCenter GDR (GEMC)
			Inarktika (AQUA)
			Henderson (HNFG)
MOEX Chemicals and Petrochemicals Gross Total Return Index	MECHTR	6	Nizhnekamskneftekhim (NKNCP)
			OrgSint (KZOS)
			PhosAgro (PHOR)
			Kuibyshevazot (KAZT)
			Acron (AKRN)
MOEX Transportation Gross Total Return Index	METNTR	6	FESCO (FESH)
			Novorossiysk Grain Plant (NKHP)
			GlobalTrans (GLTR)
			Aeroflot (AFLT)
			Novorossiysk Commercial Sea Port (NMPT)
MOEX—RSPP Responsibility and Openness Index	MRRT	27	Rosneft (ROSN)
			Aeroflot (AFLT)
			Tatneft (TATN)
			Mechel (MTLR)
			MCB (CBOM)

Source: Developed by the authors based on the materials from MOEX Index (2024a, 2024b, 2024c, 2024d, 2024e, 2024f, 2024g, 2024h, 2024i).

Table A2. Index values (closing) in 2020, 2022, and 2024 (rubles).

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
3 January 2019	8888.88	2053.9	2633.38	8866.92	6878.5	6697.63	19,286.44	1878.4	1916.22
4 January 2019	8992.21	2063.08	2700.5	8911.17	6914.25	6713.01	19,322.29	1872.54	1943.41
8 January 2019	8927.61	2050.97	2715.87	8813.6	6895.19	6711.04	19,164.61	1879.62	1927.97
9 January 2019	8955.31	2076.97	2733.87	8970.62	6962.97	6727.01	19,209.2	1895.24	1952.17
10 January 2019	9069.05	2093.44	2769.77	9042.64	6984.73	6764.34	19,159.33	1940.77	1966.47
11 January 2019	9097.82	2109.41	2754.98	9114.67	7063.1	6809.37	19,218.73	1940.46	1974.96
14 January 2019	9082.76	2105.88	2743.75	9051.03	7070.11	6818.19	19,420.47	1965.23	1968.9
15 January 2019	9068.37	2110.43	2749.66	8994.41	7106.59	6882.52	19,524.26	1972.33	1963.63
16 January 2019	9013.64	2136.53	2771.31	8961.63	7163.82	6890.83	19,481.64	1994.72	1957.53
17 January 2019	9039.3	2149.48	2779.75	8970.89	7178.76	6958.88	19,495.57	2004.41	1965.21
18 January 2019	9104.87	2149.77	2798.98	9025.22	7361.22	7012.9	19,472.42	1974.45	1982.39
21 January 2019	9083.65	2147.04	2823.02	9001.58	7367.35	7013.11	19,576.65	1959.43	1978.13
22 January 2019	9084.38	2141.71	2802.91	8960.42	7367.83	7055.36	19,469.97	1953.96	1971.3

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
23 January 2019	9182.79	2176.52	2857.12	8982.58	7422.73	7102.82	19,567.87	1957.52	1985.34
24 January 2019	9074.46	2184.65	2853.45	8922.73	7363.49	7089.03	19,409.63	1955.24	1977.93
25 January 2019	9184.69	2196.37	2841.03	8990.98	7356.32	7102.68	19,560.99	1963.23	1988.74
28 January 2019	9123.24	2172.13	2806.51	8938.69	7325.44	7064.82	19,577.79	1966.29	1971.09
29 January 2019	9205.81	2178.53	2821.88	8944.31	7417.74	7033.99	19,591.44	1967.93	1989.74
30 January 2019	9270.65	2183.8	2829.74	8990.37	7428.44	7008.23	19,598.63	2003.53	2005.57
31 January 2019	9251.78	2193.47	2821.88	9044.3	7516.88	7015.41	19,588.07	1989.82	2011.41
1 February 2019	9247.82	2199.27	2828.77	9104.46	7530.01	7032.87	19,708.43	1953.67	2010.28
4 February 2019	9268.87	2216.38	2842.33	9135.46	7539.07	7008.85	19,637.08	1923.68	2013.45
5 February 2019	9377.82	2218.14	2858.06	9191.81	7540.72	7028.11	19,698.63	1919.79	2035.14
6 February 2019	9318.69	2206.52	2843.35	9205.12	7498.91	7059.76	19,673.74	1921.62	2028.29
7 February 2019	9229.76	2187.68	2829.38	9168.88	7379.41	7025.85	19,622.1	1913.45	2004.22
8 February 2019	9185.1	2201.75	2774.43	9135.5	7395.55	7027.24	19,571.7	1914.71	2001.34
11 February 2019	9161.78	2210.09	2751.84	9146.2	7444.58	7034.74	19,600.66	1920.18	2007.07
12 February 2019	9233.05	2215.35	2785.48	9181.3	7510.74	7062.6	19,577.06	1935.05	2026.36
13 February 2019	9026.77	2202.68	2769.5	9050.82	7373.92	7014.76	19,397.66	1900.04	1986.32
14 February 2019	8975.12	2193.02	2788.95	9101.41	7225.78	6997.77	19,673.69	1922.35	1965.49
15 February 2019	9113.48	2200.88	2820.43	9148.18	7314.52	6989.17	19,660.63	1941.18	1987.81
18 February 2019	9059.55	2188.93	2766.41	9130.47	7254.32	6954.88	19,626.08	1923.44	1972.94
19 February 2019	9039.17	2183.46	2739.56	9084.95	7215.32	6923.24	19,555.47	1906.73	1966.01
20 February 2019	9120.18	2187.79	2742.6	9191.71	7280.59	6968.52	19,772.02	1908.14	1991.12
21 February 2019	9085.31	2176	2727.83	9119.58	7212.74	6918.4	19,681.04	1906.16	1975.11
22 February 2019	9155.18	2191.91	2730.37	9178.15	7241.77	6928.02	19,745.86	1907.26	1991.21
25 February 2019	9102.96	2189.71	2745	9291.96	7258.23	6932.51	19,796.2	1904.88	2000.93
26 February 2019	9107.43	2190.56	2758.58	9334.02	7239.33	6870.68	19,890.58	1893.39	2000.76
27 February 2019	9113.98	2180.12	2758.69	9283.22	7247.5	6801.51	19,869.09	1874.22	1997.57
28 February 2019	9040.8	2162.66	2761.81	9259.09	7257.46	6822.83	19,862.65	1864.83	1993.14
1 March 2019	8999.99	2167.55	2758.61	9192.13	7276.3	6848.89	19,576.54	1857.47	1983.79
4 March 2019	9002.64	2176.79	2783.72	9117.01	7289.69	6843.88	19,717.56	1876.85	1979.91
5 March 2019	8960.44	2152.83	2786.73	9108.56	7229.47	6846.51	19,693.39	1847.09	1971.97
6 March 2019	9045.5	2159.27	2797.22	9220.34	7295.75	6862.92	19,731.44	1878.75	2000.51
7 March 2019	8970.19	2148.41	2776.29	9168.53	7333.54	6806.29	19,882.25	1894.92	1986.9
11 March 2019	8899.68	2150.06	2789.71	9149.3	7349.62	6821.69	20,386.79	1925.18	1978.2
12 March 2019	8870.18	2161.3	2798.39	9207.41	7358.39	6833.37	20,313.05	1906.1	1984.71
13 March 2019	8878.38	2168.79	2820.08	9218.81	7388.76	6789.02	20,340.01	1911.1	1984.86
14 March 2019	8844.95	2157.82	2810.51	9208.66	7343.87	6704.64	20,290.64	1890.51	1975.53
15 March 2019	8931.78	2162.48	2814.69	9247.69	7466.16	6736.26	20,191.68	1894.86	1989.81
18 March 2019	8948.34	2158.63	2854.69	9310.11	7417.02	6768.51	20,100.68	1894.27	1995.28
19 March 2019	9007.15	2153.87	2838.1	9285.09	7398.13	6742.81	20,099.56	1887.46	2000.61
20 March 2019	9085.12	2154.23	2800.29	9213.38	7393.5	6749.93	19,994.51	1871.37	2008.86
21 March 2019	9115.56	2158.94	2882.24	9232.13	7390.41	6737.38	19,810	1861.04	2018.45
22 March 2019	9073.61	2149.34	2858.1	9199.38	7308.32	6755.92	19,753.88	1873.79	2007.6
25 March 2019	9037.84	2147.36	2833.18	9153.38	7405.5	6778.51	19,571.09	1863.3	2010.85
26 March 2019	9049.83	2156.78	2845.12	9190.76	7444.64	6864.05	19,679.71	1869.2	2018.13
27 March 2019	8991.03	2143.31	2799.48	9094.54	7365.92	6766.33	19,509.78	1854.82	1995.36
28 March 2019	9027.76	2140.94	2786.46	9092.53	7375.81	6827.99	19,517.74	1876.06	1993.03

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
29 March 2019	9092.41	2141.42	2754.24	9124.82	7369.86	6807.73	19,757.5	1876.95	2001.47
1 April 2019	9168.93	2156.19	2769.4	9181.11	7430.93	6796.45	19,773.13	1897.26	2023.3
2 April 2019	9157.38	2155.11	2800.1	9226.36	7453.39	6839.64	19,802.23	1903.88	2031.74
3 April 2019	9162.93	2161.5	2806.54	9196.45	7451.16	6864.12	19,675.95	1908.8	2035.71
4 April 2019	9150.74	2159.04	2839.37	9166.02	7468.52	6874.91	19,728.81	1908.83	2040.65
5 April 2019	9123.08	2163.33	2858.34	9157.37	7504.16	6866.19	19,858.12	1929.03	2047.73
8 April 2019	9191.97	2171.66	2833.28	9180.02	7527.67	6849.58	19,735.49	1914.39	2060.39
9 April 2019	9199.24	2188.24	2842.55	9149.33	7564.23	6866.39	19,704.35	1897.3	2068.3
10 April 2019	9199.02	2209.63	2827.64	9119.4	7682.03	6829.99	19,756.01	1892.94	2077.19
11 April 2019	9148.72	2198.75	2832.86	8991.58	7589.57	6841.04	19,702.47	1901.19	2052.64
12 April 2019	9182.24	2202.39	2821.43	9087.18	7552.83	6850.61	19,631.12	1900.54	2063.54
15 April 2019	9099.89	2205.34	2826.8	9007.85	7533.79	6852.35	19,512.75	1906.34	2051.42
16 April 2019	9209.06	2219.97	2806.94	9122.01	7559.13	6879.08	19,730.28	1910.83	2066.83
17 April 2019	9236.11	2224.92	2813.14	9118.69	7549.97	6936.02	19,750.2	1903.83	2073.36
18 April 2019	9217.7	2220.49	2822.48	9130.35	7532.67	6923.91	19,663.41	1893.55	2067.9
19 April 2019	9220.14	2224.13	2829.54	9159.69	7543.28	6954.02	19,701.69	1890.62	2069.89
22 April 2019	9323.61	2236.43	2838.28	9194.31	7567.34	6954.82	19,635.73	1898.12	2090.92
23 April 2019	9323.48	2246.32	2830.75	9083.47	7542.64	7026.62	19,647.06	1882.83	2091.85
24 April 2019	9287.97	2245.99	2820.33	9079.81	7554.46	7035.53	19,592.25	1880.79	2085.45
25 April 2019	9290	2235.33	2791.79	9066.32	7444.29	7116.59	19,584.82	1880.38	2071.78
26 April 2019	9373.52	2232.07	2806.98	9152.39	7412.21	7086.12	19,477.33	1889.69	2076.78
29 April 2019	9343.1	2237.45	2796.61	9086.33	7483.26	7084.64	19,414.32	1886.99	2079.99
30 April 2019	9311.85	2235.14	2790.49	9067.28	7431.59	7150.2	19,423.82	1864.76	2066.3
2 May 2019	9317.92	2239.11	2850.5	9115.97	7486.36	7185.12	19,479.71	1875.5	2079.41
3 May 2019	9358.74	2242.28	2871.46	9140.78	7535.51	7218.74	19,481.06	1872.31	2077.57
6 May 2019	9356.07	2239.64	2858.95	9170.9	7563.46	7177.7	19,458.52	1842.73	2078.66
7 May 2019	9286.85	2254.66	2844.29	9160.54	7553.26	7210.02	19,254.2	1838.06	2065.94
8 May 2019	9188.49	2250.38	2850.05	9105.72	7504.57	7151.87	19,169.87	1832.29	2054.58
10 May 2019	9085.94	2229.47	2798.89	8943.11	7436.92	7089.82	18,888.2	1817.16	2032.16
13 May 2019	9090.05	2232.21	2802.68	8889.76	7444.82	7064.26	19,167.97	1789.14	2032.81
14 May 2019	9285.21	2249.01	2828.23	8858.86	7484.52	7080.56	19,120.36	1781.11	2075.93
15 May 2019	9224.04	2249.81	2829.62	8836.07	7509.7	7052.32	18,967.31	1776.1	2071.2
16 May 2019	9331.49	2258.32	2842.31	8801.86	7504.62	7106	19,079.19	1808.27	2093.81
17 May 2019	9324.51	2274.28	2845.13	8768.3	7502.46	7171.63	19,293.1	1823.76	2085.27
20 May 2019	9341.1	2298.53	2840.1	8741.2	7512.9	7179.01	19,356.73	1807.15	2080.32
21 May 2019	9515.96	2315.91	2823.87	8810.77	7562.15	7146.61	19,225.46	1805.76	2123.46
22 May 2019	9611.27	2323.44	2838.45	8872.16	7614.11	7145.83	19,325.03	1802.79	2145.84
23 May 2019	9600.39	2316.28	2861.16	8801.79	7685.9	7038.22	19,411.47	1801.64	2131.97
24 May 2019	9573.46	2336.05	2853.56	8870.23	7670.55	7099.89	19,481.66	1798.45	2135.05
27 May 2019	9615.37	2318.01	2876.66	8904.12	7725.91	7143.19	19,475.39	1802.64	2148.12
28 May 2019	9572.38	2330.66	2821.28	8985.09	7639.19	7090.61	19,520.5	1795.1	2132.28
29 May 2019	9716.91	2334.57	2833.4	8990.73	7657.81	7169.2	19,778.79	1802.17	2152.12
30 May 2019	9831.84	2343.27	2846.09	9014.48	7662.7	7191.51	19,960.41	1792.7	2163.17
31 May 2019	9839.79	2330.75	2821.94	9036.62	7649.1	7204.22	20,052.4	1841.51	2170.42
3 June 2019	10,055.62	2327.44	2845.73	9085.09	7726.05	7259.07	20,110.27	1884.52	2222.5
4 June 2019	9959.58	2339.36	2855.8	9127.48	7736.3	7246.22	19,972.74	1876.93	2197.09

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
5 June 2019	9867.9	2354.98	2847.87	9097.66	7840.14	7275.45	20,047.74	1874.8	2190.37
6 June 2019	9924.78	2392.95	2889.53	9181.43	7948.75	7301.37	20,155.02	1875.25	2213.19
7 June 2019	9892.17	2421.7	2891.3	9196.32	7993.03	7273.2	20,296.66	1876.49	2213.86
10 June 2019	9940.47	2438.31	2902.42	9236.38	8070.96	7269.7	20,219.1	1870.99	2224.43
11 June 2019	10,071.76	2448.54	2944.77	9414.72	8123.88	7318.65	20,354.19	1875.83	2235.01
13 June 2019	10,010.34	2487.64	2941.12	9489.54	8200.69	7334.27	20,509.2	1915.19	2246.47
14 June 2019	9948.02	2527.47	2946.46	9513.15	8154.19	7287.46	20,466.19	1916.12	2231.01
17 June 2019	9932.16	2566.05	2953.32	9448.17	8132.61	7292.09	20,387.38	1958.75	2225.27
18 June 2019	10,016.07	2604.28	3003.6	9576.92	8183.35	7320.71	20,498.35	1942.29	2249.07
19 June 2019	9968.36	2634.39	3022.77	9618.02	8179.39	7289.2	20,496.69	1946.14	2245.22
20 June 2019	10,116.53	2651.7	3049.98	9675.26	8235.35	7323.08	20,546.82	1943.7	2255.69
21 June 2019	10,087.52	2615.38	3035.62	9687.88	8232.95	7317.83	20,558.28	1953.28	2242.81
24 June 2019	10,041.32	2651.5	3049.64	9693.35	8258.7	7317.12	20,602.71	1970	2241.31
25 June 2019	10,016.06	2601.16	3054.86	9726.22	8231.98	7292.04	20,894.31	1974.32	2232.65
26 June 2019	10,108.27	2590.07	3110.51	9712.52	8268.86	7371.87	21,113.45	1975.93	2247.17
27 June 2019	10,160.33	2613.06	3092.01	9698.69	8251.46	7362.46	21,377.14	1987.23	2252.52
28 June 2019	10,154.99	2602.47	3098.45	9582.23	8232.39	7302.11	21,010.77	1983.46	2242.57
1 July 2019	10,238.77	2643.66	3104.9	9513.17	8322.04	7318	20,977.1	1980.76	2267.23
2 July 2019	10,263.39	2640.8	3067.92	9606.67	8331.28	7391.54	21,068.87	1987.21	2270.35
3 July 2019	10,320.56	2660.22	3088.66	9620.24	8357.3	7415.22	21,036.32	2044.41	2278.19
4 July 2019	10,440.57	2649.52	3087.48	9638.69	8436.8	7420.9	21,107.58	2162.43	2296.75
5 July 2019	10,395.84	2637.88	3109.49	9678.02	8464.61	7438.37	21,109.59	2152.91	2290.84
8 July 2019	10,400.1	2615.47	3141.76	9731.8	8568.38	7467.98	21,239.91	2147.45	2275.83
9 July 2019	10,433.09	2597.65	3159.84	9650.4	8557.56	7457.47	21,292.65	2121.79	2278.55
10 July 2019	10,401.78	2608.27	3141.35	9595.79	8600.16	7497.61	21,088.87	2145.49	2279.07
11 July 2019	10,276.72	2561.67	3124.44	9464.34	8572.07	7442.23	20,810.85	2127.43	2252.89
12 July 2019	10,220.04	2581.41	3135.33	9476.28	8516.17	7507.29	20,971.71	2135	2237.33
15 July 2019	10,119.56	2580.1	3141.19	9507.27	8532.87	7510.67	21,082.29	2131.35	2222.57
16 July 2019	10,143.56	2536.28	3123.52	9551.37	8431.73	7533.02	20,993.77	2110.53	2222.37
17 July 2019	10,200.36	2549.15	3104.99	9572.83	8382.21	7486.92	20,752.76	2120.05	2202.35
18 July 2019	10,123.27	2549.31	3104.04	9619.01	8361.25	7498.29	20,750.68	2113.34	2196.89
19 July 2019	10,121.83	2540.79	3119.52	9638.25	8355.04	7498.38	20,783.97	2127.12	2196.74
22 July 2019	10,068.17	2516.01	3106.53	9635.91	8368.98	7411.86	20,842.09	2122.75	2187.76
23 July 2019	10,162.19	2524.94	3139.74	9620.72	8361.11	7454.26	20,918.11	2122.57	2199.02
24 July 2019	10,097.77	2527.11	3134.5	9627.83	8299.8	7443.95	20,878.32	2099.52	2185.74
25 July 2019	10,164.79	2561.59	3134.3	9675.41	8388.41	7398.5	20,856.8	2109.94	2202.12
26 July 2019	10,225.28	2545.59	3131.8	9584.39	8335.22	7406.49	20,788.7	2110.24	2213.78
29 July 2019	10,306.54	2567.04	3132.65	9589.18	8368.65	7372.47	20,800.79	2098.14	2223.91
30 July 2019	10,280.87	2548.32	3150	9584.2	8431.53	7373.72	20,858.05	2081.19	2227.7
31 July 2019	10,328.99	2547.82	3127.69	9575.41	8391.24	7399.31	20,900.3	2088.48	2231.63
1 August 2019	10,331.77	2541.07	3120.56	9493.43	8355.84	7452.79	20,982.47	2095.5	2216.43
2 August 2019	10,150.76	2512.82	3096.62	9415.79	8233.64	7367.65	21,110.61	2074.84	2170.11
5 August 2019	10,029.59	2476.4	3059.08	9398.56	8239.98	7221.12	21,032.96	2040.35	2155.9
6 August 2019	10,165.64	2485.8	3082.51	9447.1	8309.35	7266.73	21,245.88	2055.26	2183.98
7 August 2019	10,121.94	2481.09	3073.78	9523.18	8248.76	7304.64	21,284.89	2070.25	2180.73
8 August 2019	10,196.52	2487.06	3077.7	9535.52	8281.41	7260.12	21,563.28	2120.97	2203.1

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
9 August 2019	10,153.26	2471.33	3064.54	9449.28	8203.82	7267.36	21,721	2125.9	2182.09
12 August 2019	10,159.74	2454.38	3068.95	9514.7	8222.15	7280.1	21,658.15	2151.48	2188.4
13 August 2019	10,133.47	2449.8	3059.38	9353.42	8181.9	7294.26	21,532.39	2151.62	2179.44
14 August 2019	9948.84	2429.87	3049.63	9347.22	8046.93	7263.57	21,680.91	2166.38	2144.85
15 August 2019	9903.27	2411.27	3044.59	9339.99	7974.61	7266.75	21,735.5	2176.71	2135.32
16 August 2019	9885.2	2408.11	3023.23	9265.34	7908.51	7310.95	21,865.08	2155.15	2125.27
19 August 2019	9982.57	2404.41	3037.72	9341.16	8034.65	7339.58	21,858.97	2140.86	2150.4
20 August 2019	10,106.56	2413.07	3034.75	9436.62	8029.41	7369.27	21,681.55	2139.7	2175.62
21 August 2019	10,080.09	2442.89	3037.87	9435.5	8063.8	7393.2	21,370.37	2168.62	2177.65
22 August 2019	10,052.48	2446.63	3041.51	9465.35	8032.63	7392.05	21,280.84	2151.86	2184.33
23 August 2019	9991.81	2431.91	3037.37	9513.92	8062.24	7342.03	21,301.41	2130.36	2171.56
26 August 2019	9990.13	2436.91	3086.88	9576.07	8052.72	7344.43	21,672.5	2133.71	2170.59
27 August 2019	9974.88	2444.03	3079.68	9716	8120.5	7337.96	21,529.87	2129.11	2164.62
28 August 2019	10,038.24	2462.03	3115.23	9742.8	8135.98	7348.52	21,649.46	2132.79	2181.48
29 August 2019	10,156.5	2492.93	3110.09	9804.24	8193.58	7420.32	21,934.6	2133.2	2211.7
30 August 2019	10,224.03	2506.99	3126.07	9987.79	8206.04	7537.07	22,189.15	2146.95	2232.4
2 September 2019	10,450.92	2522.56	3128.56	9984.7	8284.05	7535.31	22,246.33	2128.14	2257.2
3 September 2019	10,659.61	2522.6	3122.68	9960.75	8247.58	7506.96	22,199.93	2122.92	2242.65
4 September 2019	10,700.52	2541.08	3186.18	9980.63	8493.82	7515.51	22,225.96	2124.66	2259.41
5 September 2019	10,672.24	2563.47	3201.38	9982.36	8466.24	7558.76	22,153.61	2116.83	2276.36
6 September 2019	10,666.3	2556.24	3177.33	9944.08	8458.34	7517.53	22,274.67	2098.92	2266.52
9 September 2019	10,614.79	2557.09	3180.24	9907.22	8418.71	7489.74	22,336.14	2126.3	2256.66
10 September 2019	10,579.5	2559.64	3139.3	9900.76	8498.7	7519.25	22,473.31	2111.12	2253.01
11 September 2019	10,736.27	2568.47	3145.6	10,007.25	8550.52	7566.2	22,631.6	2126.26	2271.77
12 September 2019	10,642.17	2595.51	3114.68	10,001.13	8540.59	7540.2	22,513.01	2122.1	2253.57
13 September 2019	10,630.22	2663.86	3134.33	9920.97	8516.41	7527.87	22,399.16	2124.22	2244.04
16 September 2019	10,907.06	2649.63	3144.5	10,015.34	8548.9	7484.86	22,629.79	2064.68	2284.91
17 September 2019	10,834.1	2608.11	3145.22	10,027.06	8528.84	7473.23	22,725.04	2080.23	2277.11
18 September 2019	10,785.59	2622.16	3148.43	10,077.31	8515.02	7448.27	22,612.66	2078.99	2281.23
19 September 2019	10,706.55	2604.77	3142.35	9946.17	8509.68	7329.76	22,483.96	2066.34	2261.54
20 September 2019	10,765.21	2589.09	3169.47	9939.92	8462.74	7299.92	22,346.65	2081.09	2270.19
23 September 2019	10,767.07	2583.46	3140.5	9879.42	8427.54	7280.56	22,120.49	2076.7	2264.83
24 September 2019	10,634.48	2538.93	3103.16	9836.46	8376	7251.22	21,794.26	2061.5	2238.3
25 September 2019	10,646.85	2520.95	3094.76	9865.45	8356.48	7249.94	21,824.76	2063.54	2246.32
26 September 2019	10,717.05	2540.29	3108.25	9907.44	8404.57	7311.67	21,860.89	2074.84	2263.21
27 September 2019	10,653.89	2537.7	3107.63	9817.71	8370.59	7272.17	21,867.56	2083.74	2252
30 September 2019	10,594.59	2544.13	3095.49	9856.28	8344.94	7252.2	22,086.19	2077.48	2243.1
1 October 2019	10,676.42	2520.12	3091.01	9813.29	8321.83	7270.19	22,067.19	2078.75	2250.07
2 October 2019	10,519.38	2463.79	3072.06	9716.11	8148.65	7192.81	22,074.88	2055.9	2220.42
3 October 2019	10,471.07	2483.41	3078.86	9644.07	8130.36	7104.76	22,005.99	2025.37	2212.31
4 October 2019	10,461.9	2481.9	3083.07	9614.23	8108.49	7072.38	22,099.8	2016.27	2192.6
7 October 2019	10,599.23	2483.39	3102.74	9597.65	8210.46	7044.19	22,244.58	2013.09	2215.66
8 October 2019	10,573.88	2484	3061.21	9651.92	8118.67	7029.67	22,334.66	2017.25	2206.19
9 October 2019	10,599.74	2488.05	3136.23	9660.99	8141.23	7047.33	22,478.5	2030.66	2208.17
10 October 2019	10,676.84	2504.82	3168.06	9731.94	8189.12	7033.32	22,555.29	2046.9	2218.48
11 October 2019	10,774.46	2492.99	3202.07	9701.89	8206.63	6762.74	22,373.37	2026.01	2227.23

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
14 October 2019	10,721.72	2480.63	3180.25	9621.49	8162.41	6779.35	22,642.92	2071.18	2214.9
18 October 2019	10,892.38	2534.42	3214.03	9826.57	8343.64	6890.24	22,632.95	2099.83	2265.04
21 October 2019	10,920.3	2527.88	3201.08	9782.86	8392.32	6925.24	22,390.36	2098.72	2263.69
22 October 2019	11,071.02	2551	3229.83	9783.56	8439.03	6983.14	22,401.24	2082.56	2296.03
30 October 2019	11,630.48	2511	3384.93	10,183.49	8505.3	7028.31	22,070.55	2129.22	2385.4
31 October 2019	11,568	2498.44	3355.29	10,158.69	8427.72	7028.35	22,053.31	2140.43	2368.84
1 November 2019	11,774.55	2511.18	3370.6	10,218.56	8493.26	7103.28	22,066.07	2118.62	2394.54
5 November 2019	11,874.81	2538.97	3405.3	10,212.52	8599.78	7197.28	22,099.01	2133.22	2407.61
6 November 2019	12,002.55	2571.96	3421.15	10,374.4	8582.83	7262.01	22,223.89	2135.41	2433.49
7 November 2019	12,160.05	2577.63	3490.58	10,388.17	8633.12	7294.42	22,312.86	2141.16	2461.44
8 November 2019	11,981.16	2570.3	3498.69	10,229.33	8688.41	7267.47	22,182.72	2148.46	2429.47
11 November 2019	11,999.15	2589.76	3477.21	10,098.64	8771.99	7277.05	22,068.89	2143	2410.16
12 November 2019	11,982.82	2579.02	3537.78	10,073.06	8757.68	7296.04	22,124.12	2136.08	2400.16
13 November 2019	11,908.1	2589.91	3504.14	10,093.1	8753.65	7274.07	22,033.4	2126.58	2383.7
14 November 2019	11,860.7	2563.99	3481.63	9996.09	8735.95	7209.76	21,968.35	2139.65	2372.32
15 November 2019	11,829.99	2561.07	3511.25	10,021.44	8771.67	7231.52	21,874.61	2143.84	2387.55
18 November 2019	11,698.09	2570.08	3486.18	9975.97	8708.27	7299.33	21,876.89	2163.16	2359.75
19 November 2019	11,763.9	2600.95	3563.09	10,029.8	8766.59	7328.41	21,945.85	2155.95	2377.09
20 November 2019	11,732.14	2588.82	3560.37	10,038.54	8768.17	7310.05	21,921.04	2129.18	2372.8
21 November 2019	11,748.92	2578.19	3561.7	9968.29	8744.36	7259.56	21,755.52	2129.77	2379.17
22 November 2019	11,787.93	2586.43	3549.57	10,003.39	8815.92	7257.8	21,790.76	2131.32	2378.27
25 November 2019	11,781.92	2618.98	3584.95	10,023.86	8816.09	7283.99	21,847.1	2148.84	2381.81
26 November 2019	11,635.04	2599.07	3556.27	9956.24	8829.89	7234.79	22,058.17	2145.14	2360.25
27 November 2019	11,588.36	2592.8	3569.15	9983.36	8876.5	7285.1	21,963.09	2147.02	2354.85
28 November 2019	11,571.77	2583.51	3569.24	9977.34	8850.4	7263.5	21,954.2	2130.53	2358.78
29 November 2019	11,570.3	2589.92	3549.62	10,003.16	8842.75	7319.57	21,959.54	2105.52	2358.67
2 December 2019	11,502.34	2600.16	3558.24	10,042.2	8820.66	7256.64	21,861.71	2104.72	2352.16
3 December 2019	11,340.15	2553.12	3528.57	10,002.51	8704.89	7226.47	21,735.13	2075.45	2325.63
4 December 2019	11,458.99	2554.93	3543.57	10,030.33	8772.52	7283.91	21,729.28	2079.84	2338.27
5 December 2019	11,419.01	2558.17	3545.35	10,107.96	8734.07	7317.21	21,637.53	2090.11	2341.03
6 December 2019	11,543.19	2577.46	3518.43	10,153.09	8831.83	7387.35	21,865.1	2095.96	2367.5
9 December 2019	11,608.04	2592.1	3531.02	10,261.06	8864.85	7391.76	21,870.95	2117.01	2382.51
10 December 2019	11,507.37	2605.82	3528.25	10,272.1	8827.08	7393.99	21,696.63	2101.98	2374.32
11 December 2019	11,608.42	2622.09	3550.65	10,407.23	8887.58	7421.02	21,704.89	2135.29	2388.98
12 December 2019	11,793.25	2624.48	3549.69	10,451.97	8952.29	7469.33	21,633.88	2155.54	2404.31
13 December 2019	11,803.34	2647.16	3543.05	10,525.27	9027.56	7521.95	21,880	2155.07	2419.88
16 December 2019	11,848.02	2647.43	3562.8	10,578.86	9038.26	7446.34	21,908.15	2158.67	2433.84
17 December 2019	11,910.24	2686.71	3607.91	10,580.18	9075.53	7479.65	21,929.89	2172.47	2439.72
18 December 2019	11,941.4	2721.83	3630.04	10,596.01	9099.49	7424.3	21,915.89	2171.59	2454.22
19 December 2019	11,930.44	2702.91	3617.66	10,627.6	9042.08	7401.54	21,977.04	2179.44	2446.64
20 December 2019	11,940.78	2698.39	3624.14	10,622.47	8942.83	7375.06	21,835.85	2163.35	2453.14
23 December 2019	12,034.96	2707.07	3624.16	10,635.47	9028.62	7416.05	21,891.44	2174.33	2453.84
24 December 2019	12,013.47	2721.34	3623.97	10,614.81	9013.27	7451.11	21,850.47	2159.96	2449.48
25 December 2019	12,002.36	2723.61	3662.76	10,651.19	8988.2	7486.25	21,865.8	2160.03	2455.29
26 December 2019	12,024.99	2720.15	3677.36	10,723.24	8980.71	7519.47	21,992.45	2182.92	2446.37
27 December 2019	12,081.39	2737.8	3680.64	10,798.57	9028.78	7549.5	22,135.89	2196.4	2465.57

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
30 December 2019	12,014.46	2727.68	3677.05	10,779.8	9072.4	7538.71	22,202.79	2190.47	2462.14
3 January 2020	12,171.11	2765.46	3702.86	10,924.18	9121.73	7565.77	22,576.86	2209.11	2488.5
6 January 2020	12,201.16	2779.66	3711.68	10,956.07	9099.6	7543.46	22,987.02	2217.87	2492.06
8 January 2020	12,322.45	2826.5	3757.87	11,011.11	9252.37	7543.69	23,794.52	2197.29	2526.92
9 January 2020	12,426.1	2874.14	3768.35	11,061.68	9290.67	7623.91	23,546.43	2213.05	2528.51
10 January 2020	12,424.19	2905.04	3723	11,157.37	9387.71	7674.21	23,293.23	2217.65	2530.82
13 January 2020	12,456.98	2967.99	3712.94	11,383.48	9509.32	7674.69	23,832.75	2247.14	2561.48
14 January 2020	12,376.71	3012.93	3701.81	11,363.41	9440.78	7638.03	23,835.69	2286.62	2535.11
15 January 2020	12,361.2	2976.49	3746.07	11,425.67	9447.65	7621.2	23,677.36	2308.12	2542.75
16 January 2020	12,434.53	3005.51	3754.54	11,481.72	9488.69	7747.79	23,799.31	2309.26	2564.77
17 January 2020	12,500.05	3062.33	3775.92	11,753.39	9572.89	7887.94	23,789.72	2318.52	2601.48
20 January 2020	12,534.66	3086.95	3835.64	11,851.5	9649.4	7997.15	23,765.73	2398.88	2616.01
21 January 2020	12,470.21	3050.13	3845.85	11,737.5	9683.89	7985.99	23,675.08	2373.67	2606.4
22 January 2020	12,230.13	3029.02	3884.62	11,610.17	9617.91	7973.7	23,373.77	2362.15	2575.26
23 January 2020	12,054.51	3025.24	3849.6	11,576.3	9549.24	7988.26	23,090.33	2372.12	2552.21
24 January 2020	12,031.9	3088.79	3910.64	11,612.2	9525.32	8031.73	23,188.53	2373.19	2556.7
27 January 2020	11,785.31	3010.84	3816.75	11,543.25	9271.42	7987.19	22,789.3	2289.55	2506.25
28 January 2020	11,882.94	3060.92	3820.17	11,526.35	9392.33	7988.7	22,873.61	2271.31	2527.81
29 January 2020	11,931.67	3115.77	3852.18	11,535.75	9473.21	8120.44	23,341.02	2272.91	2535.08
30 January 2020	11,845.88	3120.51	3879.39	11,498.73	9445.52	8139.47	23,381.87	2265.47	2511.21
31 January 2020	11,698.29	3056.85	3955.74	11,376.64	9360.5	8064.24	23,377.1	2249.73	2482.05
3 February 2020	11,593.54	3072.74	4005.66	11,252.61	9419.52	8062.01	23,322.98	2268.12	2478.48
4 February 2020	11,710.46	3107.7	4030.13	11,312.43	9596.49	8123.8	23,497.07	2315.9	2495.83
5 February 2020	11,742.31	3138.34	4027.54	11,398.19	9688.2	8121.73	23,413.05	2392.81	2512.48
6 February 2020	11,637.54	3112.39	4012.4	11,417.8	9677.23	8104.17	23,413.79	2423.55	2489.37
7 February 2020	11,473.92	3117.41	4004.59	11,525.16	9725.49	8054.75	23,450.2	2439.15	2477.16
10 February 2020	11,316.08	3109.42	4027.37	11,482.8	9694.4	7995.65	23,394.27	2422.84	2456.04
11 February 2020	11,487.08	3140.04	4060.26	11,543.33	9757.76	8002.42	23,349.83	2412.15	2487.99
12 February 2020	11,647.31	3213.71	4113.04	11,581.02	9742.1	8077.99	23,338.32	2441.11	2509.36
13 February 2020	11,582.51	3283.51	4093.26	11,543.76	9716.3	8081.63	23,278.78	2442.83	2494.8
14 February 2020	11,558.55	3295.4	4123.56	11,583.9	9690.24	8042.93	23,279.54	2442.65	2490.06
17 February 2020	11,672.91	3331.7	4129.36	11,599.73	9646.82	8064.06	23,404.86	2454.04	2508.32
18 February 2020	11,469.15	3258.47	4122.4	11,564.89	9560.97	7997.2	23,336.69	2410.15	2482.95
19 February 2020	11,658.97	3299.06	4189.09	11,709.42	9613.03	8054.04	23,391.97	2408.27	2521.42
20 February 2020	11,691.39	3302.86	4182.73	11,763.38	9660.04	8070.37	23,453.34	2391.63	2526.97
21 February 2020	11,549.31	3304.53	4183.84	11,863.09	9648.05	8029.99	23,364.81	2384.58	2510.38
25 February 2020	11,123.9	3175.79	4081.49	11,692.11	9418.8	7732.55	23,086.05	2291.62	2429.94
26 February 2020	11,126.25	3188.46	4085.88	11,626.11	9471.97	7693.47	23,021.61	2267.59	2445.27
27 February 2020	10,627.03	3033.07	3968.51	11,404.83	9194.71	7497.93	22,503.36	2132.63	2362.68
28 February 2020	10,194.15	2901.14	3885.98	10,755.55	8806.67	7291.36	22,031.41	1987.1	2250.39
2 March 2020	10,125.14	2939.91	3954.48	10,744.3	8711.47	7386.81	22,054.58	2016.07	2231.11
3 March 2020	10,329.04	3028.92	3962.24	10,874.17	8754.82	7438.91	22,222.34	2039.76	2284.34
4 March 2020	10,414.6	3008.3	3946.76	10,985.19	8768.21	7350.62	22,245.4	2016.76	2292.45
5 March 2020	10,323.83	2966.93	3937.33	11,044.15	8740.27	7408.06	22,586.58	1971.05	2278.84
6 March 2020	9907.64	2860.26	3816.63	11,102.6	7970.44	7135.24	22,115.54	1905.14	2218.28
10 March 2020	8807.8	2608.93	3543.09	11,209.73	7585.07	6694.1	22,591.55	1822.92	2031.23

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
11 March 2020	8783.76	2539.65	3499.65	11,097.24	7562.61	6704.35	22,592.82	1786.9	2011.33
12 March 2020	8086.98	2266.21	3230.13	10,235.76	6804.32	6144.53	21,399.29	1626.26	1838.83
13 March 2020	7926.74	2275.26	3198.24	10,130.86	7120.34	6300.15	21,151.48	1674.28	1854.71
16 March 2020	7807.4	2237.36	3199.54	9649.91	6897.29	6116.35	21,318.07	1574.2	1818.56
17 March 2020	7650.7	2185.51	3223.39	9572.25	6630.34	6036.48	21,608.54	1500.59	1780.95
18 March 2020	7161.95	2073.85	3108.51	9213.55	6300.95	6040.67	21,524.09	1358.58	1671.32
19 March 2020	7895.97	2177.81	3202.98	9546.16	6771.62	6307.13	21,975.5	1400.04	1814.52
20 March 2020	8092.74	2306.3	3281.57	9659.46	7008.24	6557.52	22,237.29	1506.6	1854.12
23 March 2020	7872.53	2321.23	3139.4	9515.75	6797.09	6553.88	22,496.21	1488.37	1793.69
24 March 2020	8433.92	2492.42	3323.12	10,481.03	7048.91	6747.99	23,015.9	1599.16	1945.04
25 March 2020	8650.15	2483.72	3315.45	10,846.13	6990.67	6733.01	23,036.24	1651.54	1985.09
26 March 2020	8822.25	2489.83	3405.81	11,116.54	6964.26	6857.81	23,345.49	1626.55	2007.66
27 March 2020	8435.37	2408.7	3418.5	10,844.63	6726.11	6725.72	22,953.33	1566.63	1925.61
30 March 2020	8477.53	2427.11	3515.03	11,194.03	6769.36	6852.87	23,395.58	1564.98	1944.56
31 March 2020	8898.05	2497.87	3564.85	11,343.75	7017.88	6976.33	23,683.73	1616.57	2004.56
1 April 2020	8857.04	2492.44	3527.53	10,993	6884.19	6908.11	23,699.5	1616.43	1973.75
2 April 2020	9327.78	2526.85	3549.92	11,118.04	6886.25	6935.34	23,879.54	1637.34	2039.99
3 April 2020	9527.59	2564.55	3528.41	11,121.34	6937.44	6967.1	23,917.71	1667.74	2065.98
6 April 2020	9635.56	2678.62	3677.97	11,462.5	7214.39	7126.71	23,882.36	1720.39	2105.14
7 April 2020	9574.78	2641.02	3697.92	11,541.25	7346.67	7129.04	23,974.3	1752.9	2118.4
8 April 2020	9672.44	2679.83	3748.12	11,647.31	7452.14	7258.66	24,425.72	1760.19	2146.21
9 April 2020	9794.21	2695.76	3715.33	11,945.91	7553.48	7223.59	24,510.5	1778.7	2181.49
10 April 2020	9684.92	2704	3718.71	11,897.48	7532.1	7212.36	24,406.04	1789.82	2157.37
13 April 2020	9455.02	2656.64	3678.82	11,815.6	7380.42	7127.3	24,415.53	1754.59	2114.56
14 April 2020	9294.19	2685.5	3721.27	12,090.52	7451.11	7214.19	24,733.09	1736.57	2111.01
15 April 2020	8761.98	2570.23	3643.23	11,531.75	7128.06	6953.01	24,654.27	1666.55	2000.22
16 April 2020	8815.51	2581.83	3640.64	11,633.37	7257.95	6956.73	24,647.12	1696.83	2008.27
17 April 2020	8903.01	2612.92	3661.48	11,599.67	7391.16	6945.06	24,747.6	1711.62	2028.91
20 April 2020	8776.29	2585.48	3664.78	11,670.92	7285.79	6947.35	24,852.53	1700.35	2020.69
21 April 2020	8627.9	2568.02	3615.6	11,631.43	7147.16	6866.02	25,105.44	1703.08	1985.1
22 April 2020	9017.63	2613.61	3692.33	11,922.57	7346.61	6972.4	25,586.79	1725.96	2055.06
23 April 2020	9139.72	2642.33	3743.57	12,048.35	7419.36	7013.81	25,220.08	1721.2	2080.09
24 April 2020	8965.89	2607.47	3673.08	11,966.21	7391.35	6935.25	25,213.92	1701.2	2049.73
27 April 2020	8940.86	2636.6	3733.26	12,005.48	7505.84	7087.15	25,278.96	1716.34	2049.27
28 April 2020	9131.31	2669.66	3780.59	12,061.11	7737.99	7147.62	25,488.59	1726.5	2079.68
29 April 2020	9375	2708.8	3843.2	12,012.12	7771.46	7259.99	25,223.55	1747.2	2125.72
30 April 2020	9270.65	2683.69	3839.13	12,083.49	7755.88	7303.32	24,745.97	1739.96	2110.13
4 May 2020	9187.03	2669.25	3815.81	11,948.21	7700.96	7299.25	24,921.83	1714.17	2085.78
5 May 2020	9372.74	2695.34	3850.77	11,947.02	7773.46	7299.84	24,813.18	1738.57	2110.92
6 May 2020	9236.8	2681.34	3824.49	11,889.09	7788.22	7279.22	24,888.36	1736.22	2092.72
7 May 2020	9253.25	2665.22	3849.05	11,893.22	7874.9	7336.16	24,757.1	1721.89	2090.74
8 May 2020	9296.54	2671.68	3901.42	11,912.56	7918.72	7340.6	24,760.43	1703.53	2094.09
12 May 2020	9316.47	2669.27	3881.01	11,874.74	7905.99	7286.09	24,723.88	1696.79	2103.9
13 May 2020	9125.44	2666.76	3817.99	11,820.74	7786.46	7237.64	24,748.24	1688.44	2071.52
14 May 2020	9234.36	2637.86	3801.1	11,727.29	7693.18	7119.84	24,657.95	1686.9	2056.37
15 May 2020	9253.65	2632.64	3819.2	11,753.7	7666.26	7112.89	24,786.11	1674.07	2058.47

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
18 May 2020	9657.52	2705.77	3883.75	12,067.49	7822.96	7269.55	24,720.31	1693.55	2150.76
19 May 2020	9722.73	2725.88	3911.8	12,070.83	7826.66	7297.6	24,902.09	1719.81	2171.8
20 May 2020	9978.84	2770.41	3957.28	12,303.35	7974.21	7389.99	25,045.84	1736.75	2233.47
21 May 2020	9672.56	2755.88	3912.79	12,091.55	7958.52	7359.07	24,848.55	1718.56	2188.07
22 May 2020	9663.27	2794.61	3899.29	12,128.62	7922.69	7374.75	25,169	1728.23	2175.1
25 May 2020	9871.31	2874.35	3949.97	12,359.41	8026.04	7464.21	25,384.77	1754.34	2213.44
26 May 2020	9878.54	2916.6	3941.7	12,232.73	8058.79	7446.92	25,291.06	1760.73	2213.44
27 May 2020	9771.37	2902.82	3886.3	12,171.2	8124.44	7427.84	25,397.01	1809.05	2204.78
28 May 2020	9849.12	2924.07	3873.8	12,435.09	8278.73	7536.97	25,732.6	1840.58	2237.73
29 May 2020	9612.6	2940.38	3841.66	12,324.81	8196.61	7429.7	25,632.65	1831.8	2200.44
1 June 2020	9704.88	2977.37	3842.95	12,350.34	8189.5	7497.05	26,001.51	1904.49	2213.35
2 June 2020	9895.73	3000.91	3919.26	12,309.17	8391.9	7613.45	26,153.68	1933.95	2252.3
3 June 2020	10,033.43	2999.99	3947.62	12,070.65	8564.6	7704.7	26,164.56	1972.49	2281.79
4 June 2020	9894.56	2962.15	3892.36	11,867.9	8419.03	7614.14	25,868.33	1944.95	2214.28
5 June 2020	10,027.74	2989.3	3915.81	11,711.74	8511.88	7667.99	25,948.38	2000.63	2242.19
8 June 2020	10,007.54	3027.69	3901.9	11,743.85	8547.14	7737.32	25,821.63	2088.77	2243.99
9 June 2020	10,060.74	2999.62	3941.19	11,822.06	8452.88	7701.96	25,888.01	2028.56	2241.12
10 June 2020	10,071.92	3021.31	3919.65	11,874.63	8399.37	7766.8	25,925.08	1984.98	2227.75
11 June 2020	9893.59	2971.2	3875.54	11,817.8	8310.05	7798.2	25,546.04	1939.72	2180.04
15 June 2020	9774.58	3008.92	3871.63	11,556.55	8356.37	7840.28	25,393.71	1936.62	2153.27
16 June 2020	9897.26	3066.26	3910.91	11,613.41	8457.04	7832.8	25,398.69	2078.87	2179.23
17 June 2020	9818.68	3062.69	3891.24	11,714.07	8427.97	7837.24	25,156.07	2013.85	2171.38
18 June 2020	9808.32	3059.95	3910.05	11,680.23	8423.26	7876.59	24,904.64	1952.51	2157.22
19 June 2020	9922.03	3066.13	3940.19	11,798.77	8471.93	8007.43	25,134.87	1963.84	2181.36
22 June 2020	9945.19	3068.98	3915.99	11,818.16	8508.28	8112.88	25,136.25	1947.45	2177.92
23 June 2020	9997.88	3084.53	3918.18	11,971.04	8623.96	8157.57	25,114.41	1951.01	2198.72
25 June 2020	9794.89	3027.09	3917.02	11,835.32	8604.7	8192.35	24,919.36	1921.07	2166.26
26 June 2020	9759.61	3004.34	3950.43	11,876.97	8565.76	8234.94	24,795.06	1900.19	2163.49
29 June 2020	9743.93	3019.96	3940.29	11,897.71	8582.74	8254.38	24,793.9	1950.43	2161.62
30 June 2020	9613.18	3006.21	3986.32	11,956.33	8515.13	8243.52	24,943.48	1940.48	2136.35
2 July 2020	9791.27	3064.59	3986.5	12,002.73	8687.96	8338.86	24,945.63	1947.58	2173.99
3 July 2020	9809.9	3082.99	4019.08	12,152.88	8710.68	8389.91	25,142.54	1939.1	2184.88
6 July 2020	9895.49	3112.56	4080.62	12,188.14	8928.85	8548.88	25,500.6	1942.86	2196.25
7 July 2020	9880.9	3083.88	4059.5	12,272.46	8914.66	8482.03	25,504.56	1932.2	2192.86
8 July 2020	9835.39	3096.05	4058.45	12,329.1	8794.52	8432.6	25,444.39	1933.97	2192.94
9 July 2020	9758.83	3079.89	4023.12	12,297.08	8839.63	8478.44	25,524.45	1934.42	2155.7
10 July 2020	9834.25	3084.39	4002.3	12,306.2	8960.65	8516.02	25,355.27	1948.26	2169.28
13 July 2020	9689.82	3092.95	4038	12,160.17	8955.87	8562.42	25,211.93	1950.71	2133.24
14 July 2020	9613.73	3041.71	4025.81	12,071.7	8926.11	8509.32	25,395.71	1938.99	2116.74
15 July 2020	9667.77	3037.32	4067.11	12,256.92	9053.63	8619.95	25,491.62	1964.58	2112.94
16 July 2020	9717.83	3027.28	4069.44	12,252.04	9097.01	8660.77	25,479.61	1972.08	2126.19
17 July 2020	9776.68	3069.68	4089.89	12,292.43	9150.71	8729.37	25,471.7	1989.2	2134.61
20 July 2020	9827.69	3157.95	4107.47	12,389.57	9269.22	8838.35	25,539.55	2009.71	2151.28
21 July 2020	9885.38	3206.58	4108.19	12,504.12	9370.9	9013.46	25,480.35	2050.45	2165.13
22 July 2020	9864.76	3190.38	4138.39	12,602.3	9519.84	9095.9	25,325.09	2031.45	2166.53
23 July 2020	9851.26	3178.38	4132.15	12,928.83	9478.49	9213.85	25,409.57	2022.8	2179.43

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
24 July 2020	9859.27	3182.12	4101.34	13,099.25	9554.14	9203.05	25,494.39	2051.35	2186.33
27 July 2020	9805.33	3171.42	4114.77	13,674.97	9711.4	9293.86	25,450.72	2050.63	2203.6
28 July 2020	9821.83	3147.26	4161.2	13,710.47	9704.37	9487.08	25,585.9	1994.83	2208.99
29 July 2020	9903.51	3210.01	4201.71	13,710.36	9816.25	9570.78	25,832.32	1985.86	2227.53
30 July 2020	9778.87	3157.53	4149.69	13,621.38	9658.15	9461.92	25,715.06	1956.8	2197.69
31 July 2020	9806.03	3188.29	4162	13,873.84	9886.97	9422.84	25,843.12	1960.98	2218.91
3 August 2020	9710.79	3231.13	4250.31	13,908.73	10,116.31	9504.62	25,716.96	1978.89	2229.77
4 August 2020	9715.99	3231.73	4273.96	14,087.43	10,179.16	9594.51	26,125.82	1953.15	2239.46
5 August 2020	9950.31	3223.47	4290.93	14,496.83	10,211.5	9612.38	26,246.64	1955.32	2285.93
6 August 2020	9957.21	3204.84	4258.66	14,504.16	10,197.71	9615.43	25,997.26	1952.03	2281.2
7 August 2020	9910.66	3170.11	4255.72	14,333.54	10,102.94	9589.31	25,921.53	1944.28	2264.12
10 August 2020	9930.25	3180.32	4253.67	14,416.91	9925.11	9462.86	26,034.55	1965.48	2265.63
11 August 2020	10,159.03	3170.23	4277.01	14,276.61	10,088.28	9499.23	26,237.59	1972.43	2307.75
12 August 2020	10,324.55	3183.07	4318.98	14,546.22	10,137.01	9538.77	26,362.65	1999.23	2346.77
13 August 2020	10,459.14	3185.41	4359.97	14,534.39	10,188.87	9715.17	26,616.7	2013.56	2361.78
14 August 2020	10,443.98	3191.41	4385.1	14,450.57	10,027.43	9672.08	26,589.71	2013.8	2352.89
17 August 2020	10,353.42	3179.27	4420.24	14,539.9	10,100.66	9664.12	26,547.57	2014.91	2335.57
18 August 2020	10,364.67	3155.23	4423.26	14,488.81	10,094.14	9685.67	26,506.31	1986.24	2336.49
19 August 2020	10,330.28	3170.06	4432.73	14,504.99	10,191.33	9745.25	26,625.67	1985.65	2335.65
20 August 2020	10,040.62	3092.26	4438.41	14,344.97	10,057.87	9683.4	26,359.27	1965.43	2274.02
21 August 2020	10,028.76	3074.96	4418.56	14,365.52	10,164.32	9698.29	26,339.84	1966.09	2271.13
24 August 2020	10,165.48	3105.07	4459.07	14,507.33	10,176.05	9885.73	26,298.14	1985.63	2296.55
25 August 2020	10,179.04	3088.49	4454.64	14,435.93	10,175.88	10,000.92	26,240.22	1973.67	2287.56
26 August 2020	10,276.03	3114.53	4479.49	14,588.31	10,171.03	10,053.01	26,301.67	1975.92	2304.32
27 August 2020	10,106.96	3099.59	4498.07	14,486.03	10,037.74	9994.79	26,276.3	1966.98	2275.39
28 August 2020	9920.27	3080.68	4444.28	14,518.3	9882.36	9804.76	25,967.96	1957.32	2248.42
31 August 2020	9812.44	3040.37	4393.76	14,275.08	9956.52	9835.13	26,194.04	1928.55	2225.59
1 September 2020	9822.55	3089.14	4411.14	14,537.96	9825.34	9708.35	25,904.27	1937.98	2245.72
2 September 2020	9766.35	3079.01	4379.28	14,431.23	9818.96	9766.68	26,101.61	1928.77	2228.06
3 September 2020	9673.48	3071.81	4374.12	14,308.81	9637.45	9743.81	26,021.1	1929.91	2210.13
4 September 2020	9689.55	3035.71	4349.95	14,302.56	9601.77	9603.21	26,094.99	1920.5	2212.72
7 September 2020	9647.52	3049.57	4367.24	14,478.45	9786.03	9692.75	26,253.81	1932.3	2208.8
8 September 2020	9530.32	3037.77	4318.69	14,343.32	9647.5	9580.56	25,984.69	1916.51	2182.56
9 September 2020	9539.05	3062.63	4333.08	14,213.46	9650.96	9528.19	25,917.26	1928.71	2174.93
10 September 2020	9521.3	3085.1	4331.62	14,462.32	9780.44	9545.72	25,916.03	1938.24	2192.86
11 September 2020	9609.4	3108.18	4312.63	14,580.83	9690	9596.26	25,893.08	1941.92	2202.34
14 September 2020	9654.41	3125.05	4334.76	14,522.7	9800.73	9637.75	25,979.29	1943.16	2216.52
15 September 2020	9889.08	3141.45	4373.68	14,694.08	10,019.26	9707.92	26,108.44	1950.12	2258.45
16 September 2020	9793.8	3137.62	4397.61	14,714.89	10,192.38	9715.73	25,927.77	1965.23	2250.45
17 September 2020	9769.93	3205.05	4391.4	14,587.04	10,241.69	9839.42	25,961.91	2000.79	2251.97
18 September 2020	9704.9	3218.15	4411.18	14,482.12	10,211.05	9815.74	26,206.71	2001.41	2235.22
21 September 2020	9357.46	3127.63	4363.19	13,985.47	9945.15	9788.11	25,736.9	1929.24	2160.11
22 September 2020	9393.89	3140.26	4400.09	14,039.55	10,067.56	9898.79	25,558.72	1905.72	2172.26
23 September 2020	9310.82	3129.03	4436.35	14,021.17	10,241.61	10,028.15	25,638.94	1895.67	2171.02
24 September 2020	9372.78	3137.84	4396.67	14,004.07	10,156.77	10,087.27	25,832.92	1865.79	2177.46
25 September 2020	9323.58	3106.14	4385.16	14,016.32	10,180.42	10,050.05	25,806.28	1835.73	2164.69

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
28 September 2020	9431.25	3152.68	4477.5	14,115.76	10,284.98	10,230.44	26,144.61	1857.02	2181.42
29 September 2020	9378.82	3133.77	4440.12	14,211.23	10,295.8	10,181.53	26,358.09	1851.14	2164.08
30 September 2020	9336.26	3122.64	4417.93	14,148.84	10,232.87	10,276.11	26,325.62	1850.58	2163.75
1 October 2020	9295.53	3096.86	4405.81	14,205.34	10,190.74	10,268.9	26,118.58	1800.97	2152.61
2 October 2020	9254.58	3096.57	4404.99	14,283.3	10,189.61	10,247.69	26,151.53	1765.65	2125.37
5 October 2020	9422.12	3099.26	4424.79	14,358.94	10,322.74	10,318.62	26,163.85	1740.1	2150.98
6 October 2020	9554.22	3103.89	4418.41	14,254.31	10,344.13	10,275.71	26,304.42	1788.6	2165.8
7 October 2020	9364.86	3054.21	4310.34	14,151.44	10,189.88	10,150.51	26,184.79	1743.84	2131.09
8 October 2020	9391.84	3073.25	4326.81	14,325.3	10,113.55	10,122.05	26,217.27	1695.94	2140.85
9 October 2020	9341.94	3046.92	4349.12	14,312.63	10,135.27	9998.16	26,010.42	1661.13	2134.04
12 October 2020	9356.38	3048.4	4374.65	14,436.23	10,009.88	10,211.98	25,989.92	1663.18	2140.93
13 October 2020	9221.54	3025.29	4391.88	14,311.91	9926.75	10,236.77	25,923.59	1635.57	2122.67
14 October 2020	9268.32	3047.67	4362.38	14,575.44	10,041.74	10,331.31	25,991.06	1637.82	2139.42
15 October 2020	9137.32	3010.01	4304.95	14,410.29	9916.41	10,204.16	25,662.32	1617.03	2112.28
16 October 2020	9110.99	2990.57	4286.4	14,411.18	9729.97	10,200	25,776.64	1628.4	2102.83
19 October 2020	9056.09	2953.89	4224.81	14,498.95	9644.85	10,254.16	25,424.48	1628.48	2098.66
20 October 2020	9089.39	2996.99	4277.59	14,518.17	9660.78	10,270.74	25,526.89	1620.65	2120.74
21 October 2020	9019.41	3008.03	4267.15	14,375	9755.04	10,163.39	25,326.7	1618.72	2101.29
22 October 2020	9066.88	3046.37	4280.98	14,609.13	9850.15	10,196.2	25,266.51	1626.83	2115.71
23 October 2020	9132.45	3065.42	4268.2	14,515.18	9874.49	10,202.23	25,479.28	1632.28	2128.16
26 October 2020	9015.65	3046.81	4258.24	14,404.87	9898.56	10,138	25,582.78	1610.88	2099.4
27 October 2020	8904.79	3022.97	4240.67	14,422.62	9914.25	10,061.06	25,632.48	1601.43	2071.81
28 October 2020	8586.23	2944.93	4169.1	13,958.39	9711	9838.91	25,625.9	1535.11	2011.77
29 October 2020	8638.85	2985.44	4171.45	14,068.86	9749.12	9827.17	25,548.42	1555.09	2024.78
30 October 2020	8569.14	2984.39	4155.44	14,159.09	9576.67	9808.04	25,574.93	1568.81	2014.91
2 November 2020	8750.61	3011.06	4199.88	14,373.62	9666.95	9909.71	25,637.57	1563.38	2050.93
3 November 2020	8978.44	3033.67	4228.81	14,626.52	9824.94	9890.65	25,743.55	1602.42	2096.86
5 November 2020	9242.91	3078.19	4280.84	14,809.23	10,167.98	9981.56	25,854.88	1623.4	2145.71
6 November 2020	9306.85	3088.22	4286.07	15,114.1	10,250.16	10,095.03	26,661.7	1623.05	2171.43
9 November 2020	9838.71	3143.57	4346.02	14,956.52	10,461.68	10,178.55	26,860.92	1702.82	2263.25
10 November 2020	9967.1	3143.47	4295.38	14,843.06	10,541.6	10,083.27	26,888.82	1726.21	2285.2
11 November 2020	10,094.91	3154.13	4290.61	14,873.29	10,698.33	10,067.05	27,133.74	1749.7	2307.96
12 November 2020	10,040.44	3158	4296.35	14,950.45	10,750.26	10,258.77	27,130.22	1747.01	2307.36
13 November 2020	10,034.36	3157.74	4272.94	15,093.9	10,796.68	10,311.57	27,097.41	1759	2307.59
16 November 2020	10,296.59	3167.18	4292.4	15,370.74	10,924.88	10,496.7	27,501.99	1791.86	2357.84
17 November 2020	10,251.17	3132.7	4308.68	15,182.42	10,875.73	10,389.62	27,418.48	1765.26	2340.54
18 November 2020	10,428.24	3161.67	4316.01	15,353.06	10,935.05	10,504.33	27,540.75	1806.1	2366.97
19 November 2020	10,299.97	3151.86	4271.72	15,217.86	10,777.87	10,478.23	27,469.37	1807.06	2337.83
20 November 2020	10,356.88	3164.62	4243.27	15,196.93	10,773.3	10,463.85	27,521.5	1825.62	2342.44
23 November 2020	10,426.08	3178.78	4267.12	14,986.91	10,681.29	10,469.25	27,303.9	1817.35	2346.37
24 November 2020	10,542.08	3169.18	4256.87	15,030.99	10,806.68	10,401.46	27,427.5	1854.17	2384.2
25 November 2020	10,707.48	3158.8	4229.26	15,120.87	11,074.28	10,323.63	27,254.92	1851.39	2416.28
26 November 2020	10,587.94	3204.56	4255.29	15,329.09	11,108.15	10,451.96	27,261.68	1842.24	2408.37
27 November 2020	10,513.45	3212.78	4304.08	15,349.75	11,312.87	10,503.24	27,404.95	1862.86	2405.77
30 November 2020	10,201.62	3189.04	4298.58	15,130.42	11,335.35	10,605.97	27,121.22	1859.32	2355.8
1 December 2020	10,235.04	3213.49	4322.81	15,511.67	11,553.23	10,730.1	27,588.03	1876.12	2391.79

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
2 December 2020	10,387.03	3218.54	4313.17	15,826.1	11,734.49	10,725.71	27,586.18	1877.81	2436.15
3 December 2020	10,215.7	3222.84	4300.39	15,660.55	11,659.55	10,684.27	27,337.59	1897.82	2412.83
4 December 2020	10,350.76	3214.81	4281.5	15,680.59	11,789.73	10,733.66	27,244.78	1901.14	2441.15
7 December 2020	10,291.69	3212.12	4291.27	15,950.81	11,811.78	10,759.02	27,486.57	1896.63	2453.61
8 December 2020	10,151.07	3210.15	4271.33	15,953.29	11,748.67	10,710.67	27,270.27	1870.68	2434.89
9 December 2020	10,188.83	3228.11	4323.38	15,919.18	12,033.84	10,948.68	27,369.4	1864.76	2449.89
10 December 2020	10,474.91	3218.91	4337.92	16,095.17	11,941.96	10,847.1	27,255.45	1858.48	2505.29
11 December 2020	10,537.44	3202.17	4300.1	16,134.49	11,790.43	10,944.41	27,265.76	1851.98	2521.6
14 December 2020	10,472.75	3207.36	4279.36	16,257.36	11,699.57	11,044.14	27,292.76	1832.59	2506.49
15 December 2020	10,439.43	3200.04	4276.96	16,393.75	11,806.21	11,163.79	27,444.45	1831.47	2496.72
16 December 2020	10,439.59	3254.22	4301.57	16,536.2	11,870.45	11,090.44	27,651.13	1850.04	2508.9
17 December 2020	10,502.02	3248.69	4313.84	16,597.76	11,888.39	10,989.09	27,655.9	1841.73	2523.48
18 December 2020	10,549.87	3234.63	4351.98	16,596.72	11,759.96	10,988.8	27,855.73	1837.7	2523.13
21 December 2020	10,241.25	3183.28	4311.28	16,402.42	11,358.35	10,873.29	27,819.67	1796.77	2451.42
22 December 2020	10,445.55	3216.15	4338.99	16,634.39	11,573.5	10,989.98	28,053.64	1817.09	2496.49
23 December 2020	10,447.11	3259.71	4333.7	16,767.97	11,659	11,086.95	28,430.32	1818.65	2504.86
24 December 2020	10,396.43	3240.39	4337.21	16,858.67	11,637.19	11,124.96	28,335.62	1808.42	2495.01
25 December 2020	10,424.11	3262.48	4351.69	16,952.12	11,604.18	11,203.59	28,331.76	1812.99	2502.95
28 December 2020	10,447.67	3315.9	4355.3	17,056.18	11,657.3	11,255.7	28,124.61	1816.15	2516.51
29 December 2020	10,537.76	3332.66	4402.45	16,983.99	11,635.61	11,233.13	28,348.79	1831.18	2525.32
30 December 2020	10,598.57	3312.36	4394.66	16,930.16	11,623.09	11,329.69	28,336.26	1844.02	2530.81
3 January 2022	14,146.44	3018.92	4367.5	19,946.49	17,328.35	12,082.76	52,288.74	2072.54	3044.59
4 January 2022	14,314.79	3041.06	4376.45	20,010.03	17,354.01	12,292.41	52,454.43	2107.65	3068.39
5 January 2022	14,090.43	3031.4	4357.93	19,864.64	16,942.08	12,202.75	51,769.54	2086.81	3027.57
6 January 2022	13,988.05	2975.51	4295.61	19,473.51	16,509.52	12,062.78	50,623.52	2081.12	2991.16
10 January 2022	14,022.22	2973.84	4224.07	19,364.82	16,371.22	11,847.07	50,564.08	2062.56	2988.7
11 January 2022	14,141.15	3003.13	4239.68	19,605.97	16,781.26	11,887.19	51,483.75	2070.77	3013.71
12 January 2022	14,352.44	3017.19	4273.47	19,774.88	17,032.02	11,977.07	51,661.43	2078.79	3048.98
13 January 2022	13,825.49	2947.24	4138.33	19,579.8	16,150.48	11,535.95	51,236.34	2015.28	2924.62
14 January 2022	13,813.58	2918.92	4105.67	19,324.23	15,422.86	11,244.71	50,779.26	1967.06	2886.92
17 January 2022	13,607.19	2906.94	4012.49	18,969.43	15,343.23	11,278.81	50,663.65	1976.61	2844.34
18 January 2022	12,841.32	2766.59	3920.23	18,129.99	14,309.47	10,760.53	48,683.05	1877.38	2664.78
19 January 2022	13,253.57	2826.4	3932	18,830.25	14,593.57	10,751.8	49,638.25	1931.43	2780.46
20 January 2022	13,368.24	2848.46	4002.41	19,363.3	15,329.04	10,724.18	49,611.04	1941.68	2843.01
21 January 2022	13,186.22	2800.76	3928.27	19,026.56	14,964.18	10,558.78	48,049.05	1911.85	2789.14
24 January 2022	12,491.58	2648.34	3794.32	17,946.24	14,077.45	10,040.63	46,186.22	1770.7	2638.54
25 January 2022	12,578.24	2678.61	3895	18,097.2	14,238.54	10,203.06	46,021.31	1790.6	2652.51
26 January 2022	12,835.97	2702.71	3951.16	18,586.74	14,640.62	10,348.39	47,579.09	1808.58	2726.06
27 January 2022	13,309.5	2756.59	3961.43	18,423.07	15,154.21	10,456.19	48,029.29	1839.51	2805.64
28 January 2022	13,471.92	2750.81	3984.6	18,500.8	15,338.24	10,508.05	48,938.91	1863.91	2830.77
31 January 2022	13,532.46	2769.11	4033.56	18,620.76	15,462.45	10,629.83	49,112.7	1905.54	2850.39
1 February 2022	13,517.37	2761.53	4049.92	18,804.22	15,452.11	10,696.05	49,738.46	1899.16	2858.71
2 February 2022	13,539.66	2747.44	4033.43	18,899.89	15,213.49	10,671.37	49,311.13	1891.92	2858.26
3 February 2022	13,353.93	2714.9	3983.26	18,696.01	14,756.55	10,473.55	48,113.18	1860.06	2809.75
4 February 2022	13,435.56	2735.32	3980.68	18,672.96	14,731.27	10,516.06	48,517.64	1849.05	2818.11
7 February 2022	13,432.91	2731.19	3982.08	18,670.64	14,711.73	10,499.95	49,874.23	1857.04	2821.93

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
8 February 2022	13,598.12	2768.71	4051.07	19,297.36	14,943.06	10,651.12	50,563.71	1890.18	2891.45
9 February 2022	13,762.58	2816.26	4062.91	19,775.32	15,662.63	10,919.19	52,178.23	1918.1	2942.75
10 February 2022	13,729.07	2802.63	4109.52	20,051.78	15,770.81	11,072.83	53,120.22	1947.91	2944.89
11 February 2022	13,430.25	2734.87	4016.53	19,729.49	15,077.76	10,830.72	52,655.85	1893.62	2869.29
14 February 2022	13,248.79	2696.49	3946.2	19,639.45	14,555.73	10,703.7	52,378.02	1874.54	2828.87
15 February 2022	13,537.47	2741.92	3975.84	19,872.77	15,083.09	10,954.87	53,467.01	1917.75	2902.05
16 February 2022	13,641.4	2783.01	4038.81	20,198.08	15,423.73	11,115.62	54,337.19	1937.05	2942.63
17 February 2022	13,146.67	2720.67	3972.3	19,700.59	14,814.95	10,874.67	52,607.78	1894.95	2832.32
18 February 2022	12,754.92	2679.52	3825.93	19,548.67	14,143.18	10,597.63	51,729.34	1846.6	2754.24
21 February 2022	11,358.02	2415.29	3611.94	18,118.34	12,482.33	9815.44	48,276.08	1624.41	2469.04
22 February 2022	11,499.55	2477.46	3591.95	18,896.06	12,363.57	9780.22	49,416.75	1673.65	2504.03
24 February 2022	7840.19	1725.34	2908.88	13,663.18	7929	7018.19	38,307.01	1132.77	1721.88
25 February 2022	9880.29	2073.86	3424.86	16,045.91	8965.01	7644.97	44,488.53	1257.13	2071.13
28 March 2022	9904.01	1803.6	2813.57	15,527.27	8491.44	7557.53	63,314.54	1115.14	2048.51
29 March 2022	9880.96	1778.28	2696.13	14,981.87	8164.12	7623.33	71,505.56	1164.72	2018.2
30 March 2022	10,132.24	1968.37	3309.27	15,758	8451.62	8769.05	64,449.98	1322.33	2103.9
31 March 2022	10,881.31	2150.35	3423.57	16,474.73	9251.74	9324.43	65,851.24	1417.85	2253.2
1 April 2022	10,951.14	2247.61	3380.39	16,648.87	10,022.37	9617.86	61,464.53	1471.05	2287.97
4 April 2022	10,965.68	2242.72	3329.63	16,844.09	10,480.32	9508.28	60,006.21	1515.2	2312.66
5 April 2022	10,467.78	2165.21	3161.37	16,512.12	9885.03	8960.59	57,273.53	1443.35	2210.06
6 April 2022	10,316.78	2167.61	3112.24	16,381.18	9501.93	8869.84	61,271.18	1453.83	2174.82
7 April 2022	10,327.73	2181.02	3129.65	16,381.78	9661.96	8820.72	60,051.78	1477.39	2192.3
8 April 2022	10,142.93	2167.98	3152.9	16,102.89	9407.13	8845.89	57,957.93	1447.17	2157.63
11 April 2022	10,058.91	2134.53	3097.55	16,113.82	9213.71	8791.23	57,294.45	1429.34	2128.57
12 April 2022	9994.07	2134.26	3079.81	16,200.54	9065.79	8562.13	56,707.04	1389.7	2117.52
13 April 2022	9965.24	2116.39	3073.32	16,041.92	9023.45	8447.36	59,045.99	1407.25	2104.77
14 April 2022	9508.79	2044.12	2997.92	15,375.37	8574.97	8182.58	55,666.56	1385.66	2003.18
15 April 2022	9536.81	2073.47	3015.52	15,524.03	8602.12	8152.86	55,840.09	1385.94	2023.24
18 April 2022	9265.84	2046.31	2964.8	15,235.85	8167.08	7902.25	56,507.05	1396.07	1959.91
19 April 2022	9107.85	2047.75	2924.22	15,177.81	7903.99	7823.9	55,966.42	1342.46	1941.37
20 April 2022	9128.45	2044.5	2877.44	15,572.14	8073.98	8093.13	56,807.34	1347.62	1955.63
21 April 2022	8934.66	2024.52	2832.34	15,562.48	7885.96	8084.62	56,606.74	1319.98	1909.2
22 April 2022	8909.53	2016.59	2781.64	15,370.58	7697.09	7891.5	55,991.99	1290.4	1875.33
25 April 2022	8837.75	1996.84	2738.76	14,960.02	7263.52	7700.44	54,300.15	1243.51	1853.94
26 April 2022	9348.61	2045.46	2874.11	15,400.96	7710.71	7771.22	55,249.58	1286.08	1966.64
27 April 2022	9630.98	2086.42	3013.38	15,659.63	8291.26	8124.13	55,806.02	1375.16	2041.91
28 April 2022	9470.45	2088.52	2973.87	15,453.63	8207.87	7910.03	56,174.81	1346.55	2002.11
29 April 2022	9758.14	2114.35	3033.09	15,746.81	8369.2	7960.78	56,212.09	1366.21	2061
4 May 2022	9473.1	2125.33	3009.67	15,433.81	8003.66	7818.8	55,687.31	1339.67	2005.03
5 May 2022	9549.12	2145.11	3070.19	15,603.29	8086.73	7842.55	56,168.5	1329.54	2032.47
6 May 2022	9560.45	2145.17	3034.66	15,566.86	7925.88	7763.22	57,560.55	1306.52	2028.53
11 May 2022	9534.58	2179.42	3016.66	15,469.1	7863.93	7735.32	60,262.69	1313.32	2024.48
12 May 2022	9158.91	2146.32	2910.34	15,073.41	7562.44	7471.8	59,439.98	1278.29	1955.64
13 May 2022	9177.94	2157.02	2914.47	14,884.33	7669.75	7542.96	59,689.78	1283.33	1961.29
16 May 2022	9434.65	2195.48	3012.18	15,042.7	7811.32	7754.16	61,143.83	1308.49	2007.4
17 May 2022	9743.48	2226.73	3098.97	15,111.76	8089.08	7885.98	60,946.6	1360.16	2047.98

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
18 May 2022	9860.89	2214.67	3373.32	15,222.66	8071.77	7895.51	61,194.75	1366.89	2063.84
19 May 2022	9883.63	2214.17	3369.74	15,152.01	7967.86	7824.81	61,853.79	1350.73	2059.75
20 May 2022	9710.81	2181.51	3307.81	14,672.38	7864.94	7599.94	59,137.01	1334.73	2005.01
23 May 2022	9359.29	2120.63	3266.46	14,054.3	7737.72	7346.87	56,789.44	1315.58	1941.49
24 May 2022	9230.89	2137.07	3345.96	13,808.78	7795.51	7193.13	55,717.39	1300.95	1935.02
25 May 2022	9504.76	2142.35	3395.55	14,025.29	7825.52	7359.71	56,408.13	1306.57	1975.66
26 May 2022	9865.08	2219.74	3374.39	14,117.82	7876.09	7411.76	57,130.86	1313.32	2030.57
27 May 2022	9930.37	2288.03	3392.39	14,136.52	7844.27	7376.2	56,661.35	1310.87	2026.33
30 May 2022	9869.27	2256.28	3483.31	14,090.27	7770.56	7328.13	55,681.59	1320.74	2023.21
31 May 2022	9663.31	2230.71	3469.36	13,934.26	7667.84	7209.09	55,347.36	1298.47	1987.06
1 June 2022	9747.2	2248.69	3500.13	13,894.72	7716.16	7217.22	55,972.78	1297.3	2003.73
2 June 2022	9646.03	2239.11	3536.85	13,537.04	7614.19	7114.59	54,843.09	1278.18	1969.98
3 June 2022	9533.53	2267.97	3513.18	13,061.5	7570.66	6874.39	54,795.34	1233.25	1948.73
6 June 2022	9479.89	2237.67	3606.97	12,957.99	7435.86	6569.88	54,330.02	1184.61	1934.76
7 June 2022	9563.82	2220.1	3626.98	12,914.35	7369.23	6726.71	54,646.99	1210.27	1942.64
8 June 2022	9712.83	2237.89	3648.16	12,893.24	7416.09	6786.78	55,152.66	1233.7	1962.51
9 June 2022	9722.29	2212.26	3631.07	12,679.19	7268.9	6644.8	54,997.01	1219.05	1946.07
10 June 2022	9840.48	2230.95	3663.21	12,454.11	7202.4	6538.07	55,161.08	1202.58	1938.55
14 June 2022	9840.07	2283.89	3674.42	12,290.42	7172.92	6460.75	54,580.06	1198.08	1944.42
15 June 2022	9973.45	2316.56	3691.51	12,320.12	7247.26	6589.15	54,933.38	1197.54	1969.16
16 June 2022	10,229.15	2350.14	3718.97	12,548.8	7405.17	6834.46	58,215.84	1223.41	2010.69
17 June 2022	10,126.92	2344.01	3699.91	12,503.58	7332.81	6788.43	57,922.49	1218.94	1997.25
20 June 2022	10,368.17	2409.58	3710.13	12,663.8	7610.24	6865.93	60,234.05	1241.04	2034.86
21 June 2022	10,204.2	2374.08	3680.42	12,461.74	7457.64	6836.11	59,543.58	1213.97	1994.26
22 June 2022	10,214.15	2370.3	3688.67	12,361.25	7507.5	6749.83	59,709.99	1206.15	2003.56
23 June 2022	10,265.85	2357.53	3710.52	12,475.65	7606.33	6769.96	60,551.18	1207.41	2027
24 June 2022	10,189.78	2368.33	3744.75	12,498.9	7627.13	6872.13	60,106.22	1206.52	2015.06
27 June 2022	10,243.03	2411.28	3767.71	12,484.73	7777.77	7157.78	60,240.46	1237.11	2025.66
28 June 2022	10,311.4	2403.41	3813.3	12,217.25	7956.99	7223.36	60,045.54	1230.1	2013.76
29 June 2022	10,249.45	2392.54	3799.18	12,230.86	7676.39	7192.81	61,408.79	1214.1	1993.57
30 June 2022	9586.71	2292.32	3736.86	11,837.91	7439.76	7003.73	59,840.83	1184.83	1821.21
1 July 2022	9663.02	2322.77	3812.84	11,667.24	7544.56	7022.47	59,674.85	1204.49	1815.29
4 July 2022	9620.85	2318.43	3837.52	11,543.21	7754.74	7056.46	58,986.66	1203.29	1805.87
5 July 2022	9646.06	2325.82	3787.28	11,599.68	7827.72	7121.47	58,506.23	1203.63	1823.61
6 July 2022	9672.19	2322.56	3735.45	11,555.48	7897.7	7215.18	59,826.52	1178.44	1820.76
7 July 2022	9626.02	2349.67	3753.59	11,634.71	7808.47	7456.12	60,276.63	1187.55	1822.47
8 July 2022	9638.57	2359.98	3788.47	11,690.99	7804.96	7508.54	60,497.92	1182.32	1820.21
11 July 2022	9445.68	2320.68	3758.68	11,519.38	7611.9	7358.59	59,256.31	1164.77	1766.38
12 July 2022	9287.32	2284.87	3715.23	11,236.69	7579.13	7216.56	56,992.46	1149.02	1744.12
13 July 2022	9020.79	2250.84	3659.18	10,831.66	7412.58	7079.77	55,315.33	1125.89	1694.39
14 July 2022	8924.29	2263.91	3598.95	10,737.73	7370.56	7017.71	55,459.33	1108.97	1685.96
15 July 2022	9163.26	2296.31	3704.98	10,848.83	7485.03	7184.46	56,965.57	1127.08	1725.22
18 July 2022	9098.03	2327.61	3700.78	10,679.81	7467.21	7294.81	56,445.4	1122.77	1709.11
19 July 2022	9036.14	2280.44	3651.37	10,565.41	7390.37	7353.84	55,692.02	1106.42	1695.11
20 July 2022	9142.56	2314.38	3671.75	10,381.48	7325.28	7384.12	55,556.26	1109.91	1697.64
21 July 2022	9086.81	2276.32	3621.45	10,181.38	7283.86	7331.45	55,278.42	1110	1677.15

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
22 July 2022	9296.63	2290.65	3639.95	10,127.75	7501.04	7511.02	56,064.38	1120.41	1707.16
25 July 2022	9337.48	2328.98	3649.21	10,262.59	7671.1	7721.11	55,950.39	1166.68	1720.24
26 July 2022	9535.96	2374.91	3681.34	10,644.66	7763.65	7795.65	56,169.07	1167.52	1766.33
27 July 2022	9606.3	2360.56	3704.61	10,722.62	7715.82	7846.23	57,191.72	1160.12	1774.96
28 July 2022	9554.68	2366.83	3793.56	10,640.39	7684.65	7892.99	56,983.52	1152.49	1769.25
29 July 2022	9784.27	2373.2	3800.82	10,893.89	7716.12	8092.87	57,451.74	1147.19	1798.32
1 August 2022	9655.11	2345.74	3769.53	10,853.27	7538.43	8032.9	56,589.51	1150.39	1770.94
2 August 2022	9441.1	2326.91	3749.27	10,617.12	7411.52	7866.53	55,912.08	1136.9	1737.36
3 August 2022	9375.08	2285.49	3807.61	10,301.6	7415.92	7900.78	55,663.77	1130.18	1720.12
4 August 2022	9314.97	2231.55	3854.81	10,182.95	7461.38	7840.32	55,449.33	1125.63	1707.97
5 August 2022	9096.66	2184.23	3737.09	9942.97	7315.41	7590.69	53,933.53	1095.28	1661.05
8 August 2022	9190.82	2220.67	3828.39	9992.24	7400.32	7806.8	58,026.27	1109.98	1683.53
9 August 2022	9437.64	2209.26	3841.44	10,155.57	7537.62	7941.64	57,671.85	1139.53	1725.22
10 August 2022	9528.99	2218.92	3865.77	10,405.45	7693.36	8089.53	57,747.32	1171.87	1732.45
11 August 2022	9438.49	2203.84	3823.25	10,374.22	7749.88	8181.48	57,582.53	1184.32	1716.3
12 August 2022	9513.43	2224.19	3829.34	10,418.75	7894.67	8270.44	57,872.94	1213.95	1728.44
15 August 2022	9565.47	2234.98	3836.93	10,572.63	7962.51	8502.67	58,972.1	1208.34	1743.84
16 August 2022	9784.22	2244.58	3854.32	10,830.21	8161.88	8624.64	60,266.09	1213.58	1779.01
17 August 2022	9662.26	2240.49	3813.84	10,789.71	8121.72	8587.42	61,555.6	1216.56	1758.22
18 August 2022	9686.27	2234.14	3780.56	10,741.37	8217.24	8585.94	61,954.7	1204.6	1762.83
19 August 2022	9646.06	2228.45	3754.21	10,729.14	8392.61	8508.59	62,719.49	1199.31	1760.99
22 August 2022	9869.81	2233.46	3737.45	10,756.52	8482.71	8652.01	63,511.99	1204.63	1785.77
23 August 2022	9936.63	2243.27	3711.55	10,879.84	8569.18	8677.14	62,486.62	1208.15	1809.27
24 August 2022	9935.8	2233.78	3657.91	10,901.84	8387.96	8676.26	61,923.55	1204.34	1802.92
25 August 2022	9848.81	2254.37	3709.81	10,915.12	8439.39	8744.73	62,197.13	1213.27	1797.89
26 August 2022	9960.53	2265.18	3761.64	11,010.43	8481.27	8778.01	63,101.97	1220.78	1818.59
29 August 2022	10,065.13	2267.47	3786.3	11,141.93	8616.05	8856.63	63,699.2	1259.71	1841.37
30 August 2022	10,091.67	2269.99	3756.09	11,119.97	8574.11	8797.68	63,025.65	1266.48	1849.89
31 August 2022	10,428.54	2308.09	3721.77	11,315.71	8732.84	8804.71	62,866.2	1274.79	1945.84
1 September 2022	10,560.83	2298.39	3778.84	11,294.49	8936.75	8810.3	63,366.57	1305.66	1984.15
2 September 2022	10,718.47	2317.85	3774.87	11,529.56	9123.48	8915.01	63,252.89	1338.26	2008.37
5 September 2022	10,843.88	2381.84	3837.42	11,796.39	9096.68	8989.49	64,186.99	1374.3	2023.34
6 September 2022	10,572.58	2334.17	3761.92	11,471.8	8892.8	8749.57	62,842.32	1358.66	1974.76
7 September 2022	10,448.4	2330.08	3726.8	11,400.47	8906.5	8683.78	62,015.97	1354.54	1951
8 September 2022	10,407.12	2309.15	3736.08	11,302.87	8893.62	8683.75	61,837.38	1341.79	1941.21
9 September 2022	10,513.65	2325.57	3736.88	11,526.28	9026.51	8761.92	62,088.78	1340.04	1970.87
12 September 2022	10,615.69	2348.24	3768.94	11,625.79	9171.32	8907.71	62,426.41	1356.1	1983.08
13 September 2022	10,541.85	2336.51	3736.43	11,556.03	9219.76	9007.52	62,855.15	1349.11	1976.82
14 September 2022	10,514.59	2335.25	3737.61	11,481.52	9197.66	8893.56	61,020.28	1328.57	1968.71
15 September 2022	10,545.3	2351.17	3755.57	11,436.75	9280.52	8966.42	61,017.93	1344.29	1976.02
16 September 2022	10,444.68	2328.11	3714.11	11,406.08	9288.44	8964.23	60,979.44	1370.48	1961.22
19 September 2022	10,400.66	2319.34	3701.6	11,371.51	9349.94	8956.99	60,775.8	1356.81	1954.84
20 September 2022	9532.23	2176.2	3517.99	10,520.42	8530.91	8199.73	56,332.19	1215.71	1787.62
21 September 2022	9082.83	2101.65	3437.98	10,006.72	8206.47	7816.32	56,841.02	1205.67	1720.16
22 September 2022	9350.65	2134.1	3389.49	9998.27	8438.37	7931.03	57,113.07	1219.04	1770.07
23 September 2022	8948.3	2048.79	3191.4	9417.14	8044.2	7525.82	55,398.14	1133.28	1693.7

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
26 September 2022	8211.44	1888.45	3053.16	8530.53	7353.36	6835.93	53,223.91	1037.26	1578.41
27 September 2022	8307.37	1890.49	3004.15	8421.4	7531.05	6914.27	53,985.72	1041.78	1590.27
28 September 2022	8362.25	1892.53	2992.42	8429.48	7476.32	7036.03	54,702.59	1037.95	1593.31
29 September 2022	8331.33	1860.16	2965.86	8192.21	7316.05	6949.66	53,906.2	1020.91	1582.75
30 September 2022	8385.78	1877.31	3017.06	8264.86	7301.41	6945.4	53,989.06	1019.07	1584.95
3 October 2022	8749.85	1964.91	3176.22	8822.5	7750.59	7451.37	54,784.85	1099.29	1646.89
4 October 2022	8745.46	1965.22	3252.52	8903.35	7773.39	7559.65	54,365.54	1133.18	1645.03
5 October 2022	8729.31	1948.64	3317.96	8790.02	7621.2	7543.72	52,985.34	1108.88	1630.4
6 October 2022	8775.24	1944.08	3326.52	8720.8	7574.8	7612.15	53,263.48	1100.57	1624.27
7 October 2022	8426.04	1897.8	3212.94	8381.06	7223.36	7415.23	51,911.18	1080.94	1564.74
10 October 2022	8657.13	1938.68	3179.66	8464.9	7388.24	7495.48	51,550.74	1118.36	1532.51
11 October 2022	8778.96	2018.59	3306.97	8690.34	7485.42	7771.3	52,170.2	1135.8	1558.12
12 October 2022	8807.33	2020.74	3233.18	8635.07	7488.56	7892.07	52,453.17	1144.37	1555.76
13 October 2022	8851.62	2026.07	3243.99	8621.21	7591.61	7879.56	52,299.83	1165.91	1558.75
14 October 2022	8816.06	2032.55	3304.12	8590.54	7564.92	7913.66	52,406.71	1148.97	1555.67
17 October 2022	9096.93	2073.35	3439.02	8958	7845.92	8098.29	54,115.13	1164.8	1607.3
18 October 2022	9140.04	2087.83	3397.65	9119.29	7933.67	8095.87	55,726.19	1159.93	1625.92
19 October 2022	8927.09	2066.34	3392.34	8841.1	7746.71	7960.45	54,286.5	1138.68	1587.9
20 October 2022	9130.43	2102.38	3421.93	9072.48	7845.05	8038.53	54,810.17	1147.4	1629.16
21 October 2022	9140.68	2117.12	3421.77	9257.6	7869.42	8165.49	54,998.14	1149.16	1645.94
24 October 2022	9248.19	2139.87	3427.43	9369.13	7932.64	8297.88	55,466.78	1176.54	1662.49
25 October 2022	9583.28	2191.94	3469.15	9605.94	8145.09	8436.1	56,057.61	1185.44	1718.67
26 October 2022	9623.41	2184.91	3458.03	9570.12	8116.72	8387.03	55,583.47	1184.7	1709.71
27 October 2022	9875.17	2223.03	3528.03	9850.2	8219.78	8494.48	55,897.38	1208.46	1748.34
28 October 2022	9970.25	2230.08	3547.26	9850.62	8236.77	8501.02	56,902.16	1203.9	1751.58
31 October 2022	9947.36	2235.66	3552.81	9769.22	8326.29	8496.58	57,195.25	1203.63	1744.33
1 November 2022	9988.15	2251.22	3554.29	9748.11	8315.65	8469.93	57,284.39	1217.56	1748.15
2 November 2022	9995.92	2263.18	3546.77	9686.72	8270.96	8378.49	58,953.98	1209.8	1749.18
3 November 2022	9900.18	2251.29	3512.22	9621.79	8181.21	8305.16	58,270.02	1197.14	1735.13
7 November 2022	10,130.18	2284.76	3591.08	9958.98	8416.51	8276.13	59,164.9	1216.08	1782.55
8 November 2022	10,113.8	2277.29	3615.93	9988.75	8447.93	8091.47	58,951.34	1236.33	1782.38
9 November 2022	9942.3	2247.28	3524.19	9883.01	8230.25	7880.96	57,987.19	1198.37	1752.06
10 November 2022	10,049.49	2256.36	3582.93	10,105.73	8576.56	7924.85	58,829.79	1201.21	1785.18
11 November 2022	10,007.67	2270.11	3655.19	10,188.57	8594.91	7976.42	58,316.16	1199.34	1793.36
14 November 2022	10,023.23	2267.77	3652.51	10,370.97	8773.04	8063.82	58,808.2	1219.37	1812.31
15 November 2022	9915.63	2258.59	3670.23	10,243.22	8703.55	7991.28	58,679.55	1213.36	1793.68
16 November 2022	9917.08	2248.57	3658.95	10,263.94	8679.46	7995.97	58,508.46	1207.72	1798.88
17 November 2022	9852.84	2243.01	3630.23	10,120.75	8705.23	8057.21	59,045.49	1220.99	1785.5
18 November 2022	9829.27	2246.4	3601.13	10,114.08	8735.58	7996.49	58,476.38	1219.97	1777.56
21 November 2022	9639.54	2211.46	3564.15	9902.17	8566.62	7920	57,628.66	1195.27	1746.33
22 November 2022	9734.94	2236.88	3566.22	10,166.87	8690.35	8025.46	57,989.57	1205.89	1770.19
23 November 2022	9789.21	2246.24	3633.31	10,265.42	8662.45	8058.49	57,904.47	1217.07	1783.3
24 November 2022	9783.88	2270.72	3636.22	10,228.58	8659.26	8149.88	58,278.51	1224.74	1782.91
25 November 2022	9739.61	2289.34	3669.06	10,150.73	8613.95	8088.17	58,196.32	1215.1	1775.03
28 November 2022	9662.7	2282.7	3662.67	10,174.53	8524.3	8065.14	58,180.81	1195.87	1766.94
29 November 2022	9675.57	2268.11	3682.89	10,251.43	8593.1	8054.71	58,374.68	1197.23	1769.8

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
30 November 2022	9628.5	2261.84	3657.79	10,203	8584.06	8031.62	58,685.79	1189.19	1758.76
1 December 2022	9673.04	2267.87	3655.2	10,389.01	8617.36	8076.52	58,780.47	1196.24	1772.25
2 December 2022	9695.76	2255.06	3636.23	10,326.45	8601.14	8021.1	58,219.99	1188.48	1765.78
5 December 2022	9784.22	2264.63	3638.39	10,420.47	8794.19	7998.2	58,224.24	1196.02	1790.07
6 December 2022	9707.06	2246.32	3635.62	10,430.97	8709.4	7882.81	58,352.59	1196.76	1780.06
7 December 2022	9667.25	2231.16	3626.95	10,419.54	8688.87	7843.06	58,254.61	1194.67	1779.09
8 December 2022	9668.25	2223	3628.27	10,458.02	8570.79	7802.37	58,385.66	1189.46	1775.43
9 December 2022	9645.39	2217.23	3630.55	10,385.71	8517.07	7828.17	58,181.6	1158.1	1771.1
12 December 2022	9611.5	2216.33	3605.26	10,381.32	8576.32	7831.47	58,154.1	1142.42	1766.49
13 December 2022	9607.49	2206.5	3573.46	10,549.68	8535.21	7809.28	58,058.05	1139.99	1770.31
14 December 2022	9541.27	2183.04	3528.19	10,538.12	8453.41	7774.69	57,703.26	1132.1	1760.66
15 December 2022	9405.22	2184.17	3476.19	10,313.98	8356.1	7661.8	57,381.16	1120.63	1730.93
16 December 2022	9469.31	2189.37	3522.07	10,331.02	8354.45	7647.88	55,990.97	1134.76	1737.35
19 December 2022	9443.49	2175.92	3497.72	10,482.85	8367.12	7593.38	55,609.13	1133.1	1740.42
20 December 2022	9593.4	2206.43	3514.55	10,673.09	8530.51	7684.82	58,015.28	1123.55	1729.91
21 December 2022	9584.48	2199.59	3486.81	10,649.16	8625.03	7711.2	58,865.2	1122.99	1728.88
22 December 2022	9577.37	2199.56	3525.27	10,633.67	8681.54	7744.94	59,450.69	1118.1	1732.37
23 December 2022	9562.32	2208.74	3534.32	10,635.57	8689.67	7727	59,210.84	1115.14	1733.03
26 December 2022	9700.6	2218.82	3557.73	10,809.49	8788.14	7710.65	59,764.64	1123.82	1748.3
27 December 2022	9742.63	2244.82	3584.2	10,894.4	8851.98	7678.42	60,114.13	1134.04	1755.67
28 December 2022	9716.86	2275.43	3599.88	10,797.06	8755.82	7628.45	60,292.12	1123.57	1747.96
29 December 2022	9762.15	2287.16	3636.08	10,819.76	8773.4	7639.66	60,518.57	1127.86	1754.49
30 December 2022	9826.6	2290.38	3642.85	10,858.81	8772.88	7592.45	60,436.37	1129.83	1763.29
3 January 2024	16,844.19	3252.45	4581.1	14,712.15	14,801.07	12,056.37	75,115.06	2769.1	2408.18
4 January 2024	16,892.82	3283.16	4647.23	14,818.02	14,953.05	12,171.58	76,053.44	2794.27	2410.34
5 January 2024	16,899.3	3289.9	4643.13	14,836.52	14,931.77	12,108.8	76,139.49	2807.54	2412.6
8 January 2024	16,980.95	3321.76	4694.23	14,941.34	15,237	12,225.17	76,612.38	2832.44	2424.65
9 January 2024	16,999.93	3374.73	4763.9	14,956.18	15,237.22	12,274.82	76,988.45	2869.54	2422.1
10 January 2024	17,079.17	3405.51	4819.2	14,990.52	15,210.61	12,377.12	77,334.53	2878.26	2433.6
11 January 2024	17,199.6	3411.09	4853.25	15,356.18	15,258.88	12,484.18	78,082.81	2913.08	2439.3
12 January 2024	17,261.91	3426.07	4851.35	15,424.71	15,474.73	12,447.56	77,891.74	2929.83	2441.03
15 January 2024	17,244.91	3433.3	4897.54	15,450.85	15,604.87	12,502.34	77,439.91	2923.29	2442.74
16 January 2024	17,252.59	3411.75	4894.5	15,428.82	15,524.75	12,449.43	77,418.16	2903.93	2433.59
17 January 2024	17,252.34	3419.93	4986.86	15,415.29	15,620.61	12,545.92	78,474.19	2939.69	2432.2
18 January 2024	17,210.96	3427.6	4998.17	15,359.48	15,571.45	12,460.7	78,421.7	2935.45	2428.77
19 January 2024	17,166.26	3407.21	4935.99	15,333.86	15,398.1	12,420.73	78,063.17	2925.42	2417.74
22 January 2024	17,145.59	3431.17	4977.05	15,462.45	15,328.21	12,537.43	77,840.46	2943.49	2423.26
23 January 2024	17,194.1	3463.19	4991.98	15,391.45	15,240.62	12,564.55	77,902.19	2930.56	2426.6
24 January 2024	17,185.18	3486.91	4986.44	15,279.83	15,125.27	12,575.62	77,576.14	2898.53	2419.48
25 January 2024	17,138.74	3455.08	4986.24	15,279.64	15,213.83	12,554.38	77,230.83	2882.69	2418.78
26 January 2024	17,138.63	3460.46	4999.45	15,242.74	15,159.81	12,561.95	77,049.9	2868.27	2424.87
29 January 2024	17,193.55	3515.43	5039.83	15,310	15,290.04	12,637.94	77,000.18	2890.84	2440.23
30 January 2024	17,200.92	3511.19	5038.89	15,543.5	15,352.94	12,782.9	78,150.46	2932.6	2460.25
31 January 2024	17,333.11	3503.23	5056.52	15,614.22	15,354	12,845.1	78,762.08	2938.57	2468.44
1 February 2024	17,499.72	3500.63	5041.14	15,633.76	15,377.51	12,945.51	78,032.35	2910.99	2479.37
2 February 2024	17,519.93	3489.67	5071.02	15,561.3	15,331.14	12,882.36	77,802.43	2925.18	2476.54

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
5 February 2024	17,570.37	3530.24	5065.45	15,580.64	15,269.99	12,872.93	77,885.09	2916.9	2477.06
6 February 2024	17,632.29	3538.52	5080.81	15,542.06	15,380.01	13,009.13	77,987.68	2943.87	2485.06
7 February 2024	17,649.75	3533.36	5065.68	15,477.3	15,491.17	13,038	77,813.43	2982.02	2506.55
8 February 2024	17,559.71	3522.59	5019.31	15,323.92	15,357.3	12,957.38	77,301.74	2947.26	2495.59
9 February 2024	17,555.4	3506.25	5004.08	15,328.67	15,220.83	12,944.55	77,004.9	2925.6	2491.57
12 February 2024	17,551.92	3514.56	4972.31	15,211.09	15,295.32	12,990.05	77,044.25	2945.3	2493.51
13 February 2024	17,608.2	3539.5	5105.17	15,189.06	15,366.68	13,072.23	77,533.25	2948.08	2501.64
14 February 2024	17,608.07	3537.01	5172.92	15,186.18	15,502.08	13,096.29	77,564.89	2955.45	2502.72
15 February 2024	17,624.74	3529	5229.13	15,151.63	15,540.32	13,258.16	77,480.89	2975.75	2501.25
16 February 2024	17,531.44	3482.83	5220.07	14,991.11	15,427.75	13,220.19	77,053.11	2935.68	2483.15
19 February 2024	17,497.21	3475.96	5275.22	14,975.12	15,537.99	13,221.84	76,989.27	2958.67	2479.25
20 February 2024	17,287.65	3437.68	5283.8	14,805.84	15,477.55	13,084.38	75,943.08	2888.51	2449.83
21 February 2024	16,932.78	3332.64	5159.92	14,411.99	14,767.7	12,629.05	74,491.49	2756.5	2399.58
22 February 2024	16,866.03	3349.66	5172.97	14,514.85	14,857.66	12,634.93	75,050.31	2782.53	2399.32
26 February 2024	17,210.05	3409.72	5304.92	14,808.16	15,253.8	13,094.89	76,364.78	2822.41	2457.8
27 February 2024	17,166.06	3422.63	5340.34	14,763.2	15,532.71	13,113.89	76,016.14	2812.91	2453.76
28 February 2024	17,213.78	3406.72	5387.82	14,774.04	15,344.99	13,242.12	75,845.6	2815.87	2465.1
29 February 2024	17,442.07	3414.83	5439.48	14,849.58	15,460.73	13,361.57	76,115.27	2896.86	2486.83
1 March 2024	17,446.03	3427.76	5456.51	14,917.35	15,505.38	13,332.13	76,304.85	2881.14	2502.74
4 March 2024	17,535.25	3450.75	5461.01	15,123.53	15,590.43	13,461.17	76,559.14	2899.96	2529.49
5 March 2024	17,595.97	3451.67	5475.33	15,161.38	15,575.6	13,447.08	76,593.92	2886.51	2531.84
6 March 2024	17,683.49	3454.54	5445.93	15,288.38	15,646.92	13,420.98	76,496.07	2886.26	2538.56
7 March 2024	17,708.22	3450.47	5470.65	15,283.93	15,648.81	13,444.89	77,303.94	2871.22	2542.21
11 March 2024	17,763.87	3447.11	5490.41	15,287.46	15,658.39	13,500.05	77,132.88	2905.35	2545.32
12 March 2024	17,863.27	3443.09	5492.23	15,349.4	15,657.82	13,510.9	76,809.76	2886.85	2550.51
13 March 2024	17,692.58	3447.45	5477.15	15,406.05	15,706.21	13,483.6	76,650.91	2906.89	2547.25
14 March 2024	17,627.75	3406.95	5396.75	15,312.59	15,593.83	13,294.96	76,257.24	2840.57	2531.72
15 March 2024	17,569.18	3400.3	5467.91	15,354.05	15,723.82	13,291.38	76,121.61	2864.44	2536.47
18 March 2024	17,536.47	3390.22	5452.35	15,342.67	15,822.91	13,391.31	76,055.59	2845.63	2536.42
19 March 2024	17,251.07	3348.92	5392.95	15,204.4	15,835.63	13,393.77	75,614.07	2820.16	2514.76
20 March 2024	17,168.49	3337.52	5494.39	15,246.66	15,764.12	13,457.42	75,368.86	2819.23	2523.18
21 March 2024	17,276.12	3349.75	5533.02	15,445.41	15,775.43	13,616.33	75,178.54	2855.15	2537.9
22 March 2024	17,217.35	3341.88	5483.46	15,428.11	15,675.09	13,551.62	74,817.48	2849.6	2529.86
25 March 2024	17,233.12	3322.95	5468.56	15,498.49	15,689.03	13,571.16	74,713.3	2863.64	2539.44
26 March 2024	17,292.27	3355.92	5524.42	15,525.64	15,737.28	13,692.25	74,439.25	2891.42	2538.84
27 March 2024	17,309.43	3352.56	5568.79	15,644.31	15,953.86	13,813.74	74,391.79	2889.08	2549.7
28 March 2024	17,398.42	3370.19	5616.91	15,666.62	15,923.24	13,741.74	74,509.55	2931.69	2555.03
29 March 2024	17,541.91	3364.54	5719.27	15,767.27	15,937.22	13,871.42	73,976.48	2950.94	2567.64
1 April 2024	17,740.84	3406.68	5763.21	15,880.91	16,052.04	14,000.81	74,935.19	3047.32	2579.78
2 April 2024	17,728.07	3440.22	5756.38	16,041.24	16,086.61	13,972.38	75,211.58	3080.71	2591.1
3 April 2024	17,797.96	3436.76	5743.73	16,198.99	16,354.29	14,245.43	75,179	3127.66	2610.44
4 April 2024	17,909.44	3455.42	5714.84	16,290.73	16,234.76	14,169.53	74,889.09	3084.12	2619.32
5 April 2024	17,860.37	3442.59	5668.8	16,217.23	16,183.05	14,107.51	74,382.61	3103.13	2610.31
8 April 2024	17,953.11	3465.05	5743.43	16,420.03	16,195.62	14,263.32	75,039.4	3134.93	2621.9
9 April 2024	17,858.71	3442.21	5694.45	16,539.14	16,044.7	14,076.84	74,792.03	3093.11	2625.88
10 April 2024	17,965.84	3483.64	5706.57	16,787.79	16,074.54	14,070.52	75,126.71	3106.3	2643.87

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
11 April 2024	17,994.89	3467.93	5705.61	16,772.3	16,054.14	14,102.67	74,909.51	3118.13	2647
12 April 2024	18,033.52	3462.96	5723.8	17,071.87	16,134.39	14,128.13	74,983.79	3132.65	2661.35
15 April 2024	18,230.87	3483.07	5871.74	16,947.02	16,218.49	14,197.45	75,087.34	3183.9	2665.46
16 April 2024	18,182.47	3529.81	5919.17	16,790.56	16,154.12	14,251.32	75,089.25	3194.16	2654.96
17 April 2024	18,086.79	3540.6	5871.41	16,714.29	16,019.62	14,196.57	75,898.48	3153.92	2651.02
18 April 2024	18,053.63	3525.99	5901.97	16,744.05	16,042.19	14,137.4	76,100.74	3144.96	2651.14
19 April 2024	18,202.85	3527.35	5912.27	16,762.75	16,115.29	14,227.6	76,206.41	3169.78	2658.16
22 April 2024	18,156.49	3540.36	5891.2	16,702.57	16,260.5	14,222.21	76,152.77	3163.84	2657.96
23 April 2024	17,987.2	3506.73	5784.34	16,508.29	16,034.3	14,140.68	75,563.07	3128	2630.09
24 April 2024	17,913.45	3477.6	5749.4	16,503.53	16,006.26	14,110.86	74,894.31	3114.04	2623.76
25 April 2024	17,893.58	3484.84	5778.62	16,592.49	16,176.29	14,183.84	74,709.21	3115.52	2629.73
26 April 2024	17,949.27	3502.57	5784.97	16,660.33	16,106	14,345.82	74,757.99	3150.8	2636.4
27 April 2024	18,091.12	3515.67	5779.76	16,615.8	16,128.93	14,363.26	73,803.64	3112.43	2648.46
29 April 2024	18,138.39	3540.61	5793.67	16,664.12	16,185.06	14,361.27	73,894.95	3140.34	2653.44
30 April 2024	18,099.32	3562.55	5770.57	16,596	16,161.02	14,337.4	73,751.13	3120.55	2648.77
2 May 2024	17,998.58	3556.22	5734.04	16,458.69	16,110.51	14,423.23	73,718.28	3098.33	2626.5
3 May 2024	17,997.45	3567.76	5723.84	16,487.89	16,072.96	14,421.97	73,842.93	3095.85	2623.92
6 May 2024	17,952.82	3625.41	5761.41	16,582.88	15,990.25	14,499.5	73,797.21	3073.22	2613.32
7 May 2024	18,125.29	3628.91	5741.45	16,574.73	16,072.67	14,400.04	74,032.41	3094.74	2605.47
8 May 2024	18,099.57	3597.74	5795.16	16,645.86	16,071.99	14,407.88	73,802.91	3105.35	2607.89
10 May 2024	18,183.51	3629.55	5808.54	16,802.32	16,100	14,446.51	74,085.63	3113.77	2619.92
13 May 2024	18,251.11	3632.77	5796.57	16,877.86	16,172.7	14,426.51	74,042.59	3157.43	2628.26
14 May 2024	18,248.06	3621.67	5756.19	16,912.71	16,229.56	14,279.09	74,020.67	3175.65	2634.89
15 May 2024	18,215.97	3587.26	5791.3	17,044.12	16,308.51	14,230.61	73,788.26	3203.08	2642.46
16 May 2024	18,315.26	3579.63	5930.89	17,037.95	16,485.19	14,207.25	73,665.73	3219.94	2656.18
17 May 2024	18,281.15	3579.39	6016.95	17,106.84	16,448.36	14,151.23	73,889.52	3253.68	2667.27
20 May 2024	18,094.17	3524.66	5934.38	17,052.28	16,299.99	13,946.28	73,872.59	3215.73	2642
21 May 2024	17,801.04	3461.24	5813.2	17,058.54	16,354.87	13,927.1	72,855.94	3207.91	2604.29
22 May 2024	17,930.46	3532.6	5875.36	17,015.96	16,301.62	13,962.23	72,794.28	3204.44	2612.53
23 May 2024	17,787.58	3521.52	5824.28	17,175.88	16,296.35	13,885.18	72,246.64	3201.52	2607.42
24 May 2024	17,505.7	3460.03	5775.1	16,864.75	16,083.18	13,740.59	71,446.25	3176.39	2574.84
27 May 2024	17,003.17	3329.69	5620.47	16,364.13	15,719.53	13,392.88	70,741.21	3023.84	2504.87
28 May 2024	16,996.93	3350.75	5651.1	16,360.15	15,830.72	13,512.27	71,084.9	3037.29	2506.27
29 May 2024	17,092.2	3317.89	5523.02	16,329.98	16,025.04	13,556.29	69,754.97	3024.02	2515.08
30 May 2024	16,925.25	3331.94	5445.44	16,164.31	15,801.93	13,432.29	69,053.26	3014.41	2489.98
31 May 2024	16,604.3	3203.78	5308.02	15,640.18	15,487.13	13,084.07	67,432.19	2890.4	2443.49
3 June 2024	16,245.22	3182.86	5237.11	15,309.01	15,218.43	12,830.97	66,390.03	2873.12	2391.7
4 June 2024	16,446.07	3245.48	5362.46	15,507.13	15,764.34	13,205.1	67,452.96	2981.76	2419.52
5 June 2024	16,599.11	3273.38	5372.14	15,676.22	15,857.49	13,287.48	67,845.49	2992.45	2438.02
6 June 2024	16,456.79	3255.66	5369.96	15,618.84	15,739.17	13,243.18	67,584.83	2974.97	2421.07
7 June 2024	16,588.41	3303.19	5440.59	15,722.11	16,139.99	13,398.38	69,622.82	3080.08	2443.84
10 June 2024	16,358.24	3283.51	5353.91	15,564.97	15,934.07	13,233.08	68,528.94	3022.41	2404.45
11 June 2024	16,347.65	3253.19	5247.15	15,500.42	15,821.98	13,052.37	68,680.78	3011.3	2402.61
13 June 2024	16,260.02	3252.04	5312.99	15,577.4	15,739.94	13,013.03	68,521.82	2993.91	2401.02
14 June 2024	16,526.38	3318.13	5364.76	15,753.41	15,990.49	13,176.54	69,103.76	3108.06	2434.4
17 June 2024	16,396.28	3308.83	5283.43	15,540.7	15,973.26	13,061.82	68,597.98	3046.4	2409.41

Table A2. *Cont.*

TRADE DATE	MEOGTR	MEEUTR	METLTR	MEMMTR	MEFNTR	MECNTR	MECHTR	METNTR	MRRT
18 June 2024	16,060.35	3254.6	5191.22	15,187.59	15,590.85	12,839.49	67,965.29	2996.52	2354.51
19 June 2024	15,572.31	3149.98	5069.19	14,650.98	15,307.32	12,555.66	65,484.49	2913.95	2292.79
20 June 2024	16,020.5	3282.24	5197.83	15,251.86	15,792.53	12,855.4	68,120.2	3033.54	2358.5
21 June 2024	15,932.63	3263.49	5223.94	15,133.6	15,734.16	12,788.93	67,615.38	3018.39	2349.06
24 June 2024	15,809.45	3267.29	5254.79	14,958.01	15,740.46	12,641.39	67,143.68	2956.7	2335.1
25 June 2024	15,945.48	3280.21	5281.77	14,978.43	15,854.12	12,713.59	67,131.46	2966.73	2345.63
26 June 2024	16,184.31	3278.31	5289.4	15,010.72	16,204.85	12,923.15	67,975.14	3017.69	2375.24
27 June 2024	16,162.22	3257.45	5273.4	15,020.16	16,299.23	12,889.84	67,771.64	2991.15	2372.63
28 June 2024	16,324.96	3260.54	5243.66	15,015.95	16,253.21	12,864.07	67,665.61	2970.8	2375.5
1 July 2024	16,614.13	3256.82	5267.44	15,182.33	16,281.73	12,890.41	67,613.21	2973.42	2401.91
2 July 2024	16,854.92	3303.08	5259.73	15,213.86	16,270.66	12,920.11	68,618.7	2980.41	2436.63
3 July 2024	16,760.8	3279.26	5210.6	15,168.27	16,180.31	12,814.63	68,293.42	2939.84	2427.69
4 July 2024	16,344.31	3226.36	5118.04	14,848.8	15,933.32	12,675.29	67,933.81	2865.17	2379.65
5 July 2024	16,396.28	3220.33	5046.92	14,928.2	15,785.23	12,693.62	67,717.61	2833.27	2395.4
8 July 2024	16,349.64	3184.51	5062.61	14,838.93	15,579	12,615.82	67,291.75	2777.1	2390.2

Source: Compiled by the authors based on the materials from MOEX Index (2024a, 2024b, 2024c, 2024d, 2024e, 2024f, 2024g, 2024h, 2024i).

Table A3. Residuals in regression models for 2019.

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
1	8450.87	438.01	2087.52	−33.62	2607.36	26.02	8762.18	104.74	7025.77	−147.27	6858.12	−160.49	19,139.73	146.71	1849.01	29.39
2	8625.30	366.91	2120.92	−57.84	2654.24	46.26	8841.81	69.36	7129.59	−215.34	6891.24	−178.23	19,311.99	10.30	1865.58	6.96
3	8526.25	401.36	2101.95	−50.98	2627.62	88.25	8796.59	17.01	7070.63	−175.44	6872.43	−161.39	19,214.17	−49.56	1856.17	23.45
4	8681.49	273.82	2131.69	−54.72	2669.35	64.52	8867.47	103.15	7163.03	−200.06	6901.90	−174.89	19,367.49	−158.29	1870.92	24.32
5	8773.23	295.82	2149.25	−55.81	2694.00	75.77	8909.35	133.29	7217.64	−232.91	6919.32	−154.98	19,458.09	−298.76	1879.64	61.13
6	8827.69	270.13	2159.69	−50.28	2708.64	46.34	8934.22	180.45	7250.05	−186.95	6929.66	−120.29	19,511.88	−293.15	1884.82	55.64
7	8788.82	293.94	2152.24	−46.36	2698.19	45.56	8916.47	134.56	7226.91	−156.80	6922.28	−104.09	19,473.49	−53.02	1881.12	84.11
8	8755.01	313.36	2145.77	−35.34	2689.10	60.56	8901.04	93.37	7206.79	−100.20	6915.86	−33.34	19,440.10	84.16	1877.91	94.42
9	8715.88	297.76	2138.27	−1.74	2678.59	92.72	8883.17	78.46	7183.50	−19.68	6908.43	−17.60	19,401.45	80.19	1874.19	120.53
10	8765.15	274.15	2147.71	1.77	2691.83	87.92	8905.66	65.23	7212.82	−34.06	6917.78	41.10	19,450.11	45.46	1878.87	125.54
11	8875.36	229.51	2168.81	−19.04	2721.45	77.53	8955.98	69.24	7278.42	82.80	6938.71	74.19	19,558.95	−86.53	1889.35	85.10
12	8848.03	235.62	2163.58	−16.54	2714.10	108.92	8943.51	58.07	7262.16	105.19	6933.52	79.59	19,531.96	44.69	1886.75	72.68
13	8804.21	280.17	2155.19	−13.48	2702.33	100.58	8923.50	36.92	7236.08	131.75	6925.20	130.16	19,488.69	−18.72	1882.59	71.37
14	8894.28	288.51	2172.44	4.08	2726.54	130.58	8964.62	17.96	7289.69	133.04	6942.30	160.52	19,577.64	−9.77	1891.15	66.37
15	8846.75	227.71	2163.33	21.32	2713.76	139.69	8942.92	−20.19	7261.39	102.10	6933.28	155.75	19,530.70	−121.07	1886.63	68.61
16	8916.09	268.60	2176.62	19.75	2732.40	108.63	8974.58	16.40	7302.67	53.65	6946.44	156.24	19,599.18	−38.19	1893.22	70.01
17	8802.87	320.37	2154.93	17.20	2701.97	104.54	8922.89	15.80	7235.28	90.16	6924.95	139.87	19,487.36	90.43	1882.46	83.83
18	8922.51	283.30	2177.84	0.69	2734.12	87.76	8977.51	−33.20	7306.49	111.25	6947.66	86.33	19,605.52	−14.08	1893.83	74.10
19	9024.06	246.59	2197.29	−13.49	2761.41	68.33	9023.87	−33.50	7366.93	61.51	6966.94	41.29	19,705.81	−107.18	1903.48	100.05
20	9061.53	190.25	2204.47	−11.00	2771.48	50.40	9040.98	3.32	7389.23	127.65	6974.05	41.36	19,742.81	−154.74	1907.04	82.78
21	9054.28	193.54	2203.08	−3.81	2769.53	59.24	9037.67	66.79	7384.91	145.10	6972.67	60.20	19,735.65	−27.22	1906.35	47.32
22	9074.61	194.26	2206.98	9.40	2775.00	67.33	9046.95	88.51	7397.02	142.05	6976.53	32.32	19,755.73	−118.65	1908.28	15.40
23	9213.76	164.06	2233.62	−15.48	2812.40	45.66	9110.48	81.33	7479.84	60.88	7002.95	25.16	19,893.15	−194.52	1921.51	−1.72
24	9169.81	148.88	2225.21	−18.69	2800.59	42.76	9090.42	114.70	7453.68	45.23	6994.61	65.15	19,849.75	−176.01	1917.33	4.29
25	9015.40	214.36	2195.64	−7.96	2759.09	70.29	9019.92	148.96	7361.77	17.64	6965.29	60.56	19,697.26	−75.16	1902.66	10.79
26	8996.93	188.17	2192.10	9.65	2754.12	20.31	9011.48	124.02	7350.78	44.77	6961.79	65.45	19,679.01	−107.31	1900.90	13.81

Table A3. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
27	9033.68	128.10	2199.14	10.95	2764.00	−12.16	9028.27	117.93	7372.66	71.92	6968.76	65.98	19,715.31	−114.65	1904.39	15.79
28	9157.43	75.62	2222.84	−7.49	2797.26	−11.78	9084.76	96.54	7446.31	64.43	6992.26	70.34	19,837.52	−260.46	1916.15	18.90
29	8900.57	126.20	2173.64	29.04	2728.23	41.27	8967.49	83.33	7293.43	80.49	6943.49	71.27	19,583.85	−186.19	1891.74	8.30
30	8766.94	208.18	2148.05	44.97	2692.31	96.64	8906.48	194.93	7213.89	11.89	6918.13	79.64	19,451.88	221.81	1879.04	43.31
31	8910.13	203.35	2175.47	25.41	2730.79	89.64	8971.86	176.32	7299.12	15.40	6945.31	43.86	19,593.29	67.34	1892.65	48.53
32	8814.74	244.81	2157.20	31.73	2705.16	61.25	8928.30	202.17	7242.34	11.98	6927.20	27.68	19,499.08	127.00	1883.59	39.85
33	8770.28	268.89	2148.69	34.77	2693.21	46.35	8908.01	176.94	7215.88	−0.56	6918.76	4.48	19,455.18	100.29	1879.36	27.37
34	8931.36	188.82	2179.54	8.25	2736.50	6.10	8981.55	210.16	7311.76	−31.17	6949.34	19.18	19,614.26	157.76	1894.67	13.47
35	8828.66	256.65	2159.87	16.13	2708.90	18.93	8934.66	184.92	7250.63	−37.89	6929.84	−11.44	19,512.83	168.21	1884.91	21.25
36	8931.94	223.24	2179.65	12.26	2736.66	−6.29	8981.81	196.34	7312.10	−70.33	6949.45	−21.43	19,614.83	131.03	1894.72	12.54
37	8994.30	108.66	2191.59	−1.88	2753.41	−8.41	9010.28	281.68	7349.21	−90.98	6961.29	−28.78	19,676.41	119.79	1900.65	4.23
38	8993.20	114.23	2191.38	−0.82	2753.12	5.46	9009.79	324.23	7348.56	−109.23	6961.08	−90.40	19,675.34	215.24	1900.55	−7.16
39	8972.74	141.24	2187.46	−7.34	2747.62	11.07	9000.44	282.78	7336.38	−88.88	6957.19	−155.68	19,655.13	213.96	1898.60	−24.38
40	8944.32	96.48	2182.02	−19.36	2739.98	21.83	8987.47	271.62	7319.47	−62.01	6951.80	−128.97	19,627.06	235.59	1895.90	−31.07
41	8884.34	115.65	2170.53	−2.98	2723.86	34.75	8960.08	232.05	7283.77	−7.47	6940.41	−91.52	19,567.82	8.72	1890.20	−32.73
42	8859.45	143.19	2165.77	11.02	2717.17	66.55	8948.72	168.29	7268.95	20.74	6935.69	−91.81	19,543.24	174.32	1887.84	−10.99
43	8808.51	151.93	2156.01	−3.18	2703.48	83.25	8925.46	183.10	7238.64	−9.17	6926.02	−79.51	19,492.94	200.45	1883.00	−35.91
44	8991.60	53.90	2191.08	−31.81	2752.69	44.53	9009.05	211.29	7347.61	−51.86	6960.78	−97.86	19,673.75	57.69	1900.39	−21.64
45	8904.29	65.90	2174.36	−25.95	2729.23	47.06	8969.19	199.34	7295.64	37.90	6944.20	−137.91	19,587.53	294.72	1892.10	2.82
46	8848.48	51.20	2163.67	−13.61	2714.23	75.48	8943.71	205.59	7262.42	87.20	6933.60	−111.91	19,532.41	854.38	1886.79	38.39
47	8890.24	−20.06	2171.66	−10.36	2725.45	72.94	8962.78	244.63	7287.28	71.11	6941.53	−108.16	19,573.65	739.40	1890.76	15.34
48	8891.20	−12.82	2171.85	−3.06	2725.71	94.37	8963.22	255.59	7287.85	100.91	6941.72	−152.70	19,574.60	765.41	1890.85	20.25
49	8831.35	13.60	2160.39	−2.57	2709.62	100.89	8935.89	272.77	7252.23	91.64	6930.35	−225.71	19,515.49	775.15	1885.17	5.34
50	8922.96	8.82	2177.93	−15.45	2734.24	80.45	8977.71	269.98	7306.75	159.41	6947.74	−211.48	19,605.96	585.72	1893.87	0.99
51	8958.05	−9.71	2184.65	−26.02	2743.67	111.02	8993.74	316.37	7327.64	89.38	6954.41	−185.90	19,640.62	460.06	1897.21	−2.94
52	8992.24	14.91	2191.20	−37.33	2752.86	85.24	9009.35	275.74	7347.99	50.14	6960.90	−218.09	19,674.39	425.17	1900.46	−13.00
53	9045.17	39.95	2201.34	−47.11	2767.09	33.20	9033.51	179.87	7379.49	14.01	6970.94	−221.01	19,726.65	267.86	1905.48	−34.11
54	9106.69	8.87	2213.12	−54.18	2783.62	98.62	9061.60	170.53	7416.11	−25.70	6982.62	−245.24	19,787.41	22.59	1911.33	−50.29
55	9037.08	36.53	2199.79	−50.45	2764.91	93.19	9029.82	169.56	7374.68	−66.36	6969.41	−213.49	19,718.67	35.21	1904.72	−30.93
56	9057.93	−20.09	2203.78	−56.42	2770.52	62.66	9039.34	114.04	7387.09	18.41	6973.37	−194.86	19,739.26	−168.17	1906.70	−43.40
57	9104.64	−54.81	2212.73	−55.95	2783.07	62.05	9060.66	130.10	7414.89	29.75	6982.23	−118.18	19,785.38	−105.67	1911.14	−41.94
58	8958.56	32.47	2184.75	−41.44	2743.81	55.67	8993.97	100.57	7327.95	37.97	6954.50	−188.17	19,641.12	−131.34	1897.25	−42.43
59	8943.62	84.14	2181.89	−40.95	2739.79	46.67	8987.15	105.38	7319.05	56.76	6951.67	−123.68	19,626.36	−108.62	1895.83	−19.77
60	8997.76	94.65	2192.26	−50.84	2754.35	−0.11	9011.86	112.96	7351.27	18.59	6961.94	−154.21	19,679.83	77.67	1900.98	−24.03
61	9137.80	31.13	2219.08	−62.89	2791.98	−22.58	9075.80	105.31	7434.63	−3.70	6988.53	−192.08	19,818.14	−45.01	1914.29	−17.03
62	9191.95	−34.57	2229.45	−74.34	2806.53	−6.43	9100.52	125.84	7466.85	−13.46	6998.81	−159.17	19,871.61	−69.38	1919.43	−15.55
63	9217.41	−54.48	2234.32	−72.82	2813.38	−6.84	9112.15	84.30	7482.01	−30.85	7003.64	−139.52	19,896.76	−220.81	1921.85	−13.05
64	9249.10	−98.36	2240.39	−81.35	2821.90	17.47	9126.62	39.40	7500.87	−32.35	7009.66	−134.75	19,928.06	−199.25	1924.86	−16.03
65	9294.52	−171.44	2249.09	−85.76	2834.10	24.24	9147.35	10.02	7527.91	−23.75	7018.28	−152.09	19,972.92	−114.80	1929.18	−0.15
66	9375.74	−183.77	2264.65	−92.99	2855.93	−22.65	9184.43	−4.41	7576.25	−48.58	7033.70	−184.12	20,053.12	−317.63	1936.90	−22.51
67	9426.48	−227.24	2274.37	−86.13	2869.57	−27.02	9207.60	−58.27	7606.45	−42.22	7043.33	−176.94	20,103.24	−398.89	1941.72	−44.42
68	9483.51	−284.49	2285.29	−75.66	2884.90	−57.26	9233.64	−114.24	7640.39	41.64	7054.16	−224.17	20,159.56	−403.55	1947.14	−54.20
69	9326.02	−177.30	2255.13	−56.38	2842.57	−9.71	9161.74	−170.16	7546.65	42.92	7024.26	−183.22	20,004.02	−301.55	1932.17	−30.98
70	9395.95	−213.71	2268.52	−66.13	2861.36	−39.93	9193.66	−106.48	7588.27	−35.44	7037.54	−186.93	20,073.08	−441.96	1938.82	−38.28
71	9318.20	−218.31	2253.63	−48.29	2840.46	−13.66	9158.16	−150.31	7542.00	−8.21	7022.78	−170.43	19,996.29	−483.54	1931.43	−25.09
72	9417.05	−207.99	2272.56	−52.59	2867.03	−60.09	9203.30	−81.29	7600.84	−41.71	7041.54	−162.46	20,093.92	−363.64	1940.82	−29.99
73	9458.94	−222.83	2280.58	−55.66	2878.29	−65.15	9222.42	−103.73	7625.77	−75.80	7049.50	−113.48	20,135.29	−385.09	1944.81	−40.98
74	9423.92	−206.22	2273.87	−53.38	2868.88	−46.40	9206.43	−76.08	7604.92	−72.25	7042.85	−118.94	20,100.70	−437.29	1941.48	−47.93

Table A3. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
75	9436.68	−216.54	2276.32	−52.19	2872.31	−42.77	9212.26	−52.57	7612.52	−69.24	7045.27	−91.25	20,113.31	−411.62	1942.69	−52.07
76	9571.59	−247.98	2302.16	−65.73	2908.57	−70.29	9273.85	−79.54	7692.82	−125.48	7070.88	−116.06	20,246.55	−610.82	1955.51	−57.39
77	9577.56	−254.08	2303.30	−56.98	2910.17	−79.42	9276.58	−193.11	7696.37	−153.73	7072.01	−45.39	20,252.44	−605.38	1956.08	−73.25
78	9536.50	−248.53	2295.44	−49.45	2899.14	−78.81	9257.83	−178.02	7671.93	−117.47	7064.22	−28.69	20,211.89	−619.64	1952.18	−71.39
79	9448.81	−158.81	2278.64	−43.31	2875.57	−83.78	9217.79	−151.47	7619.74	−175.45	7047.57	69.02	20,125.28	−540.46	1943.84	−63.46
80	9480.88	−107.36	2284.78	−52.71	2884.19	−77.21	9232.44	−80.05	7638.83	−226.62	7053.66	32.46	20,156.96	−679.63	1946.89	−57.20
81	9501.48	−158.38	2288.73	−51.28	2889.72	−93.11	9241.84	−155.51	7651.08	−167.82	7057.57	27.07	20,177.30	−762.98	1948.85	−61.86
82	9413.65	−101.80	2271.91	−36.77	2866.12	−75.63	9201.74	−134.46	7598.81	−167.22	7040.90	109.30	20,090.57	−666.75	1940.50	−75.74
83	9497.76	−179.84	2288.02	−48.91	2888.72	−38.22	9240.14	−124.17	7648.87	−162.51	7056.86	128.26	20,173.62	−693.91	1948.49	−72.99
84	9485.95	−127.21	2285.75	−43.47	2885.55	−14.09	9234.75	−93.97	7641.84	−106.33	7054.62	164.12	20,161.97	−680.91	1947.37	−75.06
85	9492.94	−136.87	2287.09	−47.45	2887.43	−28.48	9237.94	−67.04	7646.01	−82.55	7055.95	121.75	20,168.87	−710.35	1948.04	−105.31
86	9411.34	−124.49	2271.47	−16.81	2865.50	−21.21	9200.69	−40.15	7597.44	−44.18	7040.46	169.56	20,088.28	−834.08	1940.28	−102.22
87	9338.47	−149.98	2257.51	−7.13	2845.91	4.14	9167.42	−61.70	7554.06	−49.49	7026.62	125.25	20,016.31	−846.44	1933.36	−101.07
88	9194.64	−108.70	2229.96	−0.49	2807.26	−8.37	9101.75	−158.64	7468.46	−31.54	6999.32	90.50	19,874.27	−986.07	1919.69	−102.53
89	9198.81	−108.76	2230.76	1.45	2808.38	−5.70	9103.66	−213.90	7470.94	−26.12	7000.11	64.15	19,878.39	−710.42	1920.09	−130.95
90	9475.43	−190.22	2283.74	−34.73	2882.72	−54.49	9229.95	−371.09	7635.58	−151.06	7052.63	27.93	20,151.58	−1031.22	1946.37	−165.26
91	9445.09	−221.05	2277.93	−28.12	2874.57	−44.95	9216.09	−380.02	7617.52	−107.82	7046.87	5.45	20,121.61	−1154.30	1943.49	−167.39
92	9590.13	−258.64	2305.71	−47.39	2913.55	−71.24	9282.32	−480.46	7703.85	−199.23	7074.40	31.60	20,264.86	−1185.67	1957.27	−149.00
93	9535.35	−210.84	2295.21	−20.93	2898.83	−53.70	9257.30	−489.00	7671.24	−168.78	7064.00	107.63	20,210.75	−917.65	1952.07	−128.31
94	9503.59	−162.49	2289.13	9.40	2890.29	−50.19	9242.81	−501.61	7652.34	−139.44	7057.97	121.04	20,179.39	−822.66	1949.05	−141.90
95	9780.34	−264.38	2342.14	−26.23	2964.67	−140.80	9369.16	−558.39	7817.06	−254.91	7110.51	36.10	20,452.70	−1227.24	1975.35	−169.59
96	9923.91	−312.64	2369.63	−46.19	3003.26	−164.81	9434.71	−562.55	7902.52	−288.41	7137.77	8.06	20,594.49	−1269.46	1988.99	−186.20
97	9834.94	−234.55	2352.59	−36.31	2979.34	−118.18	9394.08	−592.29	7849.56	−163.66	7120.87	−82.65	20,506.62	−1095.15	1980.54	−178.90
98	9854.69	−281.23	2356.38	−20.33	2984.65	−131.09	9403.10	−532.87	7861.32	−190.77	7124.63	−24.74	20,526.13	−1044.47	1982.41	−183.96
99	9938.54	−323.17	2372.43	−54.42	3007.19	−130.53	9441.38	−537.26	7911.22	−185.31	7140.54	2.65	20,608.94	−1133.55	1990.38	−187.74
100	9836.92	−264.54	2352.97	−22.31	2979.88	−158.60	9394.99	−409.90	7850.74	−211.55	7121.25	−30.64	20,508.58	−988.08	1980.72	−185.62
101	9964.20	−247.29	2377.35	−42.78	3014.08	−180.68	9453.10	−462.37	7926.50	−268.69	7145.41	23.79	20,634.28	−855.49	1992.82	−190.65
102	10,035.09	−203.25	2390.92	−47.65	3033.13	−187.04	9485.46	−470.98	7968.69	−305.99	7158.87	32.64	20,704.29	−743.88	1999.56	−206.86
103	10,081.60	−241.81	2399.83	−69.08	3045.63	−223.69	9506.70	−470.08	7996.37	−347.27	7167.70	36.52	20,750.22	−697.82	2003.98	−162.47
104	10,415.70	−360.08	2463.82	−136.38	3135.43	−289.70	9659.23	−574.14	8195.22	−469.17	7231.13	27.94	21,080.17	−969.90	2035.73	−151.21
105	10,252.69	−293.11	2432.60	−93.24	3091.62	−235.82	9584.81	−457.33	8098.20	−361.90	7200.18	46.04	20,919.19	−946.45	2020.23	−143.30
106	10,209.58	−341.68	2424.34	−69.36	3080.03	−232.16	9565.13	−467.47	8072.54	−232.40	7192.00	83.45	20,876.61	−828.87	2016.14	−141.34
107	10,355.97	−431.19	2452.38	−59.43	3119.37	−229.84	9631.97	−450.54	8159.68	−210.93	7219.79	81.58	21,021.19	−866.17	2030.05	−154.80
108	10,360.27	−468.10	2453.20	−31.50	3120.53	−229.23	9633.93	−437.61	8162.23	−169.20	7220.61	52.59	21,025.44	−728.78	2030.46	−153.97
109	10,428.08	−487.61	2466.19	−27.88	3138.75	−236.33	9664.89	−428.51	8202.59	−131.63	7233.48	36.22	21,092.40	−873.30	2036.90	−165.91
110	10,495.95	−424.19	2479.19	−30.65	3156.99	−212.22	9695.87	−281.15	8242.99	−119.11	7246.36	72.29	21,159.43	−805.24	2043.35	−167.52
111	10,569.47	−559.13	2493.27	−5.63	3176.75	−235.63	9729.44	−239.90	8286.75	−86.06	7260.32	73.95	21,232.04	−722.84	2050.34	−135.15
112	10,470.29	−522.27	2474.27	53.20	3150.10	−203.64	9684.16	−171.01	8227.72	−73.53	7241.49	45.97	21,134.09	−667.90	2040.91	−124.79
113	10,433.47	−501.31	2467.22	98.83	3140.20	−186.88	9667.35	−219.18	8205.80	−73.19	7234.50	57.59	21,097.72	−710.34	2037.41	−78.66
114	10,586.15	−570.08	2496.46	107.82	3181.24	−177.64	9737.05	−160.13	8296.68	−113.33	7263.49	57.22	21,248.51	−750.16	2051.92	−109.63
115	10,561.45	−593.09	2491.73	142.66	3174.60	−151.83	9725.78	−107.76	8281.97	−102.58	7258.80	30.40	21,224.12	−727.43	2049.58	−103.44
116	10,628.62	−512.09	2504.60	147.10	3192.65	−142.67	9756.44	−81.18	8321.95	−86.60	7271.55	51.53	21,290.45	−743.63	2055.96	−112.26
117	10,545.99	−458.47	2488.77	126.61	3170.44	−134.82	9718.72	−30.84	8272.77	−39.82	7255.86	61.97	21,208.85	−650.57	2048.11	−94.83
118	10,536.37	−495.05	2486.93	164.57	3167.86	−118.22	9714.32	−20.97	8267.05	−8.35	7254.04	63.08	21,199.35	−596.64	2047.19	−77.19
119	10,480.81	−464.75	2476.29	124.87	3152.93	−98.07	9688.96	37.26	8233.98	−2.00	7243.49	48.55	21,144.48	−250.17	2041.91	−67.59
120	10,573.96	−465.69	2494.13	95.94	3177.96	−67.45	9731.49	−18.97	8289.42	−20.56	7261.17	110.70	21,236.47	−123.02	2050.77	−74.84
121	10,608.28	−447.95	2500.70	112.36	3187.18	−95.17	9747.16	−48.47	8309.85	−58.39	7267.69	94.77	21,270.37	106.77	2054.03	−66.80
122	10,544.45	−389.46	2488.48	113.99	3170.03	−71.58	9718.02	−135.79	8271.86	−39.47	7255.57	46.54	21,207.33	−196.56	2047.96	−64.50

Table A3. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
123	10,702.65	−463.88	2518.77	124.89	3212.55	−107.65	9790.24	−277.07	8366.01	−43.97	7285.60	32.40	21,363.56	−386.46	2062.99	−82.23
124	10,722.66	−459.27	2522.61	118.19	3217.93	−150.01	9799.38	−192.71	8377.93	−46.65	7289.40	102.14	21,383.33	−314.46	2064.90	−77.69
125	10,772.96	−452.40	2532.24	127.98	3231.44	−142.78	9822.34	−202.10	8407.86	−50.56	7298.95	116.27	21,433.00	−396.68	2069.68	−25.27
126	10,892.02	−451.45	2555.04	94.48	3263.44	−175.96	9876.70	−238.01	8478.73	−41.93	7321.55	99.35	21,550.59	−443.01	2080.99	81.44
127	10,854.11	−458.27	2547.78	90.10	3253.25	−143.76	9859.39	−181.37	8456.16	8.45	7314.36	124.01	21,513.14	−403.55	2077.39	75.52
128	10,757.82	−357.72	2529.34	86.13	3227.37	−85.61	9815.43	−83.63	8398.85	169.53	7296.08	171.90	21,418.05	−178.14	2068.24	79.21
129	10,775.27	−342.18	2532.68	64.97	3232.06	−72.22	9823.40	−173.00	8409.24	148.32	7299.39	158.08	21,435.28	−142.63	2069.90	51.89
130	10,778.60	−376.82	2533.32	74.95	3232.96	−91.61	9824.92	−229.13	8411.22	188.94	7300.02	197.59	21,438.58	−349.71	2070.21	75.28
131	10,610.65	−333.93	2501.16	60.51	3187.82	−63.38	9748.24	−283.90	8311.26	260.81	7268.14	174.09	21,272.71	−461.86	2054.25	73.18
132	10,510.84	−290.80	2482.04	99.37	3160.99	−25.66	9702.67	−226.39	8251.85	264.32	7249.19	258.10	21,174.13	−202.42	2044.77	90.23
133	10,416.15	−296.59	2463.90	116.20	3135.55	5.64	9659.44	−152.17	8195.49	337.38	7231.21	279.46	21,080.62	1.67	2035.77	95.58
134	10,414.86	−271.30	2463.66	72.62	3135.20	−11.68	9658.85	−107.48	8194.73	237.00	7230.97	302.05	21,079.35	−85.58	2035.65	74.88
135	10,286.43	−86.07	2439.06	110.09	3100.69	4.30	9600.22	−27.39	8118.29	263.92	7206.59	280.33	20,952.51	−199.75	2023.44	96.61
136	10,251.41	−128.14	2432.35	116.96	3091.27	12.77	9584.22	34.79	8097.44	263.81	7199.94	298.35	20,917.92	−167.24	2020.11	93.23
137	10,250.44	−128.61	2432.17	108.62	3091.01	28.51	9583.79	54.46	8096.87	258.17	7199.76	298.62	20,916.97	−133.00	2020.02	107.10
138	10,192.84	−124.67	2421.14	94.87	3075.53	31.00	9557.48	78.43	8062.58	306.40	7188.82	223.04	20,860.08	−17.99	2014.55	108.20
139	10,265.07	−102.88	2434.97	89.97	3094.94	44.80	9590.46	30.26	8105.57	255.54	7202.53	251.73	20,931.42	−13.31	2021.41	101.16
140	10,179.88	−82.11	2418.65	108.46	3072.05	62.45	9551.57	76.26	8054.86	244.94	7186.36	257.59	20,847.28	31.04	2013.32	86.20
141	10,284.96	−120.17	2438.78	122.81	3100.29	34.01	9599.54	75.87	8117.41	271.00	7206.31	192.19	20,951.06	−94.26	2023.30	86.64
142	10,359.76	−134.48	2453.11	92.48	3120.39	11.41	9633.69	−49.30	8161.93	173.29	7220.51	185.98	21,024.93	−236.23	2030.41	79.83
143	10,424.74	−118.20	2465.55	101.49	3137.86	−5.21	9663.36	−74.18	8200.61	168.04	7232.84	139.63	21,089.11	−288.32	2036.59	61.55
144	10,449.06	−168.19	2470.21	78.11	3144.39	5.61	9674.46	−90.26	8215.08	216.45	7237.46	136.26	21,113.12	−255.07	2038.90	42.29
145	10,474.27	−145.28	2475.04	72.78	3151.17	−23.48	9685.97	−110.56	8230.08	161.16	7242.25	157.06	21,138.02	−237.72	2041.29	47.19
146	10,376.76	−44.99	2456.36	84.71	3124.96	−4.40	9641.45	−148.02	8172.05	183.79	7223.73	229.06	21,041.72	−59.25	2032.03	63.47
147	10,079.61	71.15	2399.45	113.37	3045.10	51.52	9505.79	−90.00	7995.19	238.45	7167.32	200.33	20,748.26	362.35	2003.79	71.05
148	9988.45	41.14	2381.99	94.41	3020.60	38.48	9464.17	−65.61	7940.93	299.05	7150.02	71.10	20,658.23	374.73	1995.12	45.23
149	10,168.59	−2.95	2416.49	69.31	3069.01	13.50	9546.41	−99.31	8048.14	261.21	7184.22	82.51	20,836.13	409.75	2012.24	43.02
150	10,147.74	−25.80	2412.50	68.59	3063.41	10.37	9536.89	−13.71	8035.74	213.02	7180.26	124.38	20,815.54	469.35	2010.26	59.99
151	10,291.24	−94.72	2439.98	47.08	3101.98	−24.28	9602.41	−66.89	8121.15	160.26	7207.50	52.62	20,957.27	606.01	2023.90	97.07
152	10,156.46	−3.20	2414.17	57.16	3065.75	−1.21	9540.88	−91.60	8040.93	162.89	7181.91	85.45	20,824.16	896.84	2011.09	114.81
153	10,196.94	−37.20	2421.92	32.46	3076.63	−7.68	9559.36	−44.66	8065.02	157.13	7189.60	90.50	20,864.13	794.02	2014.94	136.54
154	10,139.46	−5.99	2410.91	38.89	3061.19	−1.81	9533.12	−179.70	8030.81	151.09	7178.69	115.57	20,807.37	725.02	2009.47	142.15
155	9917.56	31.28	2368.42	61.45	3001.55	48.08	9431.81	−84.59	7898.74	148.19	7136.56	127.01	20,588.22	1092.69	1988.39	177.99
156	9856.43	46.84	2356.71	54.56	2985.12	59.47	9403.89	−63.90	7862.35	112.26	7124.95	141.80	20,527.84	1207.66	1982.58	194.13
157	9791.95	93.25	2344.36	63.75	2967.79	55.44	9374.46	−109.12	7823.97	84.54	7112.72	198.23	20,464.17	1400.91	1976.45	178.70
158	9953.17	29.40	2375.24	29.17	3011.12	26.60	9448.06	−106.90	7919.93	114.72	7143.32	196.26	20,623.38	1235.59	1991.77	149.09
159	10,114.96	−8.40	2406.22	6.85	3054.60	−19.85	9521.93	−85.31	8016.22	13.19	7174.03	195.24	20,783.17	898.38	2007.15	132.55
160	10,127.98	−47.89	2408.71	34.18	3058.10	−20.23	9527.87	−92.37	8023.98	39.82	7176.51	216.69	20,796.03	574.34	2008.38	160.24
161	10,170.83	−118.35	2416.92	29.71	3069.62	−28.11	9547.44	−82.09	8049.48	−16.85	7184.64	207.41	20,838.35	442.49	2012.46	139.40
162	10,088.91	−97.10	2401.23	30.68	3047.60	−10.23	9510.04	3.88	8000.72	61.52	7169.09	172.94	20,757.44	543.97	2004.67	125.69
163	10,082.69	−92.56	2400.04	36.87	3045.93	40.95	9507.20	68.87	7997.02	55.70	7167.91	176.52	20,751.30	921.20	2004.08	129.63
164	10,044.39	−69.51	2392.71	51.32	3035.63	44.05	9489.71	226.29	7974.22	146.28	7160.64	177.32	20,713.47	816.40	2000.44	128.67
165	10,152.55	−114.31	2413.42	48.61	3064.70	50.53	9539.09	203.71	8038.60	97.38	7181.17	167.35	20,820.29	829.17	2010.72	122.07
166	10,346.41	−189.91	2450.55	42.38	3116.81	−6.72	9627.60	176.64	8153.99	39.59	7217.97	202.35	21,011.75	922.85	2029.14	104.06
167	10,479.21	−255.18	2475.98	31.01	3152.50	−26.43	9688.23	299.56	8233.02	−26.98	7243.18	293.89	21,142.90	1046.25	2041.76	105.19
168	10,638.30	−187.38	2506.45	16.11	3195.25	−66.69	9760.86	223.84	8327.72	−43.67	7273.39	261.92	21,300.02	946.31	2056.88	71.26
169	10,544.96	114.65	2488.58	34.02	3170.17	−47.49	9718.25	242.50	8272.16	−24.58	7255.67	251.29	21,207.84	992.09	2048.01	74.91
170	10,652.48	48.04	2509.17	31.91	3199.06	−12.88	9767.34	213.29	8336.16	157.66	7276.08	239.43	21,314.02	911.94	2058.23	66.43

Table A3. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
171	10,761.22	−88.98	2529.99	33.48	3228.29	−26.91	9816.98	165.38	8400.88	65.36	7296.72	262.04	21,421.41	732.20	2068.56	48.27
172	10,698.09	−31.79	2517.90	38.34	3211.32	−33.99	9788.16	155.92	8363.30	95.04	7284.74	232.79	21,359.06	915.61	2062.56	36.36
173	10,634.84	−20.05	2505.79	51.30	3194.32	−14.08	9759.28	147.94	8325.66	93.05	7272.73	217.01	21,296.60	1039.54	2056.55	69.75
174	10,611.42	−31.92	2501.30	58.34	3188.03	−48.73	9748.59	152.17	8311.72	186.98	7268.28	250.97	21,273.47	1199.84	2054.33	56.79
175	10,731.77	4.50	2524.35	44.12	3220.37	−74.77	9803.54	203.71	8383.35	167.17	7291.13	275.07	21,392.33	1239.27	2065.76	60.50
176	10,615.02	27.15	2501.99	93.52	3188.99	−74.31	9750.23	250.90	8313.86	226.73	7268.97	271.23	21,277.02	1235.99	2054.67	67.43
177	10,553.88	76.34	2490.28	173.58	3172.56	−38.23	9722.32	198.65	8277.47	238.94	7257.36	270.51	21,216.64	1182.52	2048.86	75.36
178	10,816.07	90.99	2540.50	109.13	3243.03	−98.53	9842.02	173.32	8433.52	115.38	7307.13	177.73	21,475.57	1154.22	2073.77	−9.09
179	10,766.03	68.07	2530.91	77.20	3229.58	−84.36	9819.18	207.88	8403.74	125.10	7297.63	175.60	21,426.16	1298.88	2069.02	11.21
180	10,792.46	−6.87	2535.98	86.18	3236.68	−88.25	9831.25	246.06	8419.47	95.55	7302.65	145.62	21,452.26	1160.40	2071.53	7.46
181	10,666.15	40.40	2511.78	92.99	3202.74	−60.39	9773.58	172.59	8344.29	165.39	7278.67	51.09	21,327.51	1156.45	2059.53	6.81
182	10,721.64	43.57	2522.41	66.68	3217.65	−48.18	9798.91	141.01	8377.32	85.42	7289.21	10.71	21,382.32	964.33	2064.80	16.29
183	10,687.25	79.82	2515.83	67.63	3208.41	−67.91	9783.21	96.21	8356.85	70.69	7282.68	−2.12	21,348.36	772.13	2061.53	15.17
184	10,517.06	117.42	2483.23	55.70	3162.67	−59.51	9705.51	130.95	8255.55	120.45	7250.37	0.85	21,180.28	613.98	2045.36	16.14
185	10,568.51	78.34	2493.08	27.87	3176.49	−81.73	9729.00	136.45	8286.17	70.31	7260.14	−10.20	21,231.09	593.67	2050.25	13.29
186	10,676.86	40.19	2513.84	26.45	3205.62	−97.37	9778.47	128.97	8350.67	53.90	7280.71	30.96	21,338.09	522.80	2060.54	14.30
187	10,604.95	48.94	2500.06	37.64	3186.29	−78.66	9745.63	72.08	8307.86	62.73	7267.05	5.12	21,267.07	600.49	2053.71	30.03
188	10,547.85	46.74	2489.13	55.00	3170.94	−75.45	9719.57	136.71	8273.88	71.06	7256.22	−4.02	21,210.69	875.50	2048.28	29.20
189	10,592.56	83.86	2497.69	22.43	3182.96	−91.95	9739.98	73.31	8300.49	21.34	7264.70	5.49	21,254.85	812.34	2052.53	26.22
190	10,402.36	117.02	2461.26	2.53	3131.84	−59.78	9653.14	62.97	8187.28	−38.63	7228.59	−35.78	21,067.00	1007.88	2034.46	21.44
191	10,350.33	120.74	2451.30	32.11	3117.86	−39.00	9629.39	14.68	8156.32	−25.96	7218.72	−113.96	21,015.62	990.37	2029.51	−4.14
192	10,223.89	238.01	2427.08	54.82	3083.88	−0.81	9571.66	42.57	8081.06	27.43	7194.71	−122.33	20,890.74	1209.06	2017.50	−1.23
193	10,371.82	227.41	2455.41	27.98	3123.63	−20.89	9639.20	−41.55	8169.11	41.35	7222.80	−178.61	21,036.84	1207.74	2031.56	−18.47
194	10,311.07	262.81	2443.78	40.22	3107.31	−46.10	9611.46	40.46	8132.95	−14.28	7211.26	−181.59	20,976.84	1357.82	2025.78	−8.53
195	10,323.77	275.97	2446.21	41.84	3110.72	25.51	9617.26	43.73	8140.51	0.72	7213.68	−166.35	20,989.39	1489.11	2026.99	3.67
196	10,389.91	286.93	2458.88	45.94	3128.50	39.56	9647.46	84.48	8179.87	9.25	7226.23	−192.91	21,054.71	1500.58	2033.27	13.63
197	10,446.04	328.42	2469.63	23.36	3143.58	58.49	9673.09	28.80	8213.28	−6.65	7236.89	−474.15	21,110.14	1263.23	2038.61	−12.60
198	10,366.94	354.78	2454.48	26.15	3122.32	57.93	9636.97	−15.48	8166.21	−3.80	7221.87	−442.52	21,032.02	1610.90	2031.09	40.09
199	10,688.60	203.78	2516.08	18.34	3208.77	5.26	9783.83	42.74	8357.65	−14.01	7282.94	−392.70	21,349.69	1283.26	2061.66	38.17
200	10,679.94	240.36	2514.43	13.45	3206.44	−5.36	9779.87	2.99	8352.50	39.82	7281.29	−356.05	21,341.13	1049.23	2060.84	37.88
201	10,887.40	183.62	2554.16	−3.16	3262.20	−32.37	9874.59	−91.03	8475.98	−36.95	7320.68	−337.54	21,546.03	855.21	2080.55	2.01
202	11,460.73	169.75	2663.96	−152.96	3416.28	−31.35	10,136.35	47.14	8817.22	−311.92	7429.52	−401.21	22,112.23	−41.68	2135.03	−5.81
203	11,354.49	213.51	2643.62	−145.18	3387.73	−32.44	10,087.84	70.85	8753.99	−326.27	7409.35	−381.00	22,007.32	45.99	2124.94	15.49
204	11,519.36	255.19	2675.19	−164.01	3432.04	−61.44	10,163.12	55.44	8852.12	−358.86	7440.65	−337.37	22,170.14	−104.07	2140.61	−21.99
205	11,603.21	271.60	2691.25	−152.28	3454.58	−49.28	10,201.40	11.12	8902.02	−302.24	7456.57	−259.29	22,252.94	−153.93	2148.57	−15.35
206	11,769.23	233.32	2723.05	−151.09	3499.20	−78.05	10,277.19	97.21	9000.84	−418.01	7488.08	−226.07	22,416.91	−193.02	2164.35	−28.94
207	11,948.53	211.52	2757.39	−179.76	3547.39	−56.81	10,359.06	29.11	9107.56	−474.44	7522.12	−227.70	22,593.98	−281.12	2181.39	−40.23
208	11,743.44	237.72	2718.11	−147.81	3492.27	6.42	10,265.42	−36.09	8985.49	−297.08	7483.19	−215.72	22,391.44	−208.72	2161.90	−13.44
209	11,619.56	379.59	2694.38	−104.62	3458.97	18.24	10,208.86	−110.22	8911.76	−139.77	7459.67	−182.62	22,269.10	−200.21	2150.13	−7.13
210	11,555.41	427.41	2682.10	−103.08	3441.73	96.05	10,179.58	−106.52	8873.58	−115.90	7447.49	−151.45	22,205.74	−81.62	2144.03	−7.95
211	11,449.82	458.28	2661.87	−71.96	3413.35	90.79	10,131.37	−38.27	8810.73	−57.08	7427.45	−153.38	22,101.46	−68.06	2134.00	−7.42
212	11,376.82	483.88	2647.89	−83.90	3393.73	87.90	10,098.04	−101.95	8767.28	−31.33	7413.59	−203.83	22,029.36	−61.01	2127.06	12.59
213	11,474.52	355.47	2666.60	−105.53	3419.99	91.26	10,142.64	−121.20	8825.43	−53.76	7432.13	−200.61	22,125.85	−251.24	2136.34	7.50
214	11,296.18	401.91	2632.45	−62.37	3372.06	114.12	10,061.22	−85.25	8719.28	−11.01	7398.28	−98.95	21,949.73	−72.84	2119.40	43.76
215	11,407.42	356.48	2653.75	−52.80	3401.96	161.13	10,112.01	−82.21	8785.49	−18.90	7419.40	−90.99	22,059.58	−113.73	2129.97	25.98
216	11,379.89	352.25	2648.48	−59.66	3394.56	165.81	10,099.44	−60.90	8769.11	−0.94	7414.17	−104.12	22,032.40	−111.36	2127.35	1.83
217	11,420.76	328.16	2656.31	−78.12	3405.54	156.16	10,118.10	−149.81	8793.43	−49.07	7421.93	−162.37	22,072.76	−317.24	2131.24	−1.47
218	11,414.99	372.94	2655.20	−68.77	3403.99	145.58	10,115.46	−112.07	8789.99	25.93	7420.83	−163.03	22,067.06	−276.30	2130.69	0.63

Table A3. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
219	11,437.70	344.22	2659.55	−40.57	3410.09	174.86	10,125.83	−101.97	8803.51	12.58	7425.14	−141.15	22,089.49	−242.39	2132.85	15.99
220	11,299.38	335.66	2633.06	−33.99	3372.92	183.35	10,062.68	−106.44	8721.19	108.70	7398.89	−164.10	21,952.89	105.28	2119.70	25.44
221	11,264.74	323.62	2626.43	−33.63	3363.61	205.54	10,046.87	−63.51	8700.57	175.93	7392.31	−107.21	21,918.68	44.41	2116.41	30.61
222	11,289.95	281.82	2631.26	−47.75	3370.39	198.85	10,058.38	−81.04	8715.58	134.82	7397.10	−133.60	21,943.58	10.62	2118.81	11.72
223	11,289.25	281.05	2631.12	−41.20	3370.20	179.42	10,058.06	−54.90	8715.16	127.59	7396.96	−77.39	21,942.88	16.66	2118.74	−13.22
224	11,247.49	254.85	2623.12	−22.96	3358.97	199.27	10,038.99	3.21	8690.30	130.36	7389.03	−132.39	21,901.64	−39.93	2114.77	−10.05
225	11,077.29	262.86	2590.53	−37.41	3313.23	215.34	9961.29	41.22	8589.00	115.89	7356.73	−130.26	21,733.56	1.57	2098.60	−23.15
226	11,158.38	300.61	2606.06	−51.13	3335.03	208.54	9998.31	32.02	8637.26	135.26	7372.12	−88.21	21,813.64	−84.36	2106.30	−26.46
227	11,176.09	242.92	2609.45	−51.28	3339.79	205.56	10,006.39	101.57	8647.80	86.27	7375.48	−58.27	21,831.12	−193.59	2107.98	−17.87
228	11,345.89	197.30	2641.97	−64.51	3385.42	133.01	10,083.92	69.17	8748.87	82.96	7407.72	−20.37	21,998.83	−133.73	2124.12	−28.16
229	11,442.19	165.85	2660.41	−68.31	3411.30	119.72	10,127.88	133.18	8806.18	58.67	7426.00	−34.24	22,093.92	−222.97	2133.27	−16.26
230	11,389.65	117.72	2650.35	−44.53	3397.18	131.07	10,103.89	168.21	8774.91	52.17	7416.02	−22.03	22,042.03	−345.40	2128.28	−26.30
231	11,483.69	124.73	2668.36	−46.27	3422.46	128.19	10,146.83	260.40	8830.89	56.69	7433.88	−12.86	22,134.91	−430.02	2137.22	−1.93
232	11,582.04	211.21	2687.19	−62.71	3448.89	100.80	10,191.73	260.24	8889.42	62.87	7452.55	16.78	22,232.04	−598.16	2146.56	8.98
233	11,681.92	121.42	2706.32	−59.16	3475.73	67.32	10,237.33	287.94	8948.87	78.69	7471.51	50.44	22,330.68	−450.68	2156.05	−0.98
234	11,771.48	76.54	2723.48	−76.05	3499.80	63.00	10,278.22	300.64	9002.17	36.09	7488.51	−42.17	22,419.12	−510.97	2164.56	−5.89
235	11,809.20	101.04	2730.70	−43.99	3509.94	97.97	10,295.44	284.74	9024.63	50.90	7495.67	−16.02	22,456.38	−526.49	2168.15	4.32
236	11,902.22	39.18	2748.51	−26.68	3534.94	95.10	10,337.91	258.10	9079.99	19.50	7513.33	−89.03	22,548.24	−632.35	2176.99	−5.40
237	11,853.59	76.85	2739.20	−36.29	3521.87	95.79	10,315.71	311.89	9051.05	−8.97	7504.10	−102.56	22,500.22	−523.18	2172.37	7.07
238	11,895.29	45.49	2747.19	−48.80	3533.08	91.06	10,334.75	287.72	9075.87	−133.04	7512.01	−136.95	22,541.40	−705.55	2176.33	−12.98
239	11,899.78	135.18	2748.05	−40.98	3534.28	89.88	10,336.80	298.67	9078.54	−49.92	7512.87	−96.82	22,545.83	−654.39	2176.76	−2.43
240	11,871.81	141.66	2742.69	−21.35	3526.77	97.20	10,324.03	290.78	9061.89	−48.62	7507.56	−56.45	22,518.21	−667.74	2174.10	−14.14
241	11,909.08	93.28	2749.83	−26.22	3536.78	125.98	10,341.04	310.15	9084.08	−95.88	7514.63	−28.38	22,555.02	−689.22	2177.64	−17.61
242	11,851.86	173.13	2738.87	−18.72	3521.40	155.96	10,314.92	408.32	9050.02	−69.31	7503.77	15.70	22,498.51	−506.06	2172.20	10.72
243	11,975.03	106.36	2762.46	−24.66	3554.51	126.13	10,371.15	427.42	9123.33	−94.55	7527.15	22.35	22,620.15	−484.26	2183.91	12.49
244	11,953.02	61.44	2758.25	−30.57	3548.59	128.46	10,361.11	418.69	9110.23	−37.83	7522.97	15.74	22,598.42	−395.63	2181.82	8.65

Source: Compiled by the authors.

Table A4. Residuals in regression models for 2020.

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
1	11,226.52	944.59	3225.73	−460.27	4223.71	−520.85	13,832.80	−2908.62	10,518.61	−1396.88	9452.33	−1886.56	25,689.98	−3113.12	2132.29	76.82
2	11,244.75	956.41	3229.17	−449.51	4226.24	−514.56	13,844.11	−2888.04	10,536.05	−1436.45	9462.60	−1919.14	25,696.72	−2709.70	2135.66	82.21
3	11,423.26	899.19	3262.81	−436.31	4251.01	−493.14	13,954.86	−2943.75	10,706.79	−1454.42	9563.18	−2019.49	25,762.75	−1968.23	2168.65	28.64
4	11,431.40	994.70	3264.34	−390.20	4252.14	−483.79	13,959.92	−2898.24	10,714.58	−1423.91	9567.77	−1943.86	25,765.76	−2219.33	2170.16	42.89
5	11,443.23	980.96	3266.57	−361.53	4253.78	−530.78	13,967.25	−2809.88	10,725.89	−1338.18	9574.43	−1900.22	25,770.14	−2476.91	2172.34	45.31
6	11,600.23	856.75	3296.16	−328.17	4275.56	−562.62	14,064.66	−2681.18	10,876.06	−1366.74	9662.89	−1988.20	25,828.21	−1995.46	2201.36	45.78
7	11,465.19	911.52	3270.71	−257.78	4256.83	−555.02	13,980.88	−2617.47	10,746.90	−1306.12	9586.81	−1948.78	25,778.26	−1942.57	2176.40	110.22
8	11,504.32	856.88	3278.09	−301.60	4262.25	−516.18	14,005.16	−2579.49	10,784.32	−1336.67	9608.85	−1987.65	25,792.74	−2115.38	2183.63	124.49
9	11,617.07	817.46	3299.34	−293.83	4277.90	−523.36	14,075.12	−2593.40	10,892.17	−1403.48	9672.39	−1924.60	25,834.45	−2035.14	2204.48	104.78
10	11,805.05	695.00	3334.77	−272.44	4303.98	−528.06	14,191.75	−2438.36	11,071.98	−1499.09	9778.30	−1890.36	25,903.98	−2114.26	2239.22	79.30
11	11,879.46	655.20	3348.79	−261.84	4314.30	−478.66	14,237.91	−2386.41	11,143.14	−1493.74	9820.22	−1823.07	25,931.50	−2165.77	2252.98	145.90
12	11,830.25	639.96	3339.52	−289.39	4307.47	−461.62	14,207.38	−2469.88	11,096.08	−1412.19	9792.50	−1806.51	25,913.30	−2238.22	2243.88	129.79
13	11,670.79	559.34	3309.46	−280.44	4285.35	−400.73	14,108.44	−2498.27	10,943.55	−1325.64	9702.65	−1728.95	25,854.32	−2480.55	2214.41	147.74
14	11,552.76	501.75	3287.22	−261.98	4268.97	−419.37	14,035.21	−2458.91	10,830.66	−1281.42	9636.15	−1647.89	25,810.65	−2720.32	2192.59	179.53

Table A4. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
15	11,575.75	456.15	3291.55	−202.76	4272.16	−361.52	14,049.48	−2437.28	10,852.65	−1327.33	9649.10	−1617.37	25,819.16	−2630.63	2196.84	176.35
16	11,317.41	467.90	3242.86	−232.02	4236.32	−419.57	13,889.19	−2345.94	10,605.55	−1334.13	9503.54	−1516.35	25,723.60	−2934.30	2149.09	140.46
17	11,427.81	455.13	3263.67	−202.75	4251.64	−431.47	13,957.69	−2431.34	10,711.15	−1318.82	9565.75	−1577.05	25,764.44	−2890.83	2169.49	101.82
18	11,465.04	466.63	3270.69	−154.92	4256.80	−404.62	13,980.79	−2445.04	10,746.75	−1273.54	9586.72	−1466.28	25,778.21	−2437.19	2176.37	96.54
19	11,342.81	503.07	3247.65	−127.14	4239.85	−360.46	13,904.95	−2406.22	10,629.84	−1184.32	9517.85	−1378.38	25,732.99	−2351.12	2153.78	111.69
20	11,193.49	504.80	3219.51	−162.66	4219.13	−263.39	13,812.31	−2435.67	10,487.02	−1126.52	9433.72	−1369.48	25,677.76	−2300.66	2126.18	123.55
21	11,175.21	418.33	3216.06	−143.32	4216.59	−210.93	13,800.97	−2548.36	10,469.53	−1050.01	9423.42	−1361.41	25,671.00	−2348.02	2122.80	145.32
22	11,264.05	446.41	3232.80	−125.10	4228.92	−198.79	13,856.09	−2543.66	10,554.51	−958.02	9473.48	−1349.68	25,703.86	−2206.79	2139.22	176.68
23	11,349.31	393.00	3248.87	−110.53	4240.75	−213.21	13,908.99	−2510.80	10,636.06	−947.86	9521.52	−1399.79	25,735.40	−2322.35	2154.98	237.83
24	11,230.97	406.57	3226.57	−114.18	4224.33	−211.93	13,835.56	−2417.76	10,522.87	−845.64	9454.84	−1350.67	25,691.63	−2277.84	2133.11	290.44
25	11,168.45	305.47	3214.79	−97.38	4215.66	−211.07	13,796.77	−2271.61	10,463.07	−737.58	9419.61	−1364.86	25,668.50	−2218.30	2121.55	317.60
26	11,060.30	255.78	3194.40	−84.98	4200.65	−173.28	13,729.67	−2246.87	10,359.62	−665.22	9358.68	−1363.03	25,628.49	−2234.22	2101.56	321.28
27	11,223.91	263.17	3225.24	−85.20	4223.35	−163.09	13,831.18	−2287.85	10,516.11	−758.35	9450.86	−1448.44	25,689.01	−2339.18	2131.80	280.35
28	11,333.34	313.97	3245.86	−32.15	4238.53	−125.49	13,899.07	−2318.05	10,620.78	−878.68	9512.52	−1434.53	25,729.49	−2391.17	2152.03	289.08
29	11,258.78	323.73	3231.81	51.70	4228.19	−134.93	13,852.82	−2309.06	10,549.47	−833.17	9470.51	−1388.88	25,701.91	−2423.13	2138.25	304.58
30	11,234.51	324.04	3227.24	68.16	4224.82	−101.26	13,837.76	−2253.86	10,526.25	−836.01	9456.83	−1413.90	25,692.93	−2413.39	2133.76	308.89
31	11,328.01	344.90	3244.86	86.84	4237.79	−108.43	13,895.77	−2296.04	10,615.69	−968.87	9509.52	−1445.46	25,727.52	−2322.66	2151.05	302.99
32	11,198.10	271.05	3220.37	38.10	4219.77	−97.37	13,815.17	−2250.28	10,491.42	−930.45	9436.32	−1439.12	25,679.46	−2342.77	2127.03	283.12
33	11,395.09	263.88	3257.50	41.56	4247.10	−58.01	13,937.39	−2227.97	10,679.85	−1066.82	9547.31	−1493.27	25,752.33	−2360.36	2163.45	244.82
34	11,423.51	267.88	3262.86	40.00	4251.04	−68.31	13,955.02	−2191.64	10,707.03	−1046.99	9563.33	−1492.96	25,762.85	−2309.51	2168.70	222.93
35	11,338.56	210.75	3246.85	57.68	4239.26	−55.42	13,902.31	−2039.22	10,625.78	−977.73	9515.46	−1485.47	25,731.42	−2366.61	2153.00	231.58
36	10,926.65	197.25	3169.21	6.58	4182.11	−100.62	13,646.75	−1954.64	10,231.79	−812.99	9283.38	−1550.83	25,579.06	−2493.01	2076.86	214.76
37	11,005.15	121.10	3184.01	4.45	4193.00	−107.12	13,695.46	−2069.35	10,306.87	−834.90	9327.61	−1634.14	25,608.09	−2586.48	2091.37	176.22
38	10,582.24	44.79	3104.30	−71.23	4134.33	−165.82	13,433.06	−2028.23	9902.35	−707.64	9089.32	−1591.39	25,451.65	−2948.29	2013.20	119.43
39	10,007.23	186.92	2995.93	−94.79	4054.55	−168.57	13,076.31	−2320.76	9352.36	−545.69	8765.34	−1473.98	25,238.96	−3207.55	1906.91	80.19
40	9908.51	216.63	2977.32	−37.41	4040.86	−86.38	13,015.05	−2270.75	9257.93	−546.46	8709.71	−1322.90	25,202.44	−3147.86	1888.66	127.41
41	10,181.08	147.96	3028.69	0.23	4078.67	−116.43	13,184.17	−2310.00	9518.64	−763.82	8863.29	−1424.38	25,303.27	−3080.93	1939.05	100.71
42	10,222.61	191.99	3036.52	−28.22	4084.44	−137.68	13,209.94	−2224.75	9558.37	−790.16	8886.69	−1536.07	25,318.63	−3073.23	1946.72	70.04
43	10,152.92	170.91	3023.39	−56.46	4074.77	−137.44	13,166.70	−2122.55	9491.71	−751.44	8847.42	−1439.36	25,292.85	−2706.27	1933.84	37.21
44	9842.81	64.83	2964.94	−104.68	4031.74	−215.11	12,974.29	−1871.69	9195.09	−1224.65	8672.70	−1537.46	25,178.14	−3062.60	1876.52	28.62
45	8884.99	−77.19	2784.41	−175.48	3898.86	−355.77	12,380.02	−1170.29	8278.93	−693.86	8133.02	−1438.92	24,823.83	−2232.28	1699.47	123.45
46	8783.08	0.68	2765.21	−225.56	3884.72	−385.07	12,316.80	−1219.56	8181.46	−618.85	8075.61	−1371.26	24,786.14	−2193.32	1680.64	106.26
47	7899.77	187.21	2598.73	−332.52	3762.17	−532.04	11,768.75	−1532.99	7336.56	−532.24	7577.91	−1433.38	24,459.40	−3060.11	1517.37	108.89
48	7981.08	−54.34	2614.05	−338.79	3773.46	−575.22	11,819.20	−1688.34	7414.34	−294.00	7623.73	−1323.58	24,489.48	−3338.00	1532.40	141.88
49	7795.97	11.43	2579.17	−341.81	3747.77	−548.23	11,704.35	−2054.44	7237.28	−339.99	7519.43	−1403.08	24,421.00	−3102.93	1498.18	76.02
50	7603.38	47.32	2542.87	−357.36	3721.06	−497.67	11,584.86	−2012.61	7053.07	−422.73	7410.92	−1374.44	24,349.76	−2741.22	1462.58	38.01
51	7042.00	119.95	2437.06	−363.21	3643.17	−534.66	11,236.56	−2023.01	6516.11	−215.16	7094.61	−1053.94	24,142.11	−2618.02	1358.82	−0.24
52	7775.28	120.69	2575.27	−397.46	3744.90	−541.92	11,691.52	−2145.36	7217.49	−445.87	7507.77	−1200.64	24,413.35	−2437.85	1494.36	−94.32
53	7978.06	114.68	2613.48	−307.18	3773.04	−491.47	11,817.33	−2157.87	7411.45	−403.21	7622.03	−1064.51	24,488.36	−2251.07	1531.84	−25.24
54	7668.62	203.91	2555.16	−233.93	3730.11	−590.71	11,625.34	−2109.59	7115.47	−318.38	7447.67	−893.79	24,373.89	−1877.68	1474.64	13.73
55	8443.63	−9.71	2701.23	−208.81	3837.63	−514.51	12,106.19	−1625.16	7856.77	−807.86	7884.35	−1136.36	24,660.58	−1644.68	1617.89	−18.73
56	8648.72	1.43	2739.88	−256.16	3866.08	−550.63	12,233.43	−1387.30	8052.94	−1062.27	7999.90	−1266.89	24,736.44	−1700.20	1655.80	−4.26
57	8764.29	57.96	2761.67	−271.84	3882.11	−476.30	12,305.14	−1188.60	8163.48	−1199.22	8065.02	−1207.21	24,779.19	−1433.70	1677.17	−50.62
58	8344.14	91.23	2682.48	−273.78	3823.83	−405.33	12,044.46	−1199.83	7761.61	−1035.50	7828.29	−1102.57	24,623.77	−1670.44	1599.50	−32.87
59	8441.18	36.35	2700.77	−273.66	3837.29	−322.26	12,104.66	−910.63	7854.42	−1085.06	7882.96	−1030.09	24,659.67	−1264.09	1617.44	−52.46
60	8748.42	149.63	2758.68	−260.81	3879.91	−315.06	12,295.29	−951.54	8148.30	−1130.42	8056.07	−1079.74	24,773.32	−1089.59	1674.23	−57.66
61	8590.65	266.39	2728.94	−236.50	3858.02	−330.49	12,197.40	−1204.40	7997.39	−1113.20	7967.18	−1059.07	24,714.96	−1015.46	1645.07	−28.64
62	8929.84	397.94	2792.87	−266.02	3905.08	−355.16	12,407.85	−1289.81	8321.83	−1435.58	8158.30	−1222.96	24,840.43	−960.89	1707.77	−70.43

Table A4. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
63	9062.93	464.66	2817.95	−253.40	3923.55	−395.14	12,490.42	−1369.08	8449.13	−1511.69	8233.28	−1266.18	24,889.66	−971.95	1732.37	−64.63
64	9263.45	372.11	2855.75	−177.13	3951.37	−273.40	12,614.84	−1152.34	8640.93	−1426.54	8346.27	−1219.56	24,963.83	−1081.47	1769.43	−49.04
65	9331.36	243.42	2868.54	−227.52	3960.79	−262.87	12,656.97	−1115.72	8705.88	−1359.21	8384.52	−1255.48	24,988.95	−1014.65	1781.98	−29.08
66	9473.76	198.68	2895.38	−215.55	3980.54	−232.42	12,745.32	−1098.01	8842.09	−1389.95	8464.76	−1206.10	25,041.62	−615.90	1808.30	−48.11
67	9654.42	139.79	2929.43	−233.67	4005.61	−290.28	12,857.41	−911.50	9014.89	−1461.41	8566.55	−1342.96	25,108.45	−597.95	1841.70	−63.00
68	9530.91	154.01	2906.15	−202.15	3988.47	−269.76	12,780.78	−883.30	8896.75	−1364.65	8496.96	−1284.60	25,062.76	−656.72	1818.87	−29.05
69	9311.69	143.33	2864.84	−208.20	3958.06	−279.24	12,644.77	−829.17	8687.07	−1306.65	8373.44	−1246.14	24,981.67	−566.14	1778.35	−23.76
70	9293.51	0.68	2861.41	−175.91	3955.54	−234.27	12,633.49	−542.97	8669.68	−1218.57	8363.20	−1149.01	24,974.95	−241.86	1774.99	−38.42
71	8726.19	35.79	2754.49	−184.26	3876.83	−233.60	12,281.50	−749.75	8127.04	−998.98	8043.55	−1090.54	24,765.10	−110.83	1670.12	−3.57
72	8767.41	48.10	2762.26	−180.43	3882.55	−241.91	12,307.07	−673.70	8166.47	−908.52	8066.78	−1110.05	24,780.34	−133.22	1677.74	19.09
73	8873.11	29.90	2782.18	−169.26	3897.21	−235.73	12,372.65	−772.98	8267.56	−876.40	8126.33	−1181.27	24,819.44	−71.84	1697.28	14.34
74	8831.01	−54.72	2774.24	−188.76	3891.37	−226.59	12,346.53	−675.61	8227.30	−941.51	8102.61	−1155.26	24,803.87	48.66	1689.50	10.85
75	8648.77	−20.87	2739.89	−171.87	3866.09	−250.49	12,233.46	−602.03	8052.98	−905.82	7999.93	−1133.91	24,736.46	368.98	1655.81	47.27
76	9007.01	10.62	2807.41	−193.80	3915.79	−223.46	12,455.73	−533.16	8395.64	−1049.03	8201.78	−1229.38	24,868.97	717.82	1722.03	3.93
77	9135.18	4.54	2831.57	−189.24	3933.57	−190.00	12,535.25	−486.90	8518.24	−1098.88	8273.99	−1260.18	24,916.38	303.70	1745.72	−24.52
78	8979.72	−13.83	2802.27	−194.80	3912.00	−238.92	12,438.80	−472.59	8369.54	−978.19	8186.40	−1251.15	24,858.88	355.04	1716.98	−15.78
79	8977.36	−36.50	2801.83	−165.23	3911.68	−178.42	12,437.33	−431.85	8367.29	−861.45	8185.07	−1097.92	24,858.00	420.96	1716.55	−0.21
80	9133.08	−1.77	2831.17	−161.51	3933.28	−152.69	12,533.95	−472.84	8516.23	−778.24	8272.81	−1125.19	24,915.61	572.98	1745.33	−18.83
81	9368.84	6.16	2875.61	−166.81	3965.99	−122.79	12,680.22	−668.10	8741.73	−970.27	8405.64	−1145.65	25,002.81	220.74	1788.91	−41.71
82	9289.01	−18.36	2860.56	−176.87	3954.91	−115.78	12,630.69	−547.20	8665.37	−909.49	8360.66	−1057.34	24,973.28	−227.31	1774.15	−34.19
83	9164.32	22.71	2837.06	−167.81	3937.61	−121.80	12,553.33	−605.12	8546.11	−845.15	8290.41	−991.16	24,927.16	−5.33	1751.11	−36.94
84	9293.05	79.69	2861.32	−165.98	3955.47	−104.70	12,633.20	−686.18	8669.24	−895.78	8362.94	−1063.10	24,974.78	−161.60	1774.90	−36.33
85	9199.86	36.94	2843.76	−162.42	3942.54	−118.05	12,575.38	−686.29	8580.10	−791.88	8310.43	−1031.21	24,940.31	−51.95	1757.68	−21.46
86	9189.72	63.53	2841.85	−176.63	3941.14	−92.09	12,569.09	−675.87	8570.40	−695.50	8304.72	−968.56	24,936.56	−179.46	1755.80	−33.91
87	9206.87	89.67	2845.08	−173.40	3943.52	−42.10	12,579.73	−667.17	8586.81	−668.09	8314.38	−973.78	24,942.90	−182.47	1758.97	−55.44
88	9257.11	59.36	2854.55	−185.28	3950.49	−69.48	12,610.90	−736.16	8634.86	−728.87	8342.69	−1056.60	24,961.48	−237.60	1768.26	−71.47
89	9091.30	34.14	2823.30	−156.54	3927.48	−109.49	12,508.02	−687.28	8476.26	−689.80	8249.27	−1011.63	24,900.15	−151.91	1737.61	−49.17
90	9013.72	220.64	2808.68	−170.82	3916.72	−115.62	12,459.89	−732.60	8402.06	−708.88	8205.56	−1085.72	24,871.45	−213.50	1723.27	−36.37
91	9024.47	229.18	2810.70	−178.06	3918.21	−99.01	12,466.56	−712.86	8412.35	−746.09	8211.61	−1098.72	24,875.43	−89.32	1725.26	−51.19
92	9497.06	160.46	2899.77	−194.00	3983.78	−100.03	12,759.78	−692.29	8864.38	−1041.42	8477.89	−1208.34	25,050.24	−329.93	1812.61	−119.06
93	9604.80	117.93	2920.08	−194.20	3998.72	−86.92	12,826.62	−755.79	8967.43	−1140.77	8538.59	−1240.99	25,090.10	−188.01	1832.53	−112.72
94	9920.59	58.25	2979.60	−209.19	4042.53	−85.25	13,022.55	−719.20	9269.49	−1295.28	8716.52	−1326.53	25,206.91	−161.07	1890.90	−154.15
95	9688.11	−15.55	2935.78	−179.90	4010.28	−97.49	12,878.31	−786.76	9047.12	−1088.60	8585.53	−1226.46	25,120.91	−272.36	1847.93	−129.37
96	9621.70	41.57	2923.27	−128.66	4001.07	−101.78	12,837.11	−708.49	8983.59	−1060.90	8548.11	−1173.36	25,096.35	72.65	1835.65	−107.42
97	9818.02	53.29	2960.27	−85.92	4028.30	−78.33	12,958.91	−599.50	9171.38	−1145.34	8658.73	−1194.52	25,168.97	215.80	1871.94	−117.60
98	9818.02	60.52	2960.27	−43.67	4028.30	−86.60	12,958.91	−726.18	9171.38	−1112.59	8658.73	−1211.81	25,168.97	122.09	1871.94	−111.21
99	9773.68	−2.31	2951.91	−49.09	4022.15	−135.85	12,931.40	−760.20	9128.96	−1004.52	8633.75	−1205.91	25,152.57	244.44	1863.74	−54.69
100	9942.41	−93.29	2983.71	−59.64	4045.56	−171.76	13,036.09	−601.00	9290.35	−1011.62	8728.81	−1191.84	25,214.98	517.62	1894.93	−54.35
101	9751.46	−138.86	2947.72	−7.34	4019.07	−177.41	12,917.61	−592.80	9107.71	−911.10	8621.22	−1191.52	25,144.34	488.31	1859.63	−27.83
102	9817.56	−112.68	2960.18	17.19	4028.24	−185.29	12,958.63	−608.29	9170.94	−981.44	8658.47	−1161.42	25,168.80	832.71	1871.85	32.64
103	10,017.01	−121.28	2997.77	3.14	4055.91	−136.65	13,082.38	−773.21	9361.71	−969.81	8770.85	−1157.40	25,242.58	911.10	1908.72	25.23
104	10,168.02	−134.59	3026.23	−26.24	4076.86	−129.24	13,176.07	−1105.42	9506.15	−941.55	8855.93	−1151.23	25,298.44	866.12	1936.63	35.86
105	9822.33	72.23	2961.08	1.07	4028.90	−136.54	12,961.58	−1093.68	9175.49	−756.46	8661.16	−1047.02	25,170.56	697.77	1872.73	72.22
106	9965.24	62.50	2988.01	1.29	4048.73	−132.92	13,050.26	−1338.52	9312.20	−800.32	8741.68	−1073.69	25,223.43	724.95	1899.15	101.48
107	9974.46	33.08	2989.75	37.94	4050.01	−148.11	13,055.97	−1312.12	9321.01	−773.87	8746.87	−1009.55	25,226.84	594.79	1900.85	187.92
108	9959.77	100.97	2986.98	12.64	4047.97	−106.78	13,046.86	−1224.80	9306.96	−854.08	8738.59	−1036.63	25,221.40	666.61	1898.14	130.42
109	9891.30	180.62	2974.08	47.23	4038.47	−118.82	13,004.38	−1129.75	9241.47	−842.10	8700.02	−933.22	25,196.07	729.01	1885.48	99.50
110	9646.99	246.60	2928.03	43.17	4004.58	−129.04	12,852.80	−1035.00	9007.79	−697.74	8562.37	−764.17	25,105.70	440.34	1840.32	99.40

Table A4. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
111	9509.91	264.67	2902.20	106.72	3985.56	−113.93	12,767.75	−1211.20	8876.67	−520.30	8485.13	−644.85	25,055.00	338.71	1814.99	121.63
112	9642.85	254.41	2927.25	139.01	4004.00	−93.09	12,850.23	−1236.82	9003.82	−546.78	8560.03	−727.23	25,104.17	294.52	1839.56	239.31
113	9602.65	216.03	2919.68	143.01	3998.42	−107.18	12,825.29	−1111.22	8965.37	−537.40	8537.38	−700.14	25,089.30	66.77	1832.13	181.72
114	9530.14	278.18	2906.01	153.94	3988.37	−78.32	12,780.30	−1100.07	8896.02	−472.76	8496.53	−619.94	25,062.48	−157.84	1818.73	133.78
115	9653.75	268.28	2929.31	136.82	4005.51	−65.32	12,856.99	−1058.22	9014.25	−542.32	8566.18	−558.75	25,108.20	26.67	1841.57	122.27
116	9636.14	309.05	2925.99	142.99	4003.07	−87.08	12,846.07	−1027.91	8997.41	−489.13	8556.25	−443.37	25,101.69	34.56	1838.32	109.13
117	9742.65	255.23	2946.06	138.47	4017.85	−99.67	12,912.15	−941.11	9099.28	−475.32	8616.26	−458.69	25,141.09	−26.68	1858.01	93.00
118	9576.43	218.46	2914.73	112.36	3994.79	−77.77	12,809.02	−973.70	8940.30	−335.60	8522.61	−330.26	25,079.60	−160.24	1827.28	93.79
119	9562.25	197.36	2912.06	92.28	3992.82	−42.39	12,800.22	−923.25	8926.73	−360.97	8514.62	−279.68	25,074.36	−279.30	1824.66	75.53
120	9552.67	191.26	2910.26	109.70	3991.49	−51.20	12,794.28	−896.57	8917.57	−334.83	8509.22	−254.84	25,070.81	−276.91	1822.89	127.54
121	9423.27	189.91	2885.87	120.34	3973.54	12.78	12,713.99	−757.66	8793.80	−278.67	8436.31	−192.79	25,022.95	−79.47	1798.97	141.51
122	9616.01	175.26	2922.19	142.40	4000.28	−13.78	12,833.58	−830.85	8978.16	−290.20	8544.91	−206.05	25,094.24	−148.61	1834.60	112.98
123	9671.78	138.12	2932.70	150.29	4008.02	11.06	12,868.18	−715.30	9031.50	−320.82	8576.33	−186.42	25,114.87	27.67	1844.91	94.19
124	9730.00	165.49	2943.68	168.88	4016.09	64.53	12,904.30	−716.16	9087.19	−158.34	8609.14	−60.26	25,136.41	364.19	1855.67	87.19
125	9712.64	168.26	2940.41	143.47	4013.68	45.82	12,893.53	−621.07	9070.58	−155.92	8599.35	−117.32	25,129.99	374.57	1852.46	79.74
126	9713.05	122.34	2940.48	155.57	4013.74	44.71	12,893.78	−564.68	9070.97	−276.45	8599.59	−166.99	25,130.14	314.25	1852.53	81.44
127	9522.36	236.47	2904.54	175.35	3987.29	35.83	12,775.47	−478.39	8888.57	−48.94	8492.14	−13.70	25,059.60	464.85	1817.29	117.13
128	9591.90	242.35	2917.65	166.74	3996.93	5.37	12,818.62	−512.42	8955.09	5.56	8531.32	−15.30	25,085.32	269.95	1830.14	118.12
129	9407.35	282.47	2882.87	210.08	3971.33	66.67	12,704.11	−543.94	8778.57	177.30	8427.34	135.08	25,017.06	194.87	1796.03	154.68
130	9322.85	290.88	2866.94	174.77	3959.61	66.20	12,651.69	−579.99	8697.75	228.36	8379.73	129.59	24,985.80	409.91	1780.41	158.58
131	9303.40	364.37	2863.27	174.05	3956.91	110.20	12,639.62	−382.70	8679.14	374.49	8368.77	251.18	24,978.61	513.01	1776.81	187.77
132	9371.25	346.58	2876.06	151.22	3966.32	103.12	12,681.72	−429.68	8744.04	352.97	8407.00	253.77	25,003.70	475.91	1789.36	182.72
133	9414.36	362.32	2884.19	185.49	3972.30	117.59	12,708.47	−416.04	8785.28	365.43	8431.29	298.08	25,019.65	452.05	1797.32	191.88
134	9499.72	327.97	2900.28	257.67	3984.15	123.32	12,761.43	−371.86	8866.92	402.30	8479.39	358.96	25,051.23	488.32	1813.10	196.61
135	9570.64	314.74	2913.64	292.94	3993.98	114.21	12,805.43	−301.31	8934.76	436.14	8519.35	494.11	25,077.46	402.89	1826.21	224.24
136	9577.81	286.95	2914.99	275.39	3994.98	143.41	12,809.88	−207.58	8941.62	578.22	8523.39	572.51	25,080.11	244.98	1827.54	203.91
137	9643.87	207.39	2927.44	250.94	4004.14	128.01	12,850.86	77.97	9004.80	473.69	8560.61	653.24	25,104.55	305.02	1839.75	183.05
138	9679.20	180.07	2934.10	248.02	4009.05	92.29	12,872.78	226.47	9038.60	515.54	8580.51	622.54	25,117.62	376.77	1846.28	205.07
139	9767.64	37.69	2950.77	220.65	4021.31	93.46	12,927.65	747.32	9123.18	588.22	8630.34	663.52	25,150.33	300.39	1862.62	188.01
140	9795.24	26.59	2955.97	191.29	4025.14	136.06	12,944.78	765.69	9149.58	554.79	8645.89	841.19	25,160.54	425.36	1867.73	127.10
141	9890.18	13.33	2973.87	236.14	4038.31	163.40	13,003.68	706.68	9240.39	575.86	8699.38	871.40	25,195.66	636.66	1885.27	100.59
142	9737.37	41.50	2945.07	212.46	4017.12	132.57	12,908.88	712.50	9094.24	563.91	8613.29	848.63	25,139.14	575.92	1857.03	99.77
143	9846.04	−40.01	2965.55	222.74	4032.19	129.81	12,976.29	897.55	9198.17	688.80	8674.51	748.33	25,179.33	663.79	1877.12	83.86
144	9901.65	−190.86	2976.03	255.10	4039.91	210.40	13,010.80	897.93	9251.36	864.95	8705.85	798.77	25,199.90	517.06	1887.40	91.49
145	9951.27	−235.28	2985.38	246.35	4046.79	227.17	13,041.58	1045.85	9298.83	880.33	8733.80	860.71	25,218.26	907.56	1896.57	56.58
146	10,189.22	−238.91	3030.23	193.24	4079.80	211.13	13,189.22	1307.61	9526.43	685.07	8867.88	744.50	25,306.28	940.36	1940.55	14.77
147	10,165.00	−207.79	3025.66	179.18	4076.44	182.22	13,174.19	1329.97	9503.27	694.44	8854.23	761.20	25,297.32	699.94	1936.07	15.96
148	10,077.54	−166.88	3009.18	160.93	4064.31	191.41	13,119.93	1213.61	9419.61	683.33	8804.95	784.36	25,264.97	656.56	1919.91	24.37
149	10,085.27	−155.02	3010.64	169.68	4065.38	188.29	13,124.73	1292.18	9427.00	498.11	8809.31	653.55	25,267.83	766.72	1921.34	44.14
150	10,300.96	−141.93	3051.29	118.94	4095.30	181.71	13,258.54	1018.07	9633.31	454.97	8930.83	568.40	25,347.61	889.98	1961.20	11.23
151	10,500.77	−176.22	3088.95	94.12	4123.03	195.95	13,382.51	1163.71	9824.42	312.59	9043.41	495.36	25,421.52	941.13	1998.14	1.09
152	10,577.63	−118.49	3103.43	81.98	4133.69	226.28	13,430.20	1104.19	9897.94	290.93	9086.72	628.45	25,449.95	1166.75	2012.34	1.22
153	10,532.10	−88.12	3094.85	96.56	4127.37	257.73	13,401.96	1048.61	9854.40	173.03	9061.07	611.01	25,433.11	1156.60	2003.93	9.87
154	10,443.41	−89.99	3078.14	101.13	4115.07	305.17	13,346.93	1192.97	9769.57	331.09	9011.10	653.02	25,400.30	1147.27	1987.54	27.37
155	10,448.12	−83.45	3079.02	76.21	4115.72	307.54	13,349.85	1138.96	9774.07	320.07	9013.75	671.92	25,402.05	1104.26	1988.41	−2.17
156	10,443.82	−113.54	3078.21	91.85	4115.13	317.60	13,347.18	1157.81	9769.96	421.37	9011.33	733.92	25,400.45	1225.22	1987.61	−1.96
157	10,128.24	−87.62	3018.73	73.53	4071.34	367.07	13,151.38	1193.59	9468.10	589.77	8833.52	849.88	25,283.72	1075.55	1929.28	36.15
158	10,113.44	−84.68	3015.94	59.02	4069.29	349.27	13,142.20	1223.32	9453.94	710.38	8825.18	873.11	25,278.24	1061.60	1926.54	39.55

Table A4. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
159	10,243.60	−78.12	3040.48	64.59	4087.35	371.72	13,222.96	1284.37	9578.45	597.60	8898.52	987.21	25,326.39	971.75	1950.60	35.03
160	10,197.57	−18.53	3031.80	56.69	4080.96	373.68	13,194.40	1241.53	9534.42	641.46	8872.58	1128.34	25,309.36	930.86	1942.09	31.58
161	10,283.39	−7.36	3047.98	66.55	4092.87	386.62	13,247.65	1340.66	9616.51	554.52	8920.94	1132.07	25,341.11	960.56	1957.96	17.96
162	10,135.25	−28.29	3020.06	79.53	4072.32	425.75	13,155.73	1330.30	9474.81	562.93	8837.47	1157.32	25,286.31	989.99	1930.57	36.41
163	9997.15	−76.88	2994.03	86.65	4053.16	391.12	13,070.05	1448.25	9342.71	539.65	8759.66	1045.10	25,235.23	732.73	1905.05	52.27
164	9880.24	−67.80	2971.99	68.38	4036.94	356.82	12,997.52	1277.56	9230.89	725.63	8693.79	1141.34	25,191.98	1002.06	1883.44	45.11
165	9983.32	−160.77	2991.42	97.72	4051.24	359.90	13,061.47	1476.49	9329.49	495.85	8751.87	956.48	25,230.11	674.16	1902.49	35.49
166	9892.89	−126.54	2974.38	104.63	4038.69	340.59	13,005.36	1425.87	9242.99	575.97	8700.91	1065.77	25,196.66	904.95	1885.78	42.99
167	9801.08	−127.60	2957.07	114.74	4025.95	348.17	12,948.40	1360.41	9155.17	482.28	8649.18	1094.63	25,162.70	858.40	1868.81	61.10
168	9814.34	−124.79	2959.57	76.14	4027.79	322.16	12,956.63	1345.93	9167.85	433.92	8656.65	946.56	25,167.61	927.38	1871.26	49.24
169	9794.26	−146.74	2955.79	93.78	4025.01	342.23	12,944.17	1534.28	9148.65	637.38	8645.34	1047.41	25,160.18	1093.63	1867.55	64.75
170	9659.90	−129.58	2930.47	107.30	4006.37	312.32	12,860.81	1482.51	9020.13	627.37	8569.64	1010.92	25,110.48	874.21	1842.71	73.80
171	9620.83	−81.78	2923.10	139.53	4000.95	332.13	12,836.57	1376.89	8982.76	668.20	8547.62	980.57	25,096.02	821.24	1835.49	93.22
172	9712.64	−191.34	2940.41	144.69	4013.68	317.94	12,893.53	1568.79	9070.58	709.86	8599.35	946.37	25,129.99	786.04	1852.46	85.78
173	9761.19	−151.79	2949.55	158.63	4020.42	292.21	12,923.65	1657.18	9117.01	572.99	8626.71	969.55	25,147.94	745.14	1861.43	80.49
174	9833.80	−179.39	2963.24	161.81	4030.49	304.27	12,968.70	1554.00	9186.47	614.26	8667.62	970.13	25,174.80	804.49	1874.85	68.31
175	10,048.51	−159.43	3003.71	137.74	4060.28	313.40	13,101.91	1592.17	9391.84	627.42	8788.59	919.33	25,254.23	854.21	1914.54	35.58
176	10,007.54	−213.74	2995.99	141.63	4054.60	343.01	13,076.50	1638.39	9352.65	839.73	8765.51	950.22	25,239.07	688.70	1906.97	58.26
177	10,015.32	−245.39	2997.45	207.60	4055.68	335.72	13,081.33	1505.71	9360.10	881.59	8769.90	1069.52	25,241.95	719.96	1908.41	92.38
178	9929.55	−224.65	2981.29	236.86	4043.78	367.40	13,028.11	1454.01	9278.06	932.99	8721.57	1094.17	25,210.22	996.49	1892.55	108.86
179	9544.94	−187.48	2908.80	218.83	3990.42	372.77	12,789.48	1195.99	8910.17	1034.98	8504.87	1283.24	25,067.95	668.95	1821.46	107.78
180	9607.16	−213.27	2920.52	219.74	3999.05	401.04	12,828.08	1211.47	8969.68	1097.88	8539.92	1358.87	25,090.97	467.75	1832.96	72.76
181	9600.81	−289.99	2919.33	209.70	3998.17	438.18	12,824.14	1197.03	8963.61	1278.00	8536.34	1491.81	25,088.62	550.32	1831.79	63.88
182	9633.78	−261.00	2925.54	212.30	4002.74	393.93	12,844.60	1159.47	8995.15	1161.62	8554.92	1532.35	25,100.82	732.10	1837.88	27.91
183	9568.39	−244.81	2913.22	192.92	3993.67	391.49	12,804.03	1212.29	8932.61	1247.81	8518.08	1531.97	25,076.63	729.65	1825.80	9.93
184	9654.06	−222.81	2929.36	223.32	4005.56	471.94	12,857.18	1258.58	9014.55	1270.43	8566.35	1664.09	25,108.32	1036.29	1841.63	15.39
185	9565.27	−186.45	2912.63	221.14	3993.24	446.88	12,802.09	1409.14	8929.62	1366.18	8516.32	1665.21	25,075.47	1282.62	1825.22	25.92
186	9563.58	−227.32	2912.31	210.33	3993.00	424.93	12,801.05	1347.79	8928.00	1304.87	8515.37	1760.74	25,074.85	1250.77	1824.91	25.67
187	9506.53	−211.00	2901.56	195.30	3985.09	420.72	12,765.65	1439.69	8873.44	1317.30	8483.23	1785.67	25,053.75	1064.83	1814.36	−13.39
188	9367.05	−112.47	2875.27	221.30	3965.74	439.25	12,679.11	1604.19	8740.02	1449.59	8404.63	1843.06	25,002.15	1149.38	1788.58	−22.93
189	9498.19	−76.07	2899.99	199.27	3983.93	440.86	12,760.47	1598.47	8865.46	1457.28	8478.52	1840.10	25,050.66	1113.19	1812.82	−72.72
190	9574.08	−19.86	2914.29	189.60	3994.46	423.95	12,807.56	1446.75	8938.04	1406.09	8521.28	1754.43	25,078.73	1225.69	1826.85	−38.25
191	9396.34	−31.48	2880.79	173.42	3969.80	340.54	12,697.28	1454.16	8768.04	1421.84	8421.14	1729.37	25,012.98	1171.81	1793.99	−50.15
192	9446.31	−54.47	2890.21	183.04	3976.74	350.07	12,728.29	1597.01	8815.84	1297.71	8449.30	1672.75	25,031.47	1185.80	1803.23	−107.29
193	9411.44	−69.50	2883.64	163.28	3971.90	377.22	12,706.66	1605.97	8782.48	1352.79	8429.65	1568.51	25,018.57	991.85	1796.79	−135.66
194	9446.72	−90.34	2890.29	158.11	3976.79	397.86	12,728.55	1707.68	8816.23	1193.65	8449.53	1762.45	25,031.62	958.30	1803.31	−140.13
195	9353.22	−131.68	2872.66	152.63	3963.82	428.06	12,670.53	1641.38	8726.79	1199.96	8396.84	1839.93	24,997.04	926.55	1786.02	−150.45
196	9438.99	−170.67	2888.83	158.84	3975.72	386.66	12,723.75	1851.69	8808.84	1232.90	8445.17	1886.14	25,028.76	962.30	1801.88	−164.06
197	9300.02	−162.70	2862.64	147.37	3956.44	348.51	12,637.52	1772.77	8675.90	1240.51	8366.87	1837.29	24,977.36	684.96	1776.19	−159.16
198	9251.63	−140.64	2853.52	137.05	3949.73	336.67	12,607.50	1803.68	8629.62	1100.35	8339.60	1860.40	24,959.46	817.18	1767.24	−138.84
199	9230.27	−174.18	2849.49	104.40	3946.76	278.05	12,594.25	1904.70	8609.19	1035.66	8327.57	1926.59	24,951.56	472.92	1763.30	−134.82
200	9343.34	−253.95	2870.80	126.19	3962.45	315.14	12,664.40	1853.77	8717.34	943.44	8391.28	1879.46	24,993.38	533.51	1784.20	−163.55
201	9243.74	−224.33	2852.03	156.00	3948.63	318.52	12,602.61	1772.39	8622.08	1132.96	8335.16	1828.23	24,956.54	370.16	1765.79	−147.07
202	9317.58	−250.70	2865.95	180.42	3958.88	322.10	12,648.42	1960.71	8692.70	1157.45	8376.76	1819.44	24,983.85	282.66	1779.44	−152.61
203	9381.33	−248.88	2877.96	187.46	3967.72	300.48	12,687.97	1827.21	8753.68	1120.81	8412.68	1789.55	25,007.43	471.85	1791.22	−158.94
204	9234.06	−218.41	2850.21	196.60	3947.29	310.95	12,596.60	1808.27	8612.82	1285.74	8329.71	1808.29	24,952.96	629.82	1764.00	−153.12
205	9092.78	−187.99	2823.58	199.39	3927.69	312.98	12,508.95	1913.67	8477.69	1436.56	8250.10	1810.96	24,900.70	731.78	1737.88	−136.45
206	8785.34	−199.11	2765.63	179.30	3885.03	284.07	12,318.19	1640.20	8183.61	1527.39	8076.88	1762.03	24,786.97	838.93	1681.06	−145.95

Table A4. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
207	8851.96	−213.11	2778.19	207.25	3894.28	277.17	12,359.53	1709.33	8247.34	1501.78	8114.41	1712.76	24,811.62	736.80	1693.37	−138.28
208	8801.42	−232.28	2768.66	215.73	3887.27	268.17	12,328.17	1830.92	8198.99	1377.68	8085.94	1722.10	24,792.92	782.01	1684.03	−115.22
209	8985.86	−235.25	2803.43	207.63	3912.85	287.03	12,442.61	1931.01	8375.42	1291.53	8189.86	1719.85	24,861.15	776.42	1718.12	−154.74
210	9221.06	−242.62	2847.76	185.91	3945.48	283.33	12,588.53	2037.99	8600.38	1224.56	8322.38	1568.27	24,948.15	795.40	1761.59	−159.17
211	9471.20	−228.29	2894.90	183.29	3980.19	300.65	12,743.73	2065.50	8839.64	1328.34	8463.32	1518.24	25,040.68	814.20	1807.83	−184.43
212	9602.90	−296.05	2919.72	168.50	3998.46	287.61	12,825.45	2288.65	8965.62	1284.54	8537.53	1557.50	25,089.40	1572.30	1832.18	−209.13
213	10,073.09	−234.38	3008.34	135.23	4063.69	282.33	13,117.16	1839.36	9415.35	1046.33	8802.44	1376.11	25,263.32	1597.60	1919.08	−216.26
214	10,185.49	−218.39	3029.52	113.95	4079.28	216.10	13,186.90	1656.16	9522.86	1018.74	8865.77	1217.50	25,304.89	1583.93	1939.86	−213.65
215	10,302.03	−207.12	3051.49	102.64	4095.45	195.16	13,259.21	1614.08	9634.33	1064.00	8931.44	1135.61	25,348.01	1785.73	1961.40	−211.70
216	10,298.96	−258.52	3050.91	107.09	4095.03	201.32	13,257.31	1693.14	9631.40	1118.86	8929.71	1329.06	25,346.87	1783.35	1960.83	−213.82
217	10,300.14	−265.78	3051.13	106.61	4095.19	177.75	13,258.04	1835.86	9632.52	1164.16	8930.37	1381.20	25,347.30	1750.11	1961.05	−202.05
218	10,557.45	−260.86	3099.63	67.55	4130.89	161.51	13,417.68	1953.06	9878.64	1046.24	9075.35	1421.35	25,442.49	2059.50	2008.61	−216.75
219	10,468.86	−217.69	3082.93	49.77	4118.60	190.08	13,362.72	1819.70	9793.91	1081.82	9025.44	1364.18	25,409.72	2008.76	1992.24	−226.98
220	10,604.20	−175.96	3108.44	53.23	4137.38	178.63	13,446.69	1906.37	9923.36	1011.69	9101.70	1402.63	25,459.78	2080.97	2017.26	−211.16
221	10,454.99	−155.02	3080.32	71.54	4116.67	155.05	13,354.11	1863.75	9780.64	997.23	9017.62	1460.61	25,404.58	2064.79	1989.68	−182.62
222	10,478.59	−121.71	3084.77	79.85	4119.95	123.32	13,368.76	1828.17	9803.22	970.08	9030.92	1432.93	25,413.32	2108.18	1994.04	−168.42
223	10,498.72	−72.64	3088.56	90.22	4122.74	144.38	13,381.24	1605.67	9822.46	858.83	9042.26	1426.99	25,420.76	1883.14	1997.76	−180.41
224	10,692.43	−150.35	3125.07	44.11	4149.62	107.25	13,501.43	1529.56	10,007.75	798.93	9151.41	1250.05	25,492.42	1935.08	2033.56	−179.39
225	10,856.70	−149.22	3156.03	2.77	4172.41	56.85	13,603.35	1517.52	10,164.88	909.40	9243.96	1079.67	25,553.18	1701.74	2063.93	−212.54
226	10,816.20	−228.26	3148.40	56.16	4166.79	88.50	13,578.22	1750.87	10,126.14	982.01	9221.14	1230.82	25,538.20	1723.48	2056.44	−214.20
227	10,802.89	−289.44	3145.89	66.89	4164.94	139.14	13,569.96	1779.79	10,113.40	1199.47	9213.64	1289.60	25,533.27	1871.68	2053.98	−191.12
228	10,547.01	−345.39	3097.66	91.38	4129.44	169.14	13,411.20	1719.22	9868.65	1466.70	9069.47	1536.50	25,438.62	1682.60	2006.68	−147.36
229	10,731.30	−496.26	3132.39	81.10	4155.01	167.80	13,525.55	1986.12	10,044.93	1508.30	9173.31	1556.79	25,506.79	2081.24	2040.75	−164.63
230	10,958.45	−571.42	3175.21	43.33	4186.52	126.65	13,666.48	2159.62	10,262.20	1472.29	9301.29	1424.42	25,590.82	1995.36	2082.74	−204.93
231	10,839.04	−623.34	3152.70	70.14	4169.96	130.43	13,592.39	2068.16	10,147.98	1511.57	9234.01	1450.26	25,546.65	1790.94	2060.66	−162.84
232	10,984.06	−633.30	3180.03	34.78	4190.07	91.43	13,682.37	1998.22	10,286.69	1503.04	9315.72	1417.94	25,600.29	1644.49	2087.47	−186.33
233	11,047.86	−756.17	3192.06	20.06	4198.93	92.34	13,721.95	2228.86	10,347.72	1464.06	9351.67	1407.35	25,623.89	1862.68	2099.26	−202.63
234	10,952.00	−800.93	3173.99	36.16	4185.63	85.70	13,662.48	2290.81	10,256.03	1492.64	9297.66	1413.01	25,588.43	1681.84	2081.54	−210.86
235	11,028.81	−839.98	3188.47	39.64	4196.28	127.10	13,710.13	2209.05	10,329.50	1704.34	9340.94	1607.74	25,616.84	1752.56	2095.74	−230.98
236	11,312.50	−837.59	3241.93	−23.02	4235.64	102.28	13,886.14	2209.03	10,600.84	1341.12	9500.77	1346.33	25,721.78	1533.67	2148.18	−289.70
237	11,396.01	−858.57	3257.68	−55.51	4247.23	52.87	13,937.96	2196.53	10,680.73	1109.70	9547.83	1396.58	25,752.67	1513.09	2163.62	−311.64
238	11,318.64	−845.89	3243.09	−35.73	4236.49	42.87	13,889.96	2367.40	10,606.72	1092.85	9504.24	1539.90	25,724.05	1568.71	2149.31	−316.72
239	11,268.61	−829.18	3233.66	−33.62	4229.55	47.41	13,858.92	2534.83	10,558.87	1247.34	9476.05	1687.74	25,705.55	1738.90	2140.07	−308.60
240	11,330.98	−891.39	3245.42	8.80	4238.21	63.36	13,897.61	2638.59	10,618.53	1251.92	9511.19	1579.25	25,728.62	1922.51	2151.59	−301.55
241	11,405.64	−903.62	3259.49	−10.80	4248.56	65.28	13,943.93	2653.83	10,689.94	1198.45	9553.26	1435.83	25,756.24	1899.66	2165.40	−323.67
242	11,403.85	−853.98	3259.15	−24.52	4248.31	103.67	13,942.82	2653.90	10,688.22	1071.74	9552.25	1436.55	25,755.57	2100.16	2165.06	−327.36
243	11,036.64	−795.39	3189.94	−6.66	4197.37	113.91	13,714.99	2687.43	10,336.99	1021.36	9345.35	1527.94	25,619.74	2199.93	2097.19	−300.42
244	11,267.43	−821.88	3233.44	−17.29	4229.39	109.60	13,858.19	2776.20	10,557.74	1015.76	9475.38	1514.60	25,705.11	2348.53	2139.85	−322.76
245	11,310.29	−863.18	3241.52	18.19	4235.34	98.36	13,884.78	2883.19	10,598.74	1060.26	9499.53	1587.42	25,720.97	2709.35	2147.77	−329.12
246	11,259.86	−863.43	3232.01	8.38	4228.34	108.87	13,853.48	3005.19	10,550.49	1086.70	9471.11	1653.85	25,702.31	2633.31	2138.45	−330.03
247	11,300.51	−876.40	3239.68	22.80	4233.98	117.71	13,878.71	3073.41	10,589.38	1014.80	9494.02	1709.57	25,717.35	2614.41	2145.96	−332.97
248	11,369.95	−922.28	3252.76	63.14	4243.61	111.69	13,921.79	3134.39	10,655.80	1001.50	9533.15	1722.55	25,743.03	2381.58	2158.80	−342.65
249	11,415.06	−877.30	3261.27	71.39	4249.87	152.58	13,949.78	3034.21	10,698.95	936.66	9558.56	1674.57	25,759.72	2589.07	2167.14	−335.96
250	11,443.18	−844.61	3266.56	45.80	4253.77	140.89	13,967.22	2962.94	10,725.84	897.25	9574.40	1755.29	25,770.12	2566.14	2172.33	−328.31

Source: Compiled by the authors.

Table A5. Residuals in regression models for 2022.

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
1	13,944.83	201.61	2861.12	157.80	4022.89	344.61	21,307.32	−1360.83	15,871.51	1456.84	11,243.43	839.33	51,478.26	810.48	2028.28	44.26
2	14,029.49	285.30	2873.98	167.08	4033.05	343.40	21,499.49	−1489.46	16,022.14	1331.87	11,309.50	982.91	51,359.52	1094.91	2044.17	63.48
3	13,884.29	206.14	2851.92	179.48	4015.62	342.31	21,169.90	−1305.26	15,763.79	1178.29	11,196.17	1006.58	51,563.18	206.36	2016.92	69.89
4	13,754.78	233.27	2832.25	143.26	4000.08	295.53	20,875.91	−1402.40	15,533.35	976.17	11,095.08	967.70	51,744.83	−1121.31	1992.61	88.51
5	13,746.03	276.19	2830.92	142.92	3999.03	225.04	20,856.05	−1491.23	15,517.78	853.44	11,088.25	758.82	51,757.10	−1193.02	1990.97	71.59
6	13,834.99	306.16	2844.43	158.70	4009.70	229.98	21,057.99	−1452.02	15,676.07	1105.19	11,157.69	729.50	51,632.32	−148.57	2007.66	63.11
7	13,960.45	391.99	2863.49	153.70	4024.76	248.71	21,342.77	−1567.89	15,899.29	1132.73	11,255.61	721.46	51,456.36	205.07	2031.21	47.58
8	13,518.08	307.41	2796.29	150.95	3971.67	166.66	20,338.64	−758.84	15,112.22	1038.26	10,910.34	625.61	52,076.80	−840.46	1948.19	67.09
9	13,383.98	429.60	2775.92	143.00	3955.57	150.10	20,034.24	−710.01	14,873.61	549.25	10,805.68	439.03	52,264.89	−1485.63	1923.02	44.04
10	13,232.52	374.67	2752.91	154.03	3937.39	75.10	19,690.43	−721.00	14,604.12	739.11	10,687.46	591.35	52,477.33	−1813.68	1894.59	82.02
11	12,593.80	247.52	2655.89	110.70	3860.73	59.50	18,240.61	−110.62	13,467.68	841.79	10,188.93	571.60	53,373.17	−4690.12	1774.71	102.67
12	13,005.29	248.28	2718.39	108.01	3910.12	21.88	19,174.65	−344.40	14,199.82	393.75	10,510.10	241.70	52,796.03	−3157.78	1851.94	79.49
13	13,227.79	140.45	2752.19	96.27	3936.82	65.59	19,679.70	−316.40	14,595.70	733.34	10,683.76	40.42	52,483.97	−2872.93	1893.70	47.98
14	13,036.16	150.06	2723.08	77.68	3913.82	14.45	19,244.73	−218.17	14,254.76	709.42	10,534.20	24.58	52,752.73	−4703.68	1857.74	54.11
15	12,500.46	−8.88	2641.71	6.63	3849.52	−55.20	18,028.74	−82.50	13,301.61	775.84	10,116.08	−75.45	53,504.09	−7317.87	1757.19	13.51
16	12,550.15	28.09	2649.26	29.35	3855.49	39.51	18,141.53	−44.33	13,390.02	848.52	10,154.87	48.19	53,434.39	−7413.08	1766.52	24.08
17	12,811.78	24.19	2689.00	13.71	3886.89	64.27	18,735.40	−148.66	13,855.52	785.10	10,359.07	−10.68	53,067.44	−5488.35	1815.62	−7.04
18	13,094.86	214.64	2732.00	24.59	3920.87	40.56	19,377.96	−954.89	14,359.19	795.02	10,580.01	−123.82	52,670.41	−4641.12	1868.75	−29.24
19	13,184.25	287.67	2745.58	5.23	3931.60	53.00	19,580.87	−1080.07	14,518.24	820.00	10,649.78	−141.73	52,545.03	−3606.12	1885.53	−21.62
20	13,254.04	278.42	2756.18	12.93	3939.97	93.59	19,739.28	−1118.52	14,642.41	820.04	10,704.25	−74.42	52,447.15	−3334.45	1898.63	6.91
21	13,283.63	233.74	2760.68	0.85	3943.53	106.39	19,806.46	−1002.24	14,695.07	757.04	10,727.35	−31.30	52,405.64	−2667.18	1904.18	−5.02
22	13,282.03	257.63	2760.43	−12.99	3943.33	90.10	19,802.83	−902.94	14,692.22	521.27	10,726.10	−54.73	52,407.88	−3096.75	1903.88	−11.96
23	13,109.48	244.45	2734.22	−19.32	3922.62	60.64	19,411.14	−715.13	14,385.20	371.35	10,591.42	−117.87	52,649.90	−4536.72	1871.50	−11.44
24	13,139.21	296.35	2738.74	−3.42	3926.19	54.49	19,478.64	−805.68	14,438.11	293.16	10,614.63	−98.57	52,608.19	−4090.55	1877.08	−28.03
25	13,152.80	280.11	2740.80	−9.61	3927.82	54.26	19,509.49	−838.85	14,462.29	249.44	10,625.24	−125.29	52,589.14	−2714.91	1879.63	−22.59
26	13,400.09	198.03	2778.37	−9.66	3957.50	93.57	20,070.82	−773.46	14,902.28	40.78	10,818.25	−167.13	52,242.29	−1678.58	1926.04	−35.86
27	13,582.58	180.00	2806.09	10.17	3979.41	83.50	20,485.03	−709.71	15,226.96	435.67	10,960.68	−41.49	51,986.35	191.88	1960.29	−42.19
28	13,590.19	138.88	2807.24	−4.61	3980.32	129.20	20,502.31	−450.53	15,240.50	530.31	10,966.62	106.21	51,975.67	1144.55	1961.72	−13.81
29	13,321.27	108.98	2766.39	−31.52	3948.04	68.49	19,891.89	−162.40	14,762.03	315.73	10,756.73	73.99	52,352.85	303.00	1911.25	−17.63
30	13,177.49	71.30	2744.55	−48.06	3930.79	15.41	19,565.52	73.93	14,506.21	49.52	10,644.51	59.19	52,554.51	−176.49	1884.26	−9.72
31	13,437.80	99.67	2784.10	−42.18	3962.03	13.81	20,156.41	−283.64	14,969.37	113.72	10,847.68	107.19	52,189.41	1277.60	1933.12	−15.37
32	13,582.15	59.25	2806.02	−23.01	3979.36	59.45	20,484.06	−285.98	15,226.20	197.53	10,960.35	155.27	51,986.95	2350.24	1960.21	−23.16
33	13,189.76	−43.09	2746.42	−25.75	3932.26	40.04	19,593.38	107.21	14,528.05	286.90	10,654.09	220.58	52,537.30	70.48	1886.56	8.39
34	12,912.02	−157.10	2704.23	−24.71	3898.92	−72.99	18,962.94	585.73	14,033.87	109.31	10,437.31	160.32	52,926.85	−1197.51	1834.44	12.16
35	11,897.52	−539.50	2550.12	−134.83	3777.15	−165.21	16,660.13	1458.21	12,228.83	253.50	9645.48	169.96	54,349.74	−6073.66	1644.03	−19.62
36	12,021.99	−522.44	2569.03	−91.57	3792.09	−200.14	16,942.66	1953.40	12,450.29	−86.72	9742.63	37.59	54,175.17	−4758.42	1667.39	6.26
37	9239.77	−1399.58	2146.39	−421.05	3458.15	−549.27	10,627.31	3035.87	7500.03	428.97	7571.09	−552.90	58,077.41	−19,770.40	1145.20	−12.43
38	10,482.10	−601.81	2335.11	−261.25	3607.27	−182.41	13,447.27	2598.64	9710.45	−745.44	8540.74	−895.77	56,334.96	−11,846.43	1378.37	−121.24
39	10,401.64	−497.63	2322.89	−519.29	3597.61	−784.04	13,264.63	2262.64	9567.29	−1075.85	8477.94	−920.41	56,447.81	6866.73	1363.27	−248.13
40	10,293.82	−412.86	2306.51	−528.23	3584.67	−888.54	13,019.90	1961.97	9375.45	−1211.33	8393.78	−770.45	56,599.03	14,906.53	1343.03	−178.31
41	10,598.67	−466.43	2352.82	−384.45	3621.26	−311.99	13,711.87	2046.13	9917.85	−1466.23	8631.72	137.33	56,171.47	8278.51	1400.25	−77.92
42	11,129.75	−248.44	2433.49	−283.14	3685.00	−261.43	14,917.37	1557.36	10,862.78	−1611.04	9046.23	278.20	55,426.59	10,424.65	1499.93	−82.08
43	11,253.43	−302.29	2452.28	−204.67	3699.85	−319.46	15,198.11	1450.76	11,082.84	−1060.47	9142.77	475.09	55,253.12	6211.41	1523.14	−52.09
44	11,341.26	−375.58	2465.62	−222.90	3710.39	−380.76	15,397.47	1446.62	11,239.10	−758.78	9211.31	296.97	55,129.94	4876.27	1539.62	−24.42
45	10,976.30	−508.52	2410.18	−244.97	3666.58	−505.21	14,569.04	1943.08	10,589.74	−704.71	8926.46	34.13	55,641.82	1631.71	1471.13	−27.78
46	10,850.94	−534.16	2391.14	−223.53	3651.54	−539.30	14,284.50	2096.68	10,366.71	−864.78	8828.62	41.22	55,817.64	5453.54	1447.60	6.23
47	10,913.12	−585.39	2400.58	−219.56	3659.00	−529.35	14,425.64	1956.14	10,477.34	−815.38	8877.15	−56.43	55,730.43	4321.35	1459.27	18.12

Table A5. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
48	10,789.79	−646.86	2381.85	−213.87	3644.20	−491.30	14,145.70	1957.19	10,257.91	−850.78	8780.89	65.00	55,903.40	2054.53	1436.12	11.05
49	10,686.42	−627.51	2366.15	−231.62	3631.79	−534.24	13,911.06	2202.76	10,073.99	−860.28	8700.21	91.02	56,048.38	1246.07	1416.72	12.62
50	10,647.12	−653.05	2360.18	−225.92	3627.07	−547.26	13,821.84	2378.70	10,004.05	−938.26	8669.53	−107.40	56,103.51	603.53	1409.34	−19.64
51	10,601.76	−636.52	2353.29	−236.90	3621.63	−548.31	13,718.89	2323.03	9923.36	−899.91	8634.13	−186.77	56,167.13	2878.86	1400.83	6.42
52	10,240.39	−731.60	2298.39	−254.27	3578.25	−580.33	12,898.62	2476.75	9280.39	−705.42	8352.08	−169.50	56,673.97	−1007.41	1333.01	52.65
53	10,311.75	−774.94	2309.23	−235.76	3586.82	−571.30	13,060.59	2463.44	9407.35	−805.23	8407.78	−254.92	56,573.89	−733.80	1346.40	39.54
54	10,086.48	−820.64	2275.01	−228.70	3559.78	−594.98	12,549.24	2686.61	9006.53	−839.45	8231.95	−329.70	56,889.85	−382.80	1304.12	91.95
55	10,020.53	−912.68	2264.99	−217.24	3551.86	−627.64	12,399.55	2778.26	8889.19	−985.20	8180.48	−356.58	56,982.35	−1015.93	1291.74	50.72
56	10,071.25	−942.80	2272.70	−228.20	3557.95	−680.51	12,514.69	3057.45	8979.44	−905.46	8220.07	−126.94	56,911.20	−103.86	1301.26	46.36
57	9906.09	−971.43	2247.61	−223.09	3538.13	−705.79	12,139.79	3422.69	8685.59	−799.63	8091.16	−6.54	57,142.85	−536.11	1270.26	49.72
58	9785.61	−876.08	2229.31	−212.72	3523.67	−742.03	11,866.32	3504.26	8471.22	−774.13	7997.12	−105.62	57,311.83	−1319.84	1247.65	42.75
59	9709.53	−871.78	2217.75	−220.91	3514.54	−775.78	11,693.61	3266.41	8335.85	−1072.33	7937.74	−237.30	57,418.54	−3118.39	1233.37	10.14
60	10,110.42	−761.81	2278.65	−233.19	3562.65	−688.54	12,603.58	2797.38	9049.13	−1338.42	8250.63	−479.41	56,856.27	−1606.69	1308.61	−22.53
61	10,378.16	−747.18	2319.32	−232.90	3594.79	−581.41	13,211.34	2448.29	9525.51	−1234.25	8459.61	−335.48	56,480.74	−674.72	1358.86	16.30
62	10,236.59	−766.14	2297.82	−209.30	3577.80	−603.93	12,889.98	2563.65	9273.62	−1065.75	8349.11	−439.08	56,679.31	−504.50	1332.29	14.26
63	10,446.07	−687.93	2329.64	−215.29	3602.94	−569.85	13,365.48	2381.33	9646.33	−1277.13	8512.61	−551.83	56,385.50	−173.41	1371.61	−5.40
64	10,246.97	−773.87	2299.39	−174.06	3579.04	−569.37	12,913.56	2520.25	9292.10	−1288.44	8357.22	−538.42	56,664.74	−977.43	1334.24	5.43
65	10,344.58	−795.46	2314.22	−169.11	3590.76	−520.57	13,135.12	2468.17	9465.77	−1379.04	8433.40	−590.85	56,527.84	−359.34	1352.56	−23.02
66	10,330.57	−770.12	2312.09	−166.92	3589.08	−554.42	13,103.31	2463.55	9440.83	−1514.95	8422.46	−659.24	56,547.49	1013.06	1349.93	−43.41
67	10,316.16	−781.58	2309.90	−130.48	3587.35	−570.69	13,070.60	2398.50	9415.20	−1551.27	8411.22	−675.90	56,567.70	3694.99	1347.23	−33.91
68	10,071.29	−912.38	2272.71	−126.39	3557.96	−647.62	12,514.77	2558.64	8979.51	−1417.07	8220.09	−748.29	56,911.15	2528.83	1301.27	−22.98
69	10,091.39	−913.45	2275.76	−118.74	3560.37	−645.90	12,560.39	2323.94	9015.27	−1345.52	8235.78	−692.82	56,882.96	2806.82	1305.04	−21.71
70	10,255.41	−820.76	2300.67	−105.19	3580.06	−567.88	12,932.69	2110.01	9307.10	−1495.78	8363.80	−609.64	56,652.91	4490.92	1335.82	−27.33
71	10,399.75	−656.27	2322.60	−95.87	3597.38	−498.41	13,260.35	1851.41	9563.93	−1474.85	8476.46	−590.48	56,450.46	4496.14	1362.92	−2.76
72	10,456.17	−595.28	2331.17	−116.50	3604.15	−230.83	13,388.41	1834.25	9664.31	−1592.54	8520.50	−624.99	56,371.33	4823.42	1373.51	−6.62
73	10,441.62	−557.99	2328.96	−114.79	3602.41	−232.67	13,355.39	1796.62	9638.42	−1670.56	8509.14	−684.33	56,391.73	5462.06	1370.77	−20.04
74	10,246.90	−536.09	2299.38	−117.87	3579.04	−271.23	12,913.40	1758.98	9291.97	−1427.03	8357.16	−757.22	56,664.84	2472.17	1334.23	0.50
75	10,020.95	−661.66	2265.06	−144.43	3551.91	−285.45	12,400.51	1653.79	8889.95	−1152.23	8180.81	−833.94	56,981.75	−192.31	1291.82	23.76
76	9997.94	−767.05	2261.56	−124.49	3549.15	−203.19	12,348.27	1460.51	8849.00	−1053.49	8162.85	−969.72	57,014.03	−1296.64	1287.50	13.45
77	10,142.50	−637.74	2283.52	−141.17	3566.50	−170.95	12,676.41	1348.88	9106.22	−1280.70	8275.68	−915.97	56,811.27	−403.14	1314.63	−8.06
78	10,337.82	−472.74	2313.19	−93.45	3589.95	−215.56	13,119.78	998.04	9453.74	−1577.65	8428.13	−1016.37	56,537.32	593.54	1351.29	−37.97
79	10,322.74	−392.37	2310.90	−22.87	3588.14	−195.75	13,085.54	1050.98	9426.91	−1582.64	8416.36	−1040.16	56,558.47	102.88	1348.46	−37.59
80	10,311.64	−442.37	2309.22	−52.94	3586.81	−103.50	13,060.35	1029.92	9407.16	−1636.60	8407.69	−1079.56	56,574.04	−892.45	1346.38	−25.64
81	10,183.05	−519.74	2289.68	−58.97	3571.37	−102.01	12,768.46	1165.80	9178.37	−1510.53	8307.33	−1098.24	56,754.39	−1407.03	1322.24	−23.77
82	10,242.35	−495.15	2298.69	−50.00	3578.49	−78.36	12,903.06	991.66	9283.87	−1567.71	8353.61	−1136.39	56,671.22	−698.44	1333.37	−36.07
83	10,122.30	−476.27	2280.45	−41.34	3564.08	−27.23	12,630.55	906.49	9070.27	−1456.08	8259.91	−1145.32	56,839.61	−1996.52	1310.84	−32.66
84	10,046.71	−513.18	2268.97	−1.00	3555.01	−41.83	12,458.97	602.53	8935.77	−1365.11	8200.91	−1326.52	56,945.63	−2150.29	1296.65	−63.40
85	9997.01	−517.12	2261.42	−23.75	3549.04	57.93	12,346.17	611.82	8847.36	−1411.50	8162.12	−1592.24	57,015.32	−2685.30	1287.33	−102.72
86	10,025.05	−461.23	2265.68	−45.58	3552.41	74.57	12,409.80	504.55	8897.23	−1528.00	8184.00	−1457.29	56,976.01	−2329.02	1292.59	−82.32
87	10,095.73	−382.90	2276.42	−38.53	3560.89	87.27	12,570.24	323.00	9022.99	−1606.90	8239.17	−1452.39	56,876.88	−1724.22	1305.85	−72.15
88	10,037.25	−314.96	2267.53	−55.27	3553.87	77.20	12,437.50	241.69	8918.94	−1650.04	8193.52	−1548.72	56,958.90	−1961.89	1294.88	−75.83
89	10,010.50	−170.02	2263.47	−32.52	3550.66	112.55	12,376.78	77.33	8871.34	−1668.94	8172.65	−1634.58	56,996.41	−1835.33	1289.86	−87.28
90	10,031.38	−191.31	2266.64	17.25	3553.17	121.25	12,424.17	−133.75	8908.50	−1735.58	8188.94	−1728.19	56,967.13	−2387.07	1293.78	−95.70
91	10,119.38	−145.93	2280.01	36.55	3563.73	127.78	12,623.93	−303.81	9065.08	−1817.82	8257.63	−1668.48	56,843.70	−1910.32	1310.29	−112.75
92	10,267.11	−37.96	2302.45	47.69	3581.46	137.51	12,959.26	−410.46	9327.92	−1922.75	8372.93	−1538.47	56,636.50	1579.34	1338.02	−114.61
93	10,219.30	−92.38	2295.19	48.82	3575.72	124.19	12,850.74	−347.16	9242.86	−1910.05	8335.62	−1547.19	56,703.55	1218.94	1329.05	−110.11
94	10,353.08	15.09	2315.51	94.07	3591.78	118.35	13,154.42	−490.62	9480.89	−1870.65	8440.04	−1574.11	56,515.91	3718.14	1354.16	−113.12

Table A5. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
95	10,208.66	−4.46	2293.57	80.51	3574.45	105.97	12,826.60	−364.86	9223.94	−1766.30	8327.32	−1491.21	56,718.47	2825.11	1327.05	−113.08
96	10,241.75	−27.60	2298.60	71.70	3578.42	110.25	12,901.69	−540.44	9282.80	−1775.30	8353.14	−1603.31	56,672.07	3037.92	1333.26	−127.11
97	10,325.13	−59.28	2311.26	46.27	3588.42	122.10	13,090.95	−615.30	9431.15	−1824.82	8418.22	−1648.26	56,555.13	3996.05	1348.91	−141.50
98	10,282.65	−92.87	2304.81	63.52	3583.33	161.42	12,994.54	−495.64	9355.58	−1728.45	8385.07	−1512.94	56,614.70	3491.52	1340.94	−134.42
99	10,320.36	−77.33	2310.54	100.74	3587.85	179.86	13,080.13	−595.40	9422.67	−1644.90	8414.50	−1256.72	56,561.81	3678.65	1348.02	−110.91
100	10,278.03	33.37	2304.11	99.30	3582.77	230.53	12,984.05	−766.80	9347.35	−1390.36	8381.46	−1158.10	56,621.18	3424.36	1340.07	−109.97
101	10,206.21	43.24	2293.20	99.34	3574.15	225.03	12,821.03	−590.17	9219.57	−1543.18	8325.40	−1132.59	56,721.91	4686.88	1326.59	−112.49
102	9593.10	−6.39	2200.07	92.25	3500.56	236.30	11,429.33	408.58	8128.70	−688.94	7846.87	−843.14	57,581.84	2258.99	1211.52	−26.69
103	9572.04	90.98	2196.87	125.90	3498.03	314.81	11,381.53	285.71	8091.23	−546.67	7830.43	−807.96	57,611.37	2063.48	1207.57	−3.08
104	9538.54	82.31	2191.78	126.65	3494.01	343.51	11,305.47	237.74	8031.61	−276.87	7804.28	−747.82	57,658.37	1328.29	1201.28	2.01
105	9601.64	44.42	2201.36	124.46	3501.59	285.69	11,448.71	150.97	8143.89	−316.17	7853.53	−732.06	57,569.86	936.37	1213.12	−9.49
106	9591.50	80.69	2199.82	122.74	3500.37	235.08	11,425.70	129.78	8125.85	−228.15	7845.62	−630.44	57,584.08	2242.44	1211.22	−32.78
107	9597.58	28.44	2200.75	148.92	3501.10	252.49	11,439.51	195.20	8136.67	−328.20	7850.36	−394.24	57,575.55	2701.08	1212.36	−24.81
108	9589.54	49.03	2199.53	160.45	3500.13	288.34	11,421.26	269.73	8122.37	−317.41	7844.09	−335.55	57,586.83	2911.09	1210.85	−28.53
109	9398.06	47.62	2170.44	150.24	3477.15	281.53	10,986.62	532.76	7781.67	−169.77	7694.64	−336.05	57,855.39	1400.92	1174.91	−10.14
110	9318.88	−31.56	2158.41	126.46	3467.65	247.58	10,806.88	429.81	7640.79	−61.66	7632.84	−416.28	57,966.45	−973.99	1160.05	−11.03
111	9141.99	−121.20	2131.54	119.30	3446.41	212.77	10,405.34	426.32	7326.05	86.53	7494.77	−415.00	58,214.56	−2899.23	1126.85	−0.96
112	9112.00	−187.71	2126.98	136.93	3442.82	156.13	10,337.28	400.45	7272.69	97.87	7471.36	−453.65	58,256.61	−2797.28	1121.22	−12.25
113	9251.65	−88.39	2148.20	148.11	3459.58	245.40	10,654.28	194.55	7521.17	−36.14	7580.36	−395.90	58,060.74	−1095.17	1147.43	−20.35
114	9194.35	−96.32	2139.49	188.12	3452.70	248.08	10,524.20	155.61	7419.21	48.00	7535.63	−240.82	58,141.12	−1695.72	1136.68	−13.91
115	9144.55	−108.41	2131.93	148.51	3446.72	204.65	10,411.16	154.25	7330.60	59.77	7496.77	−142.93	58,210.96	−2518.94	1127.33	−20.91
116	9153.55	−10.99	2133.30	181.08	3447.80	223.95	10,431.59	−50.11	7346.62	−21.34	7503.79	−119.67	58,198.34	−2642.08	1129.02	−19.11
117	9080.66	6.15	2122.22	154.10	3439.05	182.40	10,266.14	−84.76	7216.94	66.92	7446.90	−115.45	58,300.57	−3022.15	1115.34	−5.34
118	9187.41	109.22	2138.44	152.21	3451.87	188.08	10,508.45	−380.70	7406.87	94.17	7530.22	−19.20	58,150.84	−2086.46	1135.38	−14.97
119	9233.94	103.54	2145.51	183.47	3457.45	191.76	10,614.07	−351.48	7489.65	181.45	7566.54	154.57	58,085.59	−2135.20	1144.11	22.57
120	9397.89	138.07	2170.41	204.50	3477.13	204.21	10,986.21	−341.55	7781.36	−17.71	7694.50	101.15	57,855.64	−1686.57	1174.88	−7.36
121	9428.58	177.72	2175.08	185.48	3480.81	223.80	11,055.89	−333.27	7835.98	−120.16	7718.46	127.77	57,812.58	−620.86	1180.64	−20.52
122	9408.27	146.41	2171.99	194.84	3478.38	315.18	11,009.79	−369.40	7799.84	−115.19	7702.61	190.38	57,841.07	−857.55	1176.83	−24.34
123	9511.68	272.59	2187.70	185.50	3490.79	310.03	11,244.51	−350.62	7983.82	−267.70	7783.31	309.56	57,696.04	−244.30	1196.24	−49.05
124	9414.28	240.83	2172.90	172.84	3479.10	290.43	11,023.44	−170.17	7810.54	−272.11	7707.30	325.60	57,832.64	−1243.13	1177.96	−27.57
125	9294.84	146.26	2154.76	172.15	3464.76	284.51	10,752.30	−135.18	7598.01	−186.49	7614.07	252.46	58,000.17	−2088.09	1155.54	−18.64
126	9233.51	141.57	2145.44	140.05	3457.40	350.21	10,613.10	−311.50	7488.89	−72.97	7566.20	334.58	58,086.19	−2422.42	1144.03	−13.85
127	9190.29	124.68	2138.88	92.67	3452.21	402.60	10,514.99	−332.04	7412.00	49.38	7532.47	307.85	58,146.80	−2697.47	1135.92	−10.29
128	9023.39	73.27	2113.52	70.71	3432.18	304.91	10,136.15	−193.18	7115.04	200.37	7402.20	188.49	58,380.89	−4447.36	1104.59	−9.31
129	9103.35	87.47	2125.67	95.00	3441.78	386.61	10,317.66	−325.42	7257.31	143.01	7464.61	342.19	58,268.74	−242.47	1119.60	−9.62
130	9251.65	185.99	2148.20	61.06	3459.58	381.86	10,654.28	−498.71	7521.17	16.45	7580.36	361.28	58,060.74	−388.89	1147.43	−7.90
131	9277.37	251.62	2152.11	66.81	3462.66	403.11	10,712.65	−307.20	7566.93	126.43	7600.44	489.09	58,024.67	−277.35	1152.26	19.61
132	9219.92	218.57	2143.38	60.46	3455.77	367.48	10,582.25	−208.03	7464.72	285.16	7555.60	625.88	58,105.24	−522.71	1141.48	42.84
133	9263.11	250.32	2149.94	74.25	3460.95	368.39	10,680.28	−261.53	7541.55	353.12	7589.30	681.14	58,044.68	−171.74	1149.58	64.37
134	9317.89	247.58	2158.26	76.72	3467.53	369.40	10,804.62	−231.99	7639.02	323.49	7632.06	870.61	57,967.84	1004.26	1159.86	48.48
135	9442.99	341.23	2177.26	67.32	3482.54	371.78	11,088.60	−258.39	7861.61	300.27	7729.70	894.94	57,792.38	2473.71	1183.35	30.23
136	9369.04	293.22	2166.03	74.46	3473.67	340.17	10,920.73	−131.02	7730.03	391.69	7671.98	915.44	57,896.10	3659.50	1169.47	47.09
137	9385.44	300.83	2168.52	65.62	3475.64	304.92	10,957.95	−216.58	7759.21	458.03	7684.78	901.16	57,873.10	4081.60	1172.54	32.06
138	9378.89	267.17	2167.53	60.92	3474.85	279.36	10,943.10	−213.96	7747.56	645.05	7679.67	828.92	57,882.28	4837.21	1171.31	28.00
139	9467.04	402.77	2180.92	52.54	3485.43	252.02	11,143.18	−386.66	7904.39	578.32	7748.47	903.54	57,758.65	5753.34	1187.86	16.77
140	9550.63	386.00	2193.61	49.66	3495.46	216.09	11,332.93	−453.09	8053.13	516.05	7813.72	863.42	57,641.41	4845.21	1203.55	4.60
141	9528.04	407.76	2190.18	43.60	3492.75	165.16	11,281.65	−379.81	8012.94	375.02	7796.09	880.17	57,673.09	4250.46	1199.31	5.03

Table A5. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
142	9510.15	338.66	2187.47	66.90	3490.60	219.21	11,241.04	−325.92	7981.10	458.29	7782.12	962.61	57,698.18	4498.95	1195.95	17.32
143	9583.78	376.75	2198.65	66.53	3499.44	262.20	11,408.18	−397.75	8112.11	369.16	7839.59	938.42	57,594.91	5507.06	1209.77	11.01
144	9664.81	400.32	2210.96	56.51	3509.17	277.13	11,592.11	−450.18	8256.29	359.76	7902.84	953.79	57,481.26	6217.94	1224.98	34.73
145	9695.12	396.55	2215.56	54.43	3512.81	243.28	11,660.90	−540.93	8310.21	263.90	7926.49	871.19	57,438.75	5586.90	1230.67	35.81
146	10,036.43	392.11	2267.41	40.68	3553.77	168.00	12,435.64	−1119.93	8917.48	−184.64	8192.89	611.82	56,960.04	5906.16	1294.73	−19.94
147	10,172.70	388.13	2288.11	10.28	3570.13	208.71	12,744.97	−1450.48	9159.95	−223.20	8299.25	511.05	56,768.91	6597.66	1320.30	−14.64
148	10,258.86	459.61	2301.20	16.65	3580.47	194.40	12,940.53	−1410.97	9313.24	−189.76	8366.49	548.52	56,648.08	6604.81	1336.47	1.79
149	10,312.11	531.77	2309.29	72.55	3586.86	250.56	13,061.40	−1265.01	9407.98	−311.30	8408.05	581.44	56,573.39	7613.60	1346.47	27.83
150	10,139.30	433.28	2283.04	51.13	3566.12	195.80	12,669.15	−1197.35	9100.52	−207.72	8273.18	476.39	56,815.76	6026.56	1314.03	44.63
151	10,054.78	393.62	2270.20	59.88	3555.98	170.82	12,477.30	−1076.83	8950.14	−43.64	8207.21	476.57	56,934.30	5081.67	1298.17	56.37
152	10,019.96	387.16	2264.91	44.24	3551.80	184.28	12,398.25	−1095.38	8888.18	5.44	8180.03	503.72	56,983.14	4854.24	1291.63	50.16
153	10,125.46	388.19	2280.93	44.64	3564.46	172.42	12,637.74	−1111.46	9075.90	−49.39	8262.38	499.54	56,835.17	5253.61	1311.44	28.60
154	10,168.90	446.79	2287.53	60.71	3569.67	199.27	12,736.33	−1110.54	9153.18	18.14	8296.28	611.43	56,774.25	5652.16	1319.59	36.51
155	10,146.63	395.22	2284.15	52.36	3567.00	169.43	12,685.78	−1129.75	9113.56	106.20	8278.90	728.62	56,805.48	6049.67	1315.41	33.70
156	10,117.78	396.81	2279.77	55.48	3563.54	174.07	12,620.30	−1138.78	9062.23	135.43	8256.38	637.18	56,845.94	4174.34	1309.99	18.58
157	10,143.78	401.52	2283.72	67.45	3566.66	188.91	12,679.32	−1242.57	9108.49	172.03	8276.68	689.74	56,809.47	4208.46	1314.87	29.42
158	10,091.14	353.54	2275.72	52.39	3560.34	153.77	12,559.82	−1153.74	9014.82	273.62	8235.59	728.64	56,883.31	4096.13	1304.99	65.49
159	10,068.44	332.22	2272.27	47.07	3557.61	143.99	12,508.31	−1136.80	8974.44	375.50	8217.87	739.12	56,915.14	3860.66	1300.73	56.08
160	9473.62	58.61	2181.92	−5.72	3486.22	31.77	11,158.12	−637.70	7916.10	614.81	7753.61	446.12	57,749.42	−1417.23	1189.09	26.62
161	9233.65	−150.82	2145.46	−43.81	3457.42	−19.44	10,613.42	−606.70	7489.15	717.32	7566.31	250.01	58,085.99	−1244.97	1144.06	61.61
162	9411.19	−60.54	2172.43	−38.33	3478.73	−89.24	11,016.41	−1018.14	7805.03	633.34	7704.88	226.15	57,836.98	−723.91	1177.38	41.66
163	9139.53	−191.23	2131.17	−82.38	3446.12	−254.72	10,399.77	−982.63	7321.68	722.52	7492.85	32.97	58,218.00	−2819.86	1126.39	6.89
164	8729.43	−517.99	2068.87	−180.42	3396.90	−343.74	9468.88	−938.35	6592.01	761.35	7172.76	−336.83	58,793.19	−5569.28	1049.42	−12.16
165	8771.62	−464.25	2075.28	−184.79	3401.96	−397.81	9564.64	−1143.24	6667.07	863.98	7205.69	−291.42	58,734.02	−4748.30	1057.34	−15.56
166	8782.43	−420.18	2076.92	−184.39	3403.26	−410.84	9589.19	−1159.71	6686.31	790.01	7214.13	−178.10	58,718.85	−4016.26	1059.37	−21.42
167	8744.87	−413.54	2071.22	−211.06	3398.75	−432.89	9503.92	−1311.71	6619.47	696.58	7184.81	−235.15	58,771.54	−4865.34	1052.32	−31.41
168	8752.69	−366.91	2072.40	−195.09	3399.69	−382.63	9521.69	−1256.83	6633.40	668.01	7190.92	−245.52	58,760.56	−4771.50	1053.79	−34.72
169	8973.02	−223.17	2105.87	−140.96	3426.13	−249.91	10,021.81	−1199.31	7025.42	725.17	7362.89	88.48	58,451.54	−3666.69	1095.14	4.15
170	8966.40	−220.94	2104.87	−139.65	3425.34	−172.82	10,006.79	−1103.44	7013.65	759.74	7357.72	201.93	58,460.82	−4095.28	1093.90	39.28
171	8914.36	−185.05	2096.96	−148.32	3419.09	−101.13	9888.67	−1098.65	6921.05	700.15	7317.11	226.61	58,533.81	−5548.47	1084.13	24.75
172	8892.56	−117.32	2093.65	−149.57	3416.48	−89.96	9839.17	−1118.37	6882.26	692.54	7300.09	312.06	58,564.39	−5300.91	1080.04	20.53
173	8680.80	−254.76	2061.48	−163.68	3391.06	−178.12	9358.51	−977.45	6505.49	717.87	7134.81	280.42	58,861.39	−6950.21	1040.29	40.65
174	8566.16	90.97	2044.07	−105.39	3377.30	−197.64	9098.27	−633.37	6301.50	1086.74	7045.33	450.15	59,022.19	−7471.45	1018.77	99.59
175	8657.25	121.71	2057.91	−39.32	3388.23	−81.26	9305.05	−614.71	6463.59	1021.83	7116.43	654.87	58,894.42	−6724.22	1035.87	99.93
176	8648.86	158.47	2056.63	−35.89	3387.23	−154.05	9286.00	−650.93	6448.65	1039.91	7109.88	782.19	58,906.20	−6453.03	1034.30	110.07
177	8659.49	192.13	2058.25	−32.18	3388.50	−144.51	9310.14	−688.93	6467.58	1124.03	7118.18	761.38	58,891.28	−6591.45	1036.29	129.62
178	8648.54	167.52	2056.58	−24.03	3387.19	−83.07	9285.27	−694.73	6448.08	1116.84	7109.63	804.03	58,906.65	−6499.94	1034.24	114.73
179	8832.19	264.74	2084.48	−11.13	3409.23	29.79	9702.15	−744.15	6774.85	1071.07	7252.97	845.32	58,649.06	−4533.93	1068.71	96.09
180	8898.43	241.61	2094.54	−6.71	3417.18	−19.53	9852.49	−733.20	6892.70	1040.97	7304.67	791.20	58,556.16	−2829.97	1081.14	78.79
181	8763.19	163.90	2074.00	−7.66	3400.95	−8.61	9545.51	−704.41	6652.07	1094.64	7199.11	761.34	58,745.85	−4459.35	1055.75	82.93
182	8909.95	220.48	2096.29	6.09	3418.56	3.37	9878.66	−806.18	6913.20	931.85	7313.66	724.87	58,540.00	−3729.83	1083.30	64.10
183	8969.64	171.04	2105.36	11.76	3425.73	−3.96	10,014.14	−756.54	7019.41	850.01	7360.25	805.24	58,456.28	−3458.14	1094.50	54.66
184	9028.51	219.68	2114.30	25.57	3432.79	−5.36	10,147.77	−778.64	7124.15	808.49	7406.20	891.68	58,373.71	−2906.93	1105.55	70.99
185	9228.35	354.93	2144.66	47.28	3456.78	12.37	10,601.39	−995.45	7479.72	665.37	7562.18	873.92	58,093.42	−2035.81	1143.06	42.38
186	9196.48	426.93	2139.82	45.09	3452.96	5.07	10,529.04	−958.92	7423.01	693.71	7537.30	849.73	58,138.12	−2554.65	1137.08	47.62
187	9333.89	541.28	2160.69	62.34	3469.45	58.58	10,840.96	−990.76	7667.50	552.28	7644.55	849.93	57,945.39	−2048.01	1162.87	45.59
188	9345.42	624.83	2162.44	67.64	3470.83	76.43	10,867.12	−1016.50	7688.01	548.76	7653.55	847.47	57,929.23	−1027.07	1165.03	38.87

Table A5. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
189	9319.63	627.73	2158.52	77.14	3467.74	85.07	10,808.58	−1039.36	7642.12	684.17	7633.42	863.16	57,965.40	−770.15	1160.19	43.44
190	9333.22	654.93	2160.59	90.63	3469.37	84.92	10,839.42	−1091.31	7666.30	649.35	7644.02	825.91	57,946.34	−661.95	1162.74	54.82
191	9336.88	659.04	2161.15	102.03	3469.81	76.96	10,847.74	−1161.02	7672.82	598.14	7646.88	731.61	57,941.20	1012.78	1163.43	46.37
192	9286.90	613.28	2153.55	97.74	3463.81	48.41	10,734.29	−1112.50	7583.89	597.32	7607.88	697.28	58,011.30	258.72	1154.05	43.09
193	9455.58	674.60	2179.18	105.58	3484.05	107.03	11,117.18	−1158.20	7884.02	532.49	7739.53	536.60	57,774.72	1390.18	1185.71	30.37
194	9454.98	658.82	2179.09	98.20	3483.98	131.95	11,115.81	−1127.06	7882.94	564.99	7739.06	352.41	57,775.56	1175.78	1185.59	50.74
195	9347.13	595.17	2162.70	84.58	3471.04	53.15	10,870.99	−987.98	7691.04	539.21	7654.88	226.08	57,926.83	60.36	1165.35	33.02
196	9464.94	584.55	2180.60	75.76	3485.18	97.75	11,138.41	−1032.68	7900.66	675.90	7746.83	178.02	57,761.59	1068.20	1187.46	13.75
197	9494.04	513.63	2185.02	85.09	3488.67	166.52	11,204.46	−1015.89	7952.43	642.48	7769.54	206.88	57,720.78	595.38	1192.93	6.41
198	9561.44	461.79	2195.26	72.51	3496.76	155.75	11,357.47	−986.50	8072.37	700.67	7822.16	241.66	57,626.24	1181.96	1205.58	13.79
199	9495.17	420.46	2185.19	73.40	3488.81	181.42	11,207.05	−963.83	7954.46	749.09	7770.43	220.85	57,719.19	960.36	1193.14	20.22
200	9513.67	403.41	2188.00	60.57	3491.03	167.92	11,249.03	−985.09	7987.37	692.09	7784.87	211.10	57,693.24	815.22	1196.61	11.11
201	9466.08	386.76	2180.77	62.24	3485.31	144.92	11,141.00	−1020.25	7902.69	802.54	7747.72	309.49	57,760.00	1285.49	1187.68	33.31
202	9437.83	391.44	2176.48	69.92	3481.92	119.21	11,076.89	−962.81	7852.43	883.15	7725.68	270.81	57,799.61	676.77	1182.38	37.59
203	9326.74	312.80	2159.61	51.85	3468.59	95.56	10,824.73	−922.56	7654.78	911.84	7638.97	281.03	57,955.42	−326.76	1161.53	33.74
204	9411.62	323.32	2172.50	64.38	3478.78	87.44	11,017.38	−850.51	7805.79	884.56	7705.22	320.24	57,836.38	153.19	1177.46	28.43
205	9458.25	330.96	2179.58	66.66	3484.37	148.94	11,123.23	−857.81	7888.76	773.69	7741.61	316.88	57,770.97	133.50	1186.21	30.86
206	9456.86	327.02	2179.37	91.35	3484.21	152.01	11,120.09	−891.51	7886.29	772.97	7740.53	409.35	57,772.92	505.59	1185.95	38.79
207	9428.83	310.78	2175.11	114.23	3480.84	188.22	11,056.46	−905.73	7836.42	777.53	7718.65	369.52	57,812.23	384.09	1180.69	34.41
208	9400.06	262.64	2170.74	111.96	3477.39	185.28	10,991.14	−816.61	7785.22	739.08	7696.19	368.95	57,852.60	328.21	1175.29	20.58
209	9410.23	265.34	2172.29	95.82	3478.61	204.28	11,014.23	−762.80	7803.32	789.78	7704.13	350.58	57,838.33	536.35	1177.20	20.03
210	9370.96	257.54	2166.32	95.52	3473.90	183.89	10,925.09	−722.09	7733.45	850.61	7673.48	358.14	57,893.41	792.38	1169.83	19.36
211	9418.94	254.10	2173.61	94.26	3479.66	175.54	11,034.01	−645.00	7818.83	798.53	7710.93	365.59	57,826.10	954.37	1178.83	17.41
212	9395.93	299.83	2170.12	84.94	3476.89	159.34	10,981.77	−655.32	7777.88	823.26	7692.97	328.13	57,858.38	361.61	1174.51	13.97
213	9482.33	301.89	2183.24	81.39	3487.27	151.12	11,177.90	−757.43	7931.61	862.58	7760.41	237.79	57,737.20	487.04	1190.73	5.29
214	9446.73	260.33	2177.83	68.49	3482.99	152.63	11,097.07	−666.10	7868.26	841.14	7732.62	150.19	57,787.14	565.45	1184.05	12.71
215	9443.27	223.98	2177.31	53.85	3482.58	144.37	11,089.24	−669.70	7862.12	826.75	7729.93	113.13	57,791.98	462.63	1183.40	11.27
216	9430.26	237.99	2175.33	47.67	3481.01	147.26	11,059.69	−601.67	7838.95	731.84	7719.76	82.61	57,810.24	575.42	1180.95	8.51
217	9414.85	230.54	2172.99	44.24	3479.17	151.38	11,024.73	−639.02	7811.55	705.52	7707.74	120.43	57,831.84	349.76	1178.06	−19.96
218	9398.45	213.05	2170.50	45.83	3477.20	128.06	10,987.50	−606.18	7782.37	793.95	7694.94	136.53	57,854.84	299.26	1174.99	−32.57
219	9412.04	195.45	2172.56	33.94	3478.83	94.63	11,018.35	−468.67	7806.55	728.66	7705.55	103.73	57,835.78	222.27	1177.54	−37.55
220	9377.72	163.55	2167.35	15.69	3474.71	53.48	10,940.43	−402.31	7745.47	707.94	7678.76	95.93	57,883.93	−180.67	1171.09	−38.99
221	9271.96	133.26	2151.28	32.89	3462.02	14.17	10,700.38	−386.40	7557.31	798.79	7596.21	65.59	58,032.25	−651.09	1151.25	−30.62
222	9294.80	174.51	2154.75	34.62	3464.76	57.31	10,752.22	−421.20	7597.94	756.51	7614.04	33.84	58,000.22	−2009.25	1155.53	−20.77
223	9305.72	137.77	2156.41	19.51	3466.07	31.65	10,777.01	−294.16	7617.37	749.75	7622.56	−29.18	57,984.91	−2375.78	1157.58	−24.48
224	9268.33	325.07	2150.73	55.70	3461.58	52.97	10,692.15	−19.06	7550.86	979.65	7593.38	91.44	58,037.34	−22.06	1150.56	−27.01
225	9264.67	319.81	2150.18	49.41	3461.14	25.67	10,683.83	−34.67	7544.34	1080.69	7590.52	120.68	58,042.48	822.72	1149.88	−26.89
226	9277.09	300.28	2152.06	47.50	3462.63	62.64	10,712.01	−78.34	7566.42	1115.12	7600.21	144.73	58,025.07	1425.62	1152.21	−34.11
227	9279.43	282.89	2152.42	56.32	3462.91	71.41	10,717.34	−81.77	7570.60	1119.07	7602.05	124.95	58,021.78	1189.06	1152.65	−37.51
228	9333.75	366.85	2160.67	58.15	3469.43	88.30	10,840.63	−31.14	7667.25	1120.89	7644.44	66.21	57,945.59	1819.05	1162.84	−39.02
229	9359.97	382.66	2164.65	80.17	3472.58	111.62	10,900.14	−5.74	7713.89	1138.09	7664.90	13.52	57,908.82	2205.31	1167.76	−33.72
230	9332.54	384.32	2160.49	114.94	3469.29	130.59	10,837.89	−40.83	7665.09	1090.73	7643.50	−15.05	57,947.29	2344.83	1162.62	−39.05
231	9355.77	406.38	2164.01	123.15	3472.07	164.01	10,890.61	−70.85	7706.42	1066.98	7661.63	−21.97	57,914.71	2603.86	1166.97	−39.11
232	9387.07	439.53	2168.77	121.61	3475.83	167.02	10,961.67	−102.86	7762.12	1010.76	7686.06	−93.61	57,870.81	2565.56	1172.85	−43.02

Source: Compiled by the authors.

Table A6. Residuals in regression models for 2024.

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
1	16,716.88	127.31	3332.42	−79.97	5097.03	−515.93	15,069.60	−357.45	15,509.64	−708.57	12,729.84	−673.47	72,726.42	2388.64	2899.33	−130.23
2	16,730.11	162.71	3334.28	−51.12	5103.40	−456.17	15,083.42	−265.40	15,514.97	−561.92	12,743.36	−571.78	72,754.61	3298.83	2901.20	−106.93
3	16,743.95	155.35	3336.22	−46.32	5110.06	−466.93	15,097.88	−261.36	15,520.55	−588.78	12,757.50	−648.70	72,784.11	3355.38	2903.14	−95.60
4	16,817.77	163.18	3346.59	−24.83	5145.57	−451.34	15,174.95	−233.61	15,550.32	−313.32	12,832.93	−607.76	72,941.39	3670.99	2913.54	−81.10
5	16,802.15	197.78	3344.40	30.33	5138.06	−374.16	15,158.64	−202.46	15,544.02	−306.80	12,816.97	−542.15	72,908.11	4080.34	2911.34	−41.80
6	16,872.59	206.58	3354.29	51.22	5171.94	−352.74	15,232.19	−241.67	15,572.43	−361.82	12,888.95	−511.83	73,058.21	4276.32	2921.25	−42.99
7	16,907.51	292.09	3359.19	51.90	5188.74	−335.49	15,268.65	87.53	15,586.51	−327.63	12,924.63	−440.45	73,132.61	4950.20	2926.17	−13.09
8	16,918.10	343.81	3360.68	65.39	5193.84	−342.49	15,279.72	144.99	15,590.78	−116.05	12,935.46	−487.90	73,155.19	4736.55	2927.66	2.17
9	16,928.58	316.33	3362.15	71.15	5198.88	−301.34	15,290.65	160.20	15,595.01	9.86	12,946.16	−443.82	73,177.51	4262.40	2929.13	−5.84
10	16,872.53	380.06	3354.28	57.47	5171.92	−277.42	15,232.13	196.69	15,572.41	−47.66	12,888.89	−439.46	73,058.08	4360.08	2921.24	−17.31
11	16,864.01	388.33	3353.09	66.84	5167.82	−180.96	15,223.24	192.05	15,568.97	51.64	12,880.19	−334.27	73,039.94	5434.25	2920.05	19.64
12	16,843.00	367.96	3350.13	77.47	5157.71	−159.54	15,201.30	158.18	15,560.50	10.95	12,858.72	−398.02	72,995.17	5426.53	2917.09	18.36
13	16,775.44	390.82	3340.64	66.57	5125.21	−189.22	15,130.75	203.11	15,533.25	−135.15	12,789.68	−368.95	72,851.20	5211.97	2907.58	17.84
14	16,809.25	336.34	3345.39	85.78	5141.47	−164.42	15,166.06	296.39	15,546.89	−218.68	12,824.23	−286.80	72,923.25	4917.21	2912.34	31.15
15	16,829.71	364.39	3348.27	114.92	5151.32	−159.34	15,187.42	204.03	15,555.14	−314.52	12,845.13	−280.58	72,966.85	4935.34	2915.22	15.34
16	16,786.10	399.08	3342.14	144.77	5130.33	−143.89	15,141.88	137.95	15,537.55	−412.28	12,800.57	−224.95	72,873.91	4702.23	2909.08	−10.55
17	16,781.81	356.93	3341.54	113.54	5128.27	−142.03	15,137.40	142.24	15,535.82	−321.99	12,796.19	−241.81	72,864.78	4366.05	2908.47	−25.78
18	16,819.11	319.52	3346.78	113.68	5146.22	−146.77	15,176.36	66.38	15,550.86	−391.05	12,834.31	−272.36	72,944.26	4105.64	2913.73	−45.46
19	16,913.20	280.35	3359.99	155.44	5191.48	−151.65	15,274.60	35.40	15,588.81	−298.77	12,930.45	−292.51	73,144.75	3855.43	2926.97	−36.13
20	17,035.83	165.09	3377.22	133.97	5250.48	−211.59	15,402.65	140.85	15,638.26	−285.32	13,055.76	−272.86	73,406.06	4744.40	2944.23	−11.63
21	17,086.00	247.11	3384.26	118.97	5274.61	−218.09	15,455.03	159.19	15,658.49	−304.49	13,107.02	−261.92	73,512.96	5249.12	2951.29	−12.72
22	17,152.95	346.77	3393.67	106.96	5306.82	−265.68	15,524.94	108.82	15,685.49	−307.98	13,175.44	−229.93	73,655.62	4376.73	2960.72	−49.73
23	17,135.62	384.31	3391.23	98.44	5298.48	−227.46	15,506.84	54.46	15,678.50	−347.36	13,157.73	−275.37	73,618.68	4183.75	2958.28	−33.10
24	17,138.80	431.57	3391.68	138.56	5300.02	−234.57	15,510.17	70.47	15,679.79	−409.80	13,160.98	−288.05	73,625.47	4259.62	2958.73	−41.83
25	17,187.81	444.48	3398.56	139.96	5323.59	−242.78	15,561.33	−19.27	15,699.55	−319.54	13,211.06	−201.93	73,729.89	4257.79	2965.63	−21.76
26	17,319.45	330.30	3417.05	116.31	5386.92	−321.24	15,698.79	−221.49	15,752.64	−261.47	13,345.57	−307.57	74,010.39	3803.04	2984.16	−2.14
27	17,252.31	307.40	3407.62	114.97	5354.62	−335.31	15,628.69	−304.77	15,725.56	−368.26	13,276.97	−319.59	73,867.33	3434.41	2974.71	−27.45
28	17,227.69	327.71	3404.16	102.09	5342.78	−338.70	15,602.97	−274.30	15,715.63	−494.80	13,251.80	−307.25	73,814.86	3190.04	2971.24	−45.64
29	17,239.57	312.35	3405.83	108.73	5348.49	−376.18	15,615.38	−404.29	15,720.42	−425.10	13,263.95	−273.90	73,840.18	3204.07	2972.91	−27.61
30	17,289.37	318.83	3412.83	126.67	5372.45	−267.28	15,667.38	−478.32	15,740.51	−373.83	13,314.83	−242.60	73,946.30	3586.95	2979.92	−31.84
31	17,295.98	312.09	3413.76	123.25	5375.63	−202.71	15,674.29	−488.11	15,743.18	−241.10	13,321.59	−225.30	73,960.40	3604.49	2980.85	−25.40
32	17,286.98	337.76	3412.49	116.51	5371.30	−142.17	15,664.89	−513.26	15,739.54	−199.22	13,312.39	−54.23	73,941.21	3539.68	2979.59	−3.84
33	17,176.11	355.33	3396.92	85.91	5317.96	−97.89	15,549.12	−558.01	15,694.83	−267.08	13,199.10	21.09	73,704.96	3348.15	2963.98	−28.30
34	17,152.22	344.99	3393.56	82.40	5306.47	−31.25	15,524.17	−549.05	15,685.20	−147.21	13,174.69	47.15	73,654.06	3335.21	2960.62	−1.95
35	16,972.01	315.64	3368.25	69.43	5219.77	64.03	15,336.00	−530.16	15,612.52	−134.97	12,990.54	93.84	73,270.05	2673.03	2935.25	−46.74
36	16,664.20	268.58	3325.02	7.62	5071.69	88.23	15,014.60	−602.61	15,488.39	−720.69	12,676.01	−46.96	72,614.17	1877.32	2891.92	−135.42
37	16,662.61	203.42	3324.80	24.86	5070.92	102.05	15,012.94	−498.09	15,487.75	−630.09	12,674.38	−39.45	72,610.77	2439.54	2891.69	−109.16
38	17,020.83	189.22	3375.11	34.61	5243.26	61.66	15,386.98	−578.82	15,632.21	−378.41	13,040.43	54.46	73,374.08	2990.70	2942.12	−119.71
39	16,996.08	169.98	3371.63	51.00	5231.35	108.99	15,361.14	−597.94	15,622.23	−89.52	13,015.14	98.75	73,321.35	2694.79	2938.64	−125.73
40	17,065.54	148.24	3381.39	25.33	5264.77	123.05	15,433.67	−659.63	15,650.24	−305.25	13,086.12	156.00	73,469.36	2376.24	2948.41	−132.54
41	17,198.65	243.42	3400.09	14.74	5328.81	110.67	15,572.66	−723.08	15,703.92	−243.19	13,222.13	139.44	73,752.99	2362.28	2967.15	−70.29
42	17,296.11	149.92	3413.77	13.99	5375.69	80.82	15,674.42	−757.07	15,743.23	−237.85	13,321.72	10.41	73,960.66	2344.19	2980.87	−99.73
43	17,459.96	75.29	3436.79	13.96	5454.52	6.49	15,845.51	−721.98	15,809.31	−218.88	13,489.16	−27.99	74,309.81	2249.33	3003.94	−103.98
44	17,474.36	121.61	3438.81	12.86	5461.45	13.88	15,860.54	−699.16	15,815.11	−239.51	13,503.87	−56.79	74,340.48	2253.44	3005.96	−119.45
45	17,515.52	167.97	3444.59	9.95	5481.25	−35.32	15,903.52	−615.14	15,831.71	−184.79	13,545.93	−124.95	74,428.20	2067.87	3011.76	−125.50
46	17,537.88	170.34	3447.73	2.74	5492.01	−21.36	15,926.87	−642.94	15,840.73	−191.92	13,568.78	−123.89	74,475.84	2828.10	3014.91	−143.69
47	17,556.93	206.94	3450.41	−3.30	5501.17	−10.76	15,946.76	−659.30	15,848.41	−190.02	13,588.24	−88.19	74,516.43	2616.45	3017.59	−112.24
48	17,588.72	274.55	3454.87	−11.78	5516.47	−24.24	15,979.96	−630.56	15,861.23	−203.41	13,620.73	−109.83	74,584.17	2225.59	3022.06	−135.21

Table A6. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
49	17,568.75	123.83	3452.07	−4.62	5506.86	−29.71	15,959.11	−553.06	15,853.18	−146.97	13,600.32	−116.72	74,541.62	2109.29	3019.25	−112.36
50	17,473.62	154.13	3438.71	−31.76	5461.09	−64.34	15,859.78	−547.19	15,814.81	−220.98	13,503.12	−208.16	74,338.92	1918.32	3005.86	−165.29
51	17,502.72	66.46	3442.79	−42.49	5475.09	−7.18	15,890.16	−536.11	15,826.55	−102.73	13,532.85	−241.47	74,400.92	1720.69	3009.96	−145.52
52	17,502.41	34.06	3442.75	−52.53	5474.95	−22.60	15,889.84	−547.17	15,826.42	−3.51	13,532.53	−141.22	74,400.26	1655.33	3009.91	−164.28
53	17,369.74	−118.67	3424.12	−75.20	5411.12	−18.17	15,751.30	−546.90	15,772.92	62.71	13,396.96	−3.19	74,117.55	1496.52	2991.24	−171.08
54	17,421.31	−252.82	3431.36	−93.84	5435.93	58.46	15,805.15	−558.49	15,793.72	−29.60	13,449.66	7.76	74,227.45	1141.41	2998.50	−179.27
55	17,511.48	−235.36	3444.02	−94.27	5479.31	53.71	15,899.30	−453.89	15,830.08	−54.65	13,541.80	74.53	74,419.58	758.96	3011.19	−156.04
56	17,462.23	−244.88	3437.11	−95.23	5455.61	27.85	15,847.88	−419.77	15,810.22	−135.13	13,491.47	60.15	74,314.64	502.84	3004.26	−154.66
57	17,520.91	−287.79	3445.35	−122.40	5483.85	−15.29	15,909.15	−410.66	15,833.88	−144.85	13,551.44	19.72	74,439.68	273.62	3012.52	−148.88
58	17,517.24	−224.97	3444.83	−88.91	5482.08	42.34	15,905.32	−379.68	15,832.40	−95.12	13,547.68	144.57	74,431.85	7.40	3012.00	−120.58
59	17,583.76	−274.33	3454.18	−101.62	5514.08	54.71	15,974.78	−330.47	15,859.23	94.63	13,615.66	198.08	74,573.60	−181.81	3021.36	−132.28
60	17,616.41	−217.99	3458.76	−88.57	5529.79	87.12	16,008.87	−342.25	15,872.40	50.84	13,649.02	92.72	74,643.17	−133.62	3025.96	−94.27
61	17,693.65	−151.74	3469.61	−105.07	5566.95	152.32	16,089.52	−322.25	15,903.55	33.67	13,727.95	143.47	74,807.76	−831.28	3036.83	−85.89
62	17,768.02	−27.18	3480.06	−73.38	5602.72	160.49	16,167.17	−286.26	15,933.54	118.50	13,803.94	196.87	74,966.22	−31.03	3047.30	0.02
63	17,837.36	−109.29	3489.80	−49.58	5636.08	120.30	16,239.57	−198.33	15,961.50	125.11	13,874.79	97.59	75,113.97	97.61	3057.06	23.65
64	17,955.82	−157.86	3506.43	−69.67	5693.08	50.65	16,363.27	−164.28	16,009.27	345.02	13,995.85	249.58	75,366.41	−187.41	3073.74	53.92
65	18,010.22	−100.78	3514.07	−58.65	5719.24	−4.40	16,420.07	−129.34	16,031.21	203.55	14,051.43	118.10	75,482.31	−593.22	3081.40	2.72
66	17,955.03	−94.66	3506.32	−63.73	5692.69	−23.89	16,362.44	−145.21	16,008.95	174.10	13,995.04	112.47	75,364.71	−982.10	3073.63	29.50
67	18,026.02	−72.91	3516.29	−51.24	5726.85	16.58	16,436.57	−16.54	16,037.58	158.04	14,067.58	195.74	75,515.99	−476.59	3083.62	51.31
68	18,050.40	−191.69	3519.72	−77.51	5738.58	−44.13	16,462.03	77.11	16,047.42	−2.72	14,092.49	−15.65	75,567.94	−775.91	3087.05	6.06
69	18,160.60	−194.76	3535.20	−51.56	5791.59	−85.02	16,577.09	210.70	16,091.86	−17.32	14,205.10	−134.58	75,802.75	−676.04	3102.56	3.74
70	18,179.77	−184.88	3537.89	−69.96	5800.81	−95.20	16,597.11	175.19	16,099.59	−45.45	14,224.69	−122.02	75,843.60	−934.09	3105.26	12.87
71	18,267.67	−234.15	3550.24	−87.28	5843.10	−119.30	16,688.90	382.97	16,135.04	−0.65	14,314.51	−186.38	76,030.91	−1047.12	3117.64	15.01
72	18,292.85	−61.98	3553.77	−70.70	5855.21	16.53	16,715.19	231.83	16,145.19	73.30	14,340.24	−142.79	76,084.55	−997.21	3121.18	62.72
73	18,228.53	−46.06	3544.74	−14.93	5824.27	94.90	16,648.03	142.53	16,119.25	34.87	14,274.52	−23.20	75,947.50	−858.25	3112.13	82.03
74	18,204.40	−117.61	3541.35	−0.75	5812.66	58.75	16,622.83	91.46	16,109.52	−89.90	14,249.85	−53.28	75,896.07	2.41	3108.73	45.19
75	18,205.13	−151.50	3541.45	−15.46	5813.01	88.96	16,623.59	120.46	16,109.81	−67.62	14,250.60	−113.20	75,897.64	203.10	3108.83	36.13
76	18,248.13	−45.28	3547.49	−20.14	5833.70	78.57	16,668.49	94.26	16,127.16	−11.87	14,294.55	−66.95	75,989.27	217.14	3114.89	54.89
77	18,246.91	−90.42	3547.32	−6.96	5833.11	58.09	16,667.21	35.36	16,126.66	133.84	14,293.29	−71.08	75,986.66	166.11	3114.71	49.13
78	18,076.19	−88.99	3523.34	−16.61	5750.98	33.36	16,488.96	19.33	16,057.82	−23.52	14,118.85	21.83	75,622.89	−59.82	3090.68	37.32
79	18,037.42	−123.97	3517.89	−40.29	5732.33	17.07	16,448.47	55.06	16,042.18	−35.92	14,079.22	31.64	75,540.26	−645.95	3085.22	28.82
80	18,073.99	−180.41	3523.03	−38.19	5749.92	28.70	16,486.65	105.84	16,056.93	119.36	14,116.59	67.25	75,618.19	−908.98	3090.37	25.15
81	18,114.84	−165.57	3528.77	−26.20	5769.58	15.39	16,529.32	131.01	16,073.40	32.60	14,158.34	187.48	75,705.25	−947.26	3096.12	54.68
82	18,188.72	−97.60	3539.15	−23.48	5805.12	−25.36	16,606.45	9.35	16,103.19	25.74	14,233.83	129.43	75,862.66	−2059.02	3106.52	5.91
83	18,219.22	−80.83	3543.43	−2.82	5819.79	−26.12	16,638.30	25.82	16,115.50	69.56	14,265.00	96.27	75,927.66	−2032.71	3110.82	29.52
84	18,190.61	−91.29	3539.41	23.14	5806.03	−35.46	16,608.44	−12.44	16,103.96	57.06	14,235.77	101.63	75,866.71	−2115.58	3106.79	13.76
85	18,054.20	−55.62	3520.25	35.97	5740.40	−6.36	16,465.99	−7.30	16,048.95	61.56	14,096.37	326.86	75,576.03	−1857.75	3087.59	10.74
86	18,038.40	−40.95	3518.03	49.73	5732.80	−8.96	16,449.49	38.40	16,042.57	30.39	14,080.23	341.74	75,542.35	−1699.42	3085.36	10.49
87	17,973.47	−20.65	3508.91	116.50	5701.56	59.85	16,381.69	201.19	16,016.39	−26.14	14,013.88	485.62	75,404.00	−1606.79	3076.22	−3.00
88	17,925.38	199.91	3502.16	126.75	5678.43	63.02	16,331.49	243.24	15,997.00	75.67	13,964.74	435.30	75,301.54	−1269.13	3069.45	25.29
89	17,940.20	159.37	3504.24	93.50	5685.56	109.60	16,346.96	298.90	16,002.98	69.01	13,979.89	427.99	75,333.12	−1530.21	3071.54	33.81
90	18,013.89	169.62	3514.59	114.96	5721.01	87.53	16,423.91	378.41	16,032.69	67.31	14,055.19	391.32	75,490.14	−1404.51	3081.91	31.86
91	18,064.98	186.13	3521.77	111.00	5745.59	50.98	16,477.25	400.61	16,053.29	119.41	14,107.39	319.12	75,599.00	−1556.41	3089.10	68.33
92	18,105.59	142.47	3527.47	94.20	5765.13	−8.94	16,519.66	393.05	16,069.67	159.89	14,148.89	130.20	75,685.54	−1664.87	3094.82	80.83
93	18,151.96	64.01	3533.98	53.28	5787.44	3.86	16,568.08	476.04	16,088.37	220.14	14,196.27	34.34	75,784.34	−1996.08	3101.35	101.73
94	18,236.00	79.26	3545.79	33.84	5827.87	103.02	16,655.83	382.12	16,122.27	362.92	14,282.15	−74.90	75,963.42	−2297.69	3113.18	106.76
95	18,303.94	−22.79	3555.33	24.06	5860.55	156.40	16,726.76	380.08	16,149.66	298.70	14,351.57	−200.34	76,108.18	−2218.66	3122.74	130.94
96	18,149.15	−54.98	3533.59	−8.93	5786.08	148.30	16,565.13	487.15	16,087.24	212.75	14,193.39	−247.11	75,778.34	−1905.75	3100.95	114.78

Table A6. *Cont.*

Observation	*Predicted MEOGTR*	*Residuals of MEOGTR*	*Predicted MEEUTR*	*Residuals of MEEUTR*	*Predicted METLTR*	*Residuals of METLTR*	*Predicted MEMMTR*	*Residuals of MEMMTR*	*Predicted MEFNTR*	*Residuals of MEFNTR*	*Predicted MECNTR*	*Residuals of MECNTR*	*Predicted MECHTR*	*Residuals of MECHTR*	*Predicted METNTR*	*Residuals of METNTR*
97	17,918.15	−117.11	3501.14	−39.90	5674.95	138.25	16,323.94	734.60	15,994.08	360.79	13,957.36	−30.26	75,286.13	−2430.19	3068.44	139.47
98	17,968.63	−38.17	3508.23	24.37	5699.23	176.13	16,376.64	639.32	16,014.44	287.18	14,008.93	−46.70	75,393.69	−2599.41	3075.54	128.90
99	17,937.33	−149.75	3503.84	17.68	5684.18	140.10	16,343.96	831.92	16,001.81	294.54	13,976.95	−91.77	75,326.99	−3080.35	3071.13	130.39
100	17,737.76	−232.06	3475.81	−15.78	5588.17	186.93	16,135.57	729.18	15,921.33	161.85	13,773.02	−32.43	74,901.74	−3455.49	3043.04	133.35
101	17,309.15	−305.98	3415.61	−85.92	5381.97	238.50	15,688.04	676.09	15,748.49	−28.96	13,335.05	57.83	73,988.46	−3247.25	2982.71	41.13
102	17,317.73	−320.80	3416.81	−66.06	5386.10	265.00	15,697.00	663.15	15,751.95	78.77	13,343.82	168.45	74,006.73	−2921.83	2983.91	53.38
103	17,371.70	−279.50	3424.39	−106.50	5412.06	110.96	15,753.34	576.64	15,773.71	251.33	13,398.96	157.33	74,121.73	−4366.76	2991.51	32.51
104	17,217.95	−292.70	3402.80	−70.86	5338.09	107.35	15,592.80	571.51	15,711.70	90.23	13,241.85	190.44	73,794.11	−4740.85	2969.87	44.54
105	16,933.17	−328.87	3362.80	−159.02	5201.09	106.93	15,295.45	344.73	15,596.86	−109.73	12,950.85	133.22	73,187.30	−5755.11	2929.78	−39.38
106	16,615.93	−370.71	3318.24	−135.38	5048.47	188.64	14,964.20	344.81	15,468.92	−250.49	12,626.68	204.29	72,511.32	−6121.29	2885.12	−12.00
107	16,786.34	−340.27	3342.18	−96.70	5130.45	232.01	15,142.14	364.99	15,537.65	226.69	12,800.82	404.28	72,874.43	−5421.47	2909.11	72.65
108	16,899.66	−300.55	3358.09	−84.71	5184.97	187.17	15,260.46	415.76	15,583.35	274.14	12,916.62	370.86	73,115.90	−5270.41	2925.06	67.39
109	16,795.84	−339.05	3343.51	−87.85	5135.02	234.94	15,152.05	466.79	15,541.48	197.69	12,810.52	432.66	72,894.67	−5309.84	2910.45	64.52
110	16,935.32	−346.91	3363.10	−59.91	5202.12	238.47	15,297.69	424.42	15,597.73	542.26	12,953.05	445.33	73,191.87	−3569.05	2930.08	150.00
111	16,694.03	−335.79	3329.21	−45.70	5086.04	267.87	15,045.75	519.22	15,500.42	433.65	12,706.49	526.59	72,677.73	−4148.79	2896.12	126.29
112	16,682.76	−335.11	3327.63	−74.44	5080.62	166.53	15,033.98	466.44	15,495.88	326.10	12,694.97	357.40	72,653.72	−3972.94	2894.53	116.77
113	16,673.02	−413.00	3326.26	−74.22	5075.93	237.06	15,023.81	553.59	15,491.95	247.99	12,685.02	328.01	72,632.96	−4111.14	2893.16	100.75
114	16,877.49	−351.11	3354.98	−36.85	5174.30	190.46	15,237.31	516.10	15,574.41	416.08	12,893.96	282.58	73,068.65	−3964.89	2921.94	186.12
115	16,724.41	−328.13	3333.48	−24.65	5100.66	182.77	15,077.47	463.23	15,512.67	460.59	12,737.54	324.28	72,742.47	−4144.49	2900.39	146.01
116	16,388.12	−327.77	3286.24	−31.64	4938.87	252.35	14,726.33	461.26	15,377.06	213.79	12,393.90	445.59	72,025.89	−4060.60	2853.05	143.47
117	16,010.06	−437.75	3233.14	−83.16	4756.99	312.20	14,331.56	319.42	15,224.59	82.73	12,007.57	548.09	71,220.30	−5735.81	2799.83	114.12
118	16,412.56	−392.06	3289.68	−7.44	4950.63	247.20	14,751.85	500.01	15,386.91	405.62	12,418.87	436.53	72,077.97	−3957.77	2856.50	177.04
119	16,354.74	−422.11	3281.56	−18.07	4922.81	301.13	14,691.47	442.13	15,363.59	370.57	12,359.79	429.14	71,954.76	−4339.38	2848.36	170.03
120	16,269.23	−459.78	3269.54	−2.25	4881.67	373.12	14,602.18	355.83	15,329.11	411.35	12,272.41	368.98	71,772.55	−4628.87	2836.32	120.38
121	16,333.73	−388.25	3278.60	1.61	4912.71	369.06	14,669.53	308.90	15,355.12	499.00	12,338.32	375.27	71,909.99	−4778.53	2845.40	121.33
122	16,515.11	−330.80	3304.08	−25.77	4999.96	289.44	14,858.92	151.80	15,428.26	776.59	12,523.66	399.49	72,296.47	−4321.33	2870.93	146.76
123	16,499.12	−336.90	3301.83	−44.38	4992.27	281.13	14,842.22	177.94	15,421.82	877.41	12,507.32	382.52	72,262.40	−4490.76	2868.68	122.47
124	16,516.70	−191.74	3304.30	−43.76	5000.73	242.93	14,860.58	155.37	15,428.91	824.30	12,525.28	338.79	72,299.87	−4634.26	2871.15	99.65
125	16,678.47	−64.34	3327.02	−70.20	5078.56	188.88	15,029.50	152.83	15,494.15	787.58	12,690.59	199.82	72,644.58	−5031.37	2893.93	79.49
126	16,891.15	−36.23	3356.90	−53.82	5180.87	78.86	15,251.57	−37.71	15,579.91	690.75	12,907.92	12.19	73,097.76	−4479.06	2923.87	56.54
127	16,836.39	−75.59	3349.20	−69.94	5154.53	56.07	15,194.39	−26.12	15,557.83	622.48	12,851.96	−37.33	72,981.07	−4687.65	2916.16	23.68
128	16,542.12	−197.81	3307.87	−81.51	5012.96	105.08	14,887.12	−38.32	15,439.16	494.16	12,551.26	124.03	72,354.03	−4420.22	2874.73	−9.56
129	16,638.60	−242.32	3321.42	−101.09	5059.37	−12.45	14,987.86	−59.66	15,478.06	307.17	12,649.84	43.78	72,559.61	−4842.00	2888.31	−55.04
130	16,606.74	−257.10	3316.95	−132.44	5044.05	18.56	14,954.60	−115.67	15,465.22	113.78	12,617.29	−1.47	72,491.74	−5199.99	2883.83	−106.73

Source: Compiled by the authors.

Table A7. Forecast of MRRT for 2025: 100 generated values.

No.	MRRT	No.	MRRT	No.	MRRT	No.	MRRT
1	2503.38	26	2519.22	51	2470.75	76	2476.53
2	2506.28	27	2567.81	52	2648.89	77	2500.27
3	2285.44	28	2469.92	53	2546.47	78	2398.70
4	2686.11	29	2415.58	54	2646.83	79	2352.75
5	2515.45	30	2558.08	55	2555.30	80	2591.37
6	2391.74	31	2559.36	56	2485.50	81	2560.49
7	2466.61	32	2532.98	57	2519.73	82	2564.51
8	2694.11	33	2514.24	58	2591.70	83	2485.02

Table A7. *Cont.*

No.	MRRT	No.	MRRT	No.	MRRT	No.	MRRT
9	2346.95	34	2465.44	59	2576.38	84	2369.73
10	2538.69	35	2488.28	60	2598.11	85	2566.68
11	2541.62	36	2512.62	61	2695.03	86	2594.89
12	2497.49	37	2300.95	62	2547.90	87	2573.97
13	2543.99	38	2626.63	63	2440.66	88	2575.74
14	2275.71	39	2475.14	64	2725.24	89	2518.61
15	2195.61	40	2513.73	65	2527.18	90	2519.52
16	2546.66	41	2412.23	66	2643.97	91	2558.37
17	2551.67	42	2631.57	67	2427.44	92	2523.94
18	2507.60	43	2457.60	68	2748.90	93	2350.38
19	2480.23	44	2290.88	69	2526.82	94	2557.60
20	2419.26	45	2458.59	70	2621.28	95	2645.04
21	2479.51	46	2428.72	71	2496.52	96	2598.98
22	2557.50	47	2507.15	72	2614.59	97	2530.62
23	2494.94	48	2424.25	73	2314.08	98	2549.70
24	2416.03	49	2433.15	74	2512.92	99	2490.68
25	2500.38	50	2599.33	75	2407.71	100	2491.47

Source: Compiled by the authors.

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