

Research Article

Impact of the COVID-19 Pandemic on the US Credit Default Swap Market

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The COVID-19 pandemic affected the US economy at different levels. Since credit default swaps can be viewed as a default probability indicator, the article shows the credit default swap market perspective on how the US economy was hit by the pandemic. Forecasting models are built to estimate the predictability of the CDS market sectors during the pandemic, i.e., manufacturing, energy, banks, consumer goods, and services and financial sector excluding banks. Econometric tests are applied to check the uniqueness of credit default swap market sectors after the declaration of the pandemic. The results indicate that the financial sector excluding banks performed uniquely during the pandemic; i.e., the predictability of this sector dropped significantly, and the Chow breakpoint test and Wald coefficient test can identify the shift in the data after declaration of the pandemic.

1. Introduction

Economies do not develop in a straight line. They go through periods of growth and periods of systemic crisis. However, catastrophic events can cause nonsystemic crises. COVID-19 is caused by a respiratory virus with unusual properties [1, 2], considering which governments initiated lockdowns and other restrictions all over the world. These measures affected the US economy at many levels, e.g., stocks [3], corporate bonds [4], and treasury yields [5]. Even COVID-19 news had an impact on the US stock market [6].

This paper studies the US credit default swap (CDS) market before and during the COVID-19 pandemic. A credit default swap is a contract, transferring credit risk from a bond holder to a third party. CDS spread indicates the riskiness of a given company. If a CDS spread is getting wider, it means that market agents consider a company's probability of default to be higher. Moreover, CDS spreads indicate some credit risk information of a company better than stocks and bonds prices [7]. As a result, the impact of the COVID-19 pandemic on the US economy can be analyzed through a unique perspective of the CDS market. If there is a structural shift in the CDS data generating process

after the declaration of the pandemic, then the findings in previous CDS research would be less relevant during the pandemic.

Multiple models are applied for forecasting CDS spreads in the literature, e.g., the Markov switching model [8], neural networks [9], and support vector machine [10]. However, this article is not about discovering new ways to predict CDS spreads, rather it is about estimating whether or not the COVID-19 pandemic affected the predictability of the US CDS market. An autoregression with exogenous variables, i.e., an autoregressive distributed lag (ARDL) model, is appropriate for this task because it will be easier to see what the differences are in the interconnections between variables in the periods before and during the COVID-19 pandemic, compared to machine learning techniques, which usually perform like a black box. Econometric tests can be also applied to assess the uniqueness of the CDS market during the pandemic.

2. Methods

2.1. Data Description. The data contain daily credit default swap spreads for 6 sectors, according to Thomson Reuters Eikon industry classification, i.e., manufacturing, energy,

banks, other financial (the paper refers to it as the financial sector excluding banks), consumer goods (food and beverages), and services, 10 maturities each (6 M, 1 Y, 2 Y, 3 Y, 4 Y, 5 Y, 7 Y, 10 Y, 20 Y, and 30 Y) from 2010 to 2021. CDS spreads

for all companies from these sectors were initially down-loaded. CDS spreads are relatively small for companies in normal circumstances, but if a company is going through very difficult times with a high chance of default, then the CDS spread can be a hundred times greater than the average value,

shifting a CDS spread for a sector dramatically. Companies with a significant number of missing values and outliers were removed, and 237 companies are left for the analysis.

In addition, multiple exogenous variables are applied: Federal Funds Rate, 10-year US Treasuries Yield, NYMEX WTI Crude Oil Futures, USD Index, USD/CNY Exchange Rate, S&P 500, S&P 500 VIX, and a set of US sectoral fund indexes (NASDAQ Bank, NASDAQ Financial 100, NASDAQ Insurance, NASDAQ Real Estate and Other Financial Services, S&P 500

Consumer Discretionary, S&P 500 Consumer Staples, S&P 500 Energy, S&P 500 Financial, S&P 500 Health Care, S&P 500 Industrial, S&P 500 Information Technology, S&P 500 Materials, and S&P 500 Real Estate).

2.2. ARDL Model. A general ARDL model is presented in equation (1). After assessing the qualities of the variables, a higher potential for further analysis was found in the first differences of the natural logarithm of the initial variables (equation (2)).

$$y_t = \beta_0 + \beta_i * y_{t-i} + \delta^l * x^l + \varepsilon_t, \quad (1)$$

$$\Delta \ln CDS_t = \beta_0 + \beta_i * \Delta \ln CDS_{t-i} + \delta^l * \Delta \ln x^l + \varepsilon_t. \quad (2)$$

The following steps were taken to build each ARDL model:

- (1) The optimal lag structure for the AR model is found
- (2) Granger causality test is applied to estimate which variables are potentially valuable for the model
- (3) The potentially valuable variable is added, and the F-test is applied to compare restricted and unrestricted models
- (4) Steps 2 and 3 are repeated until there are no potentially valuable variables left

Training and testing sets are formed as shown in Table 1. Five ARDL models are constructed for each CDS

square error (MSE in equation (3)), mean absolute error (equation (4)), and mean absolute percentage error (equation (5)). Random walk (RW) forecasts are used as a benchmark.

$$MSE = \frac{1}{N} \sum_{i=1}^N (y_{t+i} - \hat{y}_{t+i})^2, \quad (3)$$

$$MAE = \frac{1}{N} \sum_{i=1}^N |y_{t+i} - \hat{y}_{t+i}|, \quad (4)$$

$$MAPE = \frac{1}{N} \sum_{i=1}^N \frac{|y_{t+i} - \hat{y}_{t+i}|}{y_{t+i}}. \quad (5)$$

3. Results

The tables with the performance of forecasting models are given in the annex.

3.1. Manufacturing. The performance of the forecasting models for the manufacturing sector is shown in Tables A1–A5. Models trained on the 2014/15 and 2016/17 datasets are especially successful. CDS spreads are predictable for this sector during the COVID-19 pandemic.

3.2. Consumer Goods. The performance of the forecasting models for the consumer goods sector is shown in

Tables B1–B5. Models trained on 2018/19 datasets showed poor performance on almost all testing sets. Models trained on 2016/17 datasets were the most consistent in outperforming the benchmark. CDS spreads are predictable for

this sector during the COVID-19 pandemic.

3.3. Banking. The performance of forecasting models for the

maturity of each sector, giving 300 models in total (5 × 10 × 6). This is applied in order to see whether the poor performance of a forecasting model during the COVID-19 pandemic is because of the pandemic or because of specificity of a training set, which can be observed through poor performance on other test sets. The performance is measured by root mean

banking sector is shown in Tables C1–C5. The performance during the pandemic is poor. However, it is poor for all datasets. ARDL models trained on 2010/11 datasets outperform the benchmark only for 6-month, 1-year, and 2-year spreads by only RMSE. The situation is identical for 2013 and 2016 test sets and similar for 2018 where forecasts for 6-month spreads outperform the benchmark by all measures. ARDL models outperform the benchmark only for 3-year spreads on the 2012 test set. For the rest test sets, ARDL models do not outperform the benchmark for any maturity. As a result, poor performance during the pandemic is not a drop in predictability due to the pandemic.

3.4. Energy. The performance of forecasting models for the energy sector is shown in Tables D1–D5. ARDL models trained on 2014/15 test sets show the worst performance but most of the models successfully outperform the benchmark. CDS spreads are predictable for this sector during the COVID-19 pandemic.

Table 1: Train and test sets.

#	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020–2021*
1	Train		Test	Test	Test	Test	Test	Test	Test	Test	Test
2	Test	Test	Train		Test	Test	Test	Test	Test	Test	Test
3	Test	Test	Test	Test	Train		Test	Test	Test	Test	Test
4	Test	Test	Test	Test	Test	Test	Train		Test	Test	Test
5	Test	Test	Test	Test	Test	Test	Test	Test	Train		Test

*11 March 2020–10 March 2021.

Table 2: *p*-values from the Chow test for all sectors, 2010–2019.

	Manufacturing (%)	Financial excluding banks (%)	Services (%)	Banks (%)	Consumer goods (%)	Energy (%)
6 M	48	0	0	48	53	37
1 Y	45	0	1	45	57	85
2 Y	48	0	2	48	35	4
3 Y	17	0	9	17	40	2
4 Y	17	0	32	17	30	1
5 Y	45	0	63	27	19	1
7 Y	12	0	63	12	35	2
10 Y	32	0	67	32	57	7
20 Y	72	0	38	72	64	20
30 Y	64	0	21	64	63	21

3.5. Services. The performance of forecasting models for the services sector is shown in Tables E1–E5. CDS spreads are predictable for this sector during the COVID-19 pandemic. Interestingly, ARDL models trained on 2010/11 datasets did not outperform the benchmark for any CDS spreads in 2014–2019 but did outperform it during the COVID-19 pandemic, meaning that this sector performed in the pandemic period similarly to the post-2008 crisis period.

3.6. Financial Excluding Banks. The performance of the forecasting models for the financial sector excluding banks is shown in Tables F1–F5. There are just a few cases in which ARDL models outperform the benchmark during the COVID-19 pandemic; hence, checking whether it is a drop in predictability due to the pandemic or just the poor performance of forecasting models in this sector is required. After going through all periods and all maturities, the pattern is clear; i.e., ARDL models outperform the benchmark on test sets before the pandemic but during the pandemic the performance drops.

3.7. Chow Breakpoint Test. Chow test estimates whether or not there is a breakpoint on a specific date, i.e., the null hypothesis: there is no breakpoint on a given date. This test is appropriate because there is a specific date of a potential breakpoint, 11 March 2020, when the World Health Organization declared COVID-19 a pandemic. CDS spreads of contracts with short-term maturities increased markedly on this date.

The Chow test is applied as follows. The optimal autoregression specification is found for CDS spreads of a sector in the prepandemic period (2010–2019). This specification is applied for the period from 4 January 2010 to 10

March 2021, and 11 March 2020 is used as a potential breakpoint (Table 2). The null hypothesis is rejected for all CDS maturities only in the financial sector excluding banks and for some CDS maturities in the services and energy sectors.

A 5-year period can be applied for a more detailed analysis. The same design is applied for the period 2015–2019 (Table 3). The financial sector excluding banks is the only sector where the null hypothesis is rejected, and it is rejected for all CDS maturities. As a result, the Chow test shows that 11 March 2020 was the breakpoint only for the financial sector excluding banks.

3.8. Wald Coefficient Test. The Wald test checks constraints on coefficients, i.e., the null hypothesis: coefficients are equal to given constraints. The Wald test is applied as follows. Optimal autoregression specifications are found for all CDS spreads for a full year after the declaration of the COVID-19 pandemic, and autoregression coefficients are taken for further usage as constraints for the Wald test. These specifications are then applied for CDS spreads each year from 2010 to 2019. The Wald test checks whether or not the autoregression coefficients for a particular year are similar to those in the pandemic period.

The Wald test for the manufacturing sector can be found in Table 4. The null hypothesis is rejected for all CDS spreads in 2012 and 2015–2019; it is rejected for some CDS spreads in 2011 and 2013 and 2014; and it is not rejected for any CDS spreads in 2010. Manufacturing sector CDS spreads did not perform uniquely after the declaration of the pandemic. After applying the Wald test for all sectors, the null hypothesis was rejected for all maturities for each year only for the financial sector excluding banks (Table 5).

Table 3: *p*-values from the Chow test for the financial excluding banks, services, and energy sectors, 2015–2019.

	Financial excluding banks (%)	Services	Energy
6 M	0	77%	n/a
1 Y	0	73%	n/a
2 Y	0	56%	55%
3 Y	0	n/a	46%
4 Y	0	n/a	45%
5 Y	0	n/a	52%
7 Y	0	n/a	76%
10 Y	0	n/a	n/a
20 Y	0	n/a	n/a
30 Y	0	n/a	n/a

Table 4: *p*-values from the Wald test for the manufacturing sector.

	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	2018 (%)	2019 (%)
6 M	38.3	5.8	0.0	58.0	0.5	0.0	0.0	0.0	0.0	0.0
1 Y	6.3	0.1	0.0	4.6	0.1	0.0	0.0	0.0	0.0	0.0
2 Y	93.9	18.3	1.3	94.0	0.9	0.0	0.0	0.1	0.0	0.0
3 Y	96.0	7.3	0.2	44.7	34.6	0.0	0.0	0.2	0.0	0.0
4 Y	96.9	16.5	1.1	45.4	81.1	0.0	0.1	0.4	0.0	0.1
5 Y	96.9	9.8	0.7	28.4	97.5	0.0	0.1	0.1	0.0	0.1
7 Y	93.0	55.0	0.3	24.8	92.7	0.0	0.1	0.1	0.0	0.0
10 Y	32.5	7.9	4.0	38.9	93.0	1.0	2.0	3.6	3.6	0.0
20 Y	43.3	2.0	1.9	13.6	47.5	0.3	0.7	1.7	0.0	2.2
30 Y	64.4	2.7	2.1	12.8	44.9	0.2	0.7	0.9	0.0	0.6

Table 5: Wald coefficient test summary, the number of times when the null hypothesis was not rejected for CDS spreads in different years, 2010–2019.

	Manufacturing	Financial excluding banks	Services	Banks	Consumer goods	Energy
6 M	3	0	3	1	2	1
1 Y	1	0	4	0	1	6
2 Y	3	0	3	1	3	6
3 Y	4	0	2	1	2	4
4 Y	4	0	1	1	1	5
5 Y	4	0	0	1	2	4
7 Y	4	0	0	0	1	3
10 Y	4	0	0	1	1	3
20 Y	3	0	6	2	1	4
30 Y	3	0	6	2	0	4

4. Conclusions

The US CDS market was analyzed in this paper. 300 ARDL models were constructed to find a drop in predictability of 6 CDS market sectors after the declaration of the COVID-19 pandemic. Such a drop was found only for the financial sector excluding banks. In addition, the Chow breakpoint test and Wald coefficient test were applied to check the uniqueness of 6 CDS market sectors after the declaration of the COVID-19 pandemic. The tests showed that only the financial sector excluding banks performed uniquely during the pandemic, which can be explained as follows. The financial sector excluding banks contains many insurance companies. Healthcare is expensive in the US, and it is mostly financed through the insurance system. A high number of COVID-19 cases appeared in the US, and COVID-19 treatment was expensive. Insurance companies were required to cover a

significant part of these costs. As a result, the financial sector excluding banks became the forefront of the 2020 crisis in the US.

The unusual performance of the financial sector excluding banks means that the results for this sector obtained from analysis of 2010–2019 data are potentially less relevant after the declaration of the pandemic, and at least the performance of forecasting models is lower because of unusual patterns in CDS spreads. This does not mean that this sector will perform this way forever as the situation was caused by the pandemic. When the pandemic is over, insurance companies will not face unexpectedly high payments due to COVID-19, and the financial sector excluding banks will be more likely to perform similarly to the pre-COVID-19 pandemic period. However, the other sectors did not perform uniquely during the pandemic which makes previous CDS research results more applicable after the declaration of the pandemic.

Data Availability

The data used to support the findings of this study can be discovered in Thomson Reuters Eikon.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

Supplementary Materials

The annex contains tables with the performance of the forecasting models for all sectors: manufacturing (A), consumer goods (B), banking (C), energy (D), services (E), and financial excluding banks (F). (*Supplementary Materials*)

References

- [1] W. Gao, H. M. Baskonus, and L. Shi, "New investigation of bats-hosts-reservoir-people coronavirus model and application to 2019-nCoV system," *Advances in Difference Equations*, vol. 391, pp. 1–11, 2020.
- [2] W. Gao, P. Veerasha, H. M. Baskonus, D. G. Prakasha, and P. Kumar, "A new study of unreported cases of 2019-nCoV epidemic outbreaks," *Chaos, Solitons & Fractals*, vol. 138, Article ID 109929, 2020.
- [3] S. Farid, G. M. Kayani, M. A. Naeem, and S. J. H. Shahzad, "Intraday volatility transmission among precious metals, energy and stocks during the COVID-19 pandemic," *Resources Policy*, vol. 72, Article ID 102101, 2021.
- [4] M. O'Hara and X. Zhou, "Anatomy of a liquidity crisis: corporate bonds in the COVID-19 crisis," *Journal of Financial Economics*, vol. 142, no. 1, pp. 46–68, 2021.
- [5] Z. He, S. Nagel, and Z. Song, "Treasury inconvenience yields during the COVID-19 crisis," *Journal of Financial Economics*, 2021, In press.
- [6] S. Baek, S. K. Mohanty, and M. Glambosky, "COVID-19 and stock market volatility: an industry level analysis," *Finance Research Letters*, vol. 37, Article ID 101748, 2020.
- [7] J. Lee, A. Naranjo, and G. Velioglu, "When do CDS spreads lead? Rating events, private entities, and firm-specific information flows," *Journal of Financial Economics*, vol. 130, no. 3, pp. 556–578, 2018.
- [8] F. Fei, A.-M. Fuertes, and E. Kalotychou, "Dependence in credit default swap and equity markets: dynamic copula with Markov-switching," *International Journal of Forecasting*, vol. 33, no. 3, pp. 662–678, 2017.
- [9] Y. Son, H. Byun, and J. Lee, "Nonparametric machine learning models for predicting the credit default swaps: an empirical study," *Expert Systems with Applications*, vol. 58, pp. 210–220, 2016.
- [10] C. Luo, D. Wu, and D. Wu, "A deep learning approach for credit scoring using credit default swaps," *Engineering Applications of Artificial Intelligence*, vol. 65, pp. 465–470, 2017.

Annex

A. The performance of the forecasting models for the manufacturing sector

Table A1: The performance of ARDL models for the manufacturing sector trained on 2010/11 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.388	2.484	1.265	0.663	0.544	0.427	0.573	0.339	0.245	0.211	0.692
	MAE	1.479	1.563	0.887	0.349	0.360	0.285	0.385	0.164	0.160	0.131	0.454
	MAPE	0.024	0.024	0.023	0.018	0.022	0.015	0.017	0.011	0.012	0.010	0.016
1Y	RMSE	2.386	2.381	1.345	0.720	0.491	0.411	0.608	0.437	0.345	0.372	0.820
	MAE	1.491	1.510	0.966	0.366	0.358	0.286	0.400	0.204	0.207	0.186	0.511
	MAPE	0.021	0.020	0.018	0.014	0.017	0.013	0.015	0.012	0.013	0.011	0.016
2Y	RMSE	2.443	2.349	1.494	0.857	0.570	0.505	0.776	0.553	0.527	0.558	1.015
	MAE	1.538	1.525	1.060	0.461	0.414	0.350	0.494	0.253	0.311	0.297	0.632
	MAPE	0.016	0.015	0.012	0.010	0.011	0.009	0.011	0.009	0.011	0.011	0.013
3Y	RMSE	2.344	2.462	1.695	1.104	0.691	0.747	0.949	0.681	0.747	0.839	1.240
	MAE	1.513	1.639	1.209	0.644	0.508	0.504	0.621	0.349	0.478	0.490	0.781
	MAPE	0.013	0.012	0.010	0.009	0.009	0.008	0.009	0.008	0.010	0.011	0.012
4Y	RMSE	2.194	2.423	1.765	1.217	0.798	0.946	1.170	0.756	0.984	1.055	1.531
	MAE	1.496	1.659	1.255	0.740	0.582	0.618	0.817	0.480	0.687	0.672	1.020
	MAPE	0.010	0.010	0.008	0.007	0.007	0.007	0.008	0.007	0.010	0.010	0.012
5Y	RMSE	2.264	2.545	1.743	1.326	0.928	1.117	1.205	0.747	1.090	1.102	1.636
	MAE	1.538	1.772	1.257	0.837	0.680	0.724	0.836	0.470	0.704	0.731	1.098
	MAPE	0.009	0.009	0.007	0.006	0.006	0.006	0.007	0.005	0.007	0.008	0.010
7Y	RMSE	2.179	2.487	1.591	1.348	1.005	1.072	1.322	0.837	1.124	1.097	1.863
	MAE	1.494	1.692	1.138	0.846	0.719	0.761	0.925	0.544	0.785	0.792	1.273
	MAPE	0.009	0.008	0.006	0.005	0.005	0.005	0.006	0.004	0.006	0.006	0.009
10Y	RMSE	3.597	2.694	1.769	1.631	1.252	1.384	1.595	1.033	1.340	1.300	2.408
	MAE	1.919	1.818	1.324	1.013	0.883	0.982	1.065	0.663	0.967	0.991	1.628
	MAPE	0.010	0.008	0.006	0.005	0.006	0.006	0.006	0.005	0.007	0.007	0.011
20Y	RMSE	2.012	2.295	1.572	1.505	1.158	1.507	1.488	0.970	1.452	1.236	2.196
	MAE	1.388	1.630	1.175	0.987	0.853	0.972	1.039	0.652	1.077	0.940	1.506
	MAPE	0.007	0.007	0.005	0.005	0.005	0.005	0.005	0.004	0.007	0.006	0.009
30Y	RMSE	2.027	2.308	1.571	1.544	1.185	1.577	1.519	1.002	1.445	1.200	2.230
	MAE	1.393	1.624	1.170	1.002	0.869	0.999	1.057	0.669	1.072	0.917	1.557
	MAPE	0.007	0.007	0.005	0.005	0.005	0.005	0.005	0.004	0.006	0.006	0.009

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table A2: The performance of ARDL models for the manufacturing sector trained on 2012/13 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.599	2.984	1.177	0.602	0.579	0.505	0.636	0.381	0.307	0.268	1.242
	MAE	1.743	1.879	0.842	0.360	0.399	0.363	0.442	0.220	0.230	0.194	0.803
	MAPE	0.028	0.029	0.021	0.019	0.025	0.019	0.019	0.015	0.017	0.014	0.028
1Y	RMSE	2.449	2.829	1.236	0.688	0.474	0.424	0.595	0.429	0.323	0.348	0.833
	MAE	1.608	1.676	0.860	0.369	0.334	0.290	0.388	0.185	0.169	0.155	0.473
	MAPE	0.023	0.022	0.016	0.014	0.016	0.013	0.015	0.011	0.011	0.010	0.014
2Y	RMSE	2.544	2.571	1.352	0.816	0.563	0.495	0.734	0.514	0.489	0.520	1.027
	MAE	1.575	1.560	0.938	0.427	0.393	0.341	0.472	0.230	0.273	0.262	0.640
	MAPE	0.016	0.015	0.011	0.009	0.011	0.009	0.011	0.008	0.010	0.009	0.014
3Y	RMSE	2.530	2.700	1.516	1.027	0.688	0.660	0.873	0.632	0.700	0.774	1.294
	MAE	1.591	1.634	1.066	0.552	0.486	0.445	0.572	0.292	0.416	0.418	0.830
	MAPE	0.013	0.012	0.009	0.007	0.009	0.007	0.008	0.007	0.009	0.009	0.012
4Y	RMSE	2.541	2.818	1.600	1.191	0.859	0.903	1.071	0.743	0.955	1.041	1.529
	MAE	1.611	1.696	1.131	0.649	0.583	0.580	0.693	0.369	0.572	0.581	0.996
	MAPE	0.011	0.010	0.008	0.006	0.007	0.007	0.007	0.006	0.008	0.008	0.011
5Y	RMSE	2.615	3.015	1.601	1.275	1.077	1.105	1.338	0.860	1.209	1.203	1.809
	MAE	1.693	1.894	1.151	0.743	0.754	0.721	0.847	0.464	0.780	0.757	1.196
	MAPE	0.010	0.010	0.007	0.005	0.007	0.006	0.007	0.005	0.008	0.008	0.011
7Y	RMSE	2.528	2.775	1.542	1.331	1.095	1.156	1.325	0.892	1.167	1.164	1.860
	MAE	1.613	1.670	1.093	0.765	0.743	0.789	0.877	0.517	0.765	0.790	1.316
	MAPE	0.009	0.008	0.006	0.004	0.005	0.005	0.005	0.004	0.006	0.006	0.010
10Y	RMSE	4.233	2.776	1.508	1.385	1.156	1.249	1.394	0.938	1.189	1.195	2.028
	MAE	1.887	1.664	1.067	0.783	0.785	0.827	0.924	0.556	0.793	0.826	1.425
	MAPE	0.010	0.007	0.005	0.004	0.005	0.005	0.005	0.004	0.005	0.006	0.009
20Y	RMSE	2.364	2.775	1.489	1.459	1.262	1.409	1.562	1.027	1.649	1.339	2.322
	MAE	1.499	1.710	1.066	0.847	0.861	0.888	0.993	0.592	1.152	0.983	1.619
	MAPE	0.008	0.007	0.005	0.004	0.005	0.005	0.005	0.004	0.007	0.006	0.009
30Y	RMSE	2.346	2.821	1.459	1.480	1.320	1.499	1.653	1.078	1.606	1.296	2.400
	MAE	1.507	1.751	1.060	0.861	0.899	0.943	1.059	0.627	1.146	0.952	1.700
	MAPE	0.007	0.007	0.005	0.004	0.005	0.005	0.005	0.004	0.007	0.006	0.009

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table A3: The performance of ARDL models for the manufacturing sector trained on 2014/15 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.514	2.724	1.298	0.662	0.505	0.406	0.567	0.354	0.220	0.197	0.624
	MAE	1.565	1.658	0.915	0.380	0.349	0.269	0.386	0.175	0.146	0.127	0.410
	MAPE	0.026	0.025	0.024	0.020	0.022	0.014	0.017	0.012	0.011	0.009	0.015
1Y	RMSE	2.460	2.681	1.282	0.687	0.454	0.371	0.571	0.422	0.304	0.317	0.734
	MAE	1.534	1.598	0.920	0.364	0.324	0.251	0.379	0.189	0.168	0.154	0.455
	MAPE	0.022	0.021	0.018	0.014	0.016	0.011	0.014	0.012	0.010	0.009	0.014
2Y	RMSE	2.558	2.533	1.380	0.855	0.534	0.455	0.720	0.515	0.478	0.494	0.973
	MAE	1.574	1.520	0.958	0.446	0.365	0.297	0.453	0.220	0.260	0.244	0.592
	MAPE	0.016	0.014	0.011	0.009	0.010	0.008	0.010	0.008	0.009	0.009	0.013
3Y	RMSE	2.530	2.714	1.551	1.058	0.650	0.613	0.850	0.632	0.680	0.735	1.183
	MAE	1.601	1.620	1.091	0.573	0.453	0.399	0.539	0.285	0.385	0.394	0.750
	MAPE	0.013	0.012	0.009	0.008	0.008	0.007	0.008	0.006	0.008	0.009	0.011
4Y	RMSE	2.541	2.728	1.636	1.261	0.818	0.842	1.065	0.726	0.924	0.991	1.430
	MAE	1.625	1.626	1.161	0.670	0.549	0.518	0.658	0.338	0.537	0.553	0.903
	MAPE	0.011	0.010	0.008	0.006	0.007	0.006	0.007	0.005	0.008	0.008	0.010
5Y	RMSE	2.581	2.778	1.682	1.369	0.976	1.016	1.223	0.778	1.136	1.142	1.605
	MAE	1.651	1.683	1.203	0.752	0.654	0.632	0.752	0.394	0.690	0.710	1.057
	MAPE	0.010	0.009	0.007	0.006	0.006	0.006	0.006	0.004	0.007	0.008	0.010
7Y	RMSE	2.506	2.663	1.593	1.401	1.046	1.080	1.303	0.864	1.145	1.143	1.844
	MAE	1.609	1.600	1.125	0.777	0.704	0.719	0.811	0.467	0.742	0.798	1.259
	MAPE	0.009	0.007	0.006	0.005	0.005	0.005	0.005	0.004	0.006	0.006	0.009
10Y	RMSE	4.016	2.685	1.598	1.475	1.093	1.128	1.410	0.930	1.198	1.212	2.027
	MAE	1.902	1.650	1.151	0.827	0.749	0.764	0.900	0.539	0.797	0.878	1.410
	MAPE	0.010	0.007	0.005	0.004	0.005	0.005	0.005	0.004	0.006	0.006	0.009
20Y	RMSE	2.378	2.697	1.594	1.567	1.195	1.286	1.509	1.016	1.647	1.338	2.248
	MAE	1.536	1.662	1.162	0.891	0.822	0.839	0.967	0.599	1.147	0.999	1.578
	MAPE	0.008	0.007	0.005	0.004	0.005	0.005	0.005	0.004	0.007	0.006	0.009
30Y	RMSE	2.389	2.747	1.648	1.642	1.218	1.316	1.543	1.073	1.592	1.290	2.350
	MAE	1.563	1.683	1.201	0.933	0.840	0.854	1.001	0.627	1.132	0.978	1.686
	MAPE	0.008	0.007	0.005	0.004	0.005	0.005	0.005	0.004	0.007	0.006	0.009

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table A4: The performance of ARDL models for the manufacturing sector trained on 2016/17 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.551	2.882	1.285	0.678	0.535	0.436	0.539	0.317	0.218	0.200	0.662
	MAE	1.610	1.634	0.890	0.351	0.352	0.285	0.358	0.147	0.134	0.124	0.417
	MAPE	0.026	0.025	0.023	0.018	0.022	0.015	0.016	0.010	0.010	0.009	0.015
1Y	RMSE	2.640	2.902	1.329	0.726	0.475	0.414	0.532	0.395	0.309	0.330	0.834
	MAE	1.664	1.629	0.915	0.366	0.328	0.286	0.348	0.173	0.166	0.155	0.480
	MAPE	0.023	0.021	0.017	0.014	0.016	0.013	0.013	0.011	0.010	0.010	0.014
2Y	RMSE	2.654	2.858	1.409	0.887	0.550	0.497	0.699	0.488	0.470	0.485	1.035
	MAE	1.654	1.631	0.963	0.470	0.371	0.317	0.444	0.199	0.245	0.238	0.608
	MAPE	0.017	0.015	0.011	0.010	0.010	0.008	0.010	0.007	0.009	0.009	0.013
3Y	RMSE	2.607	2.914	1.576	1.130	0.680	0.658	0.821	0.597	0.684	0.733	1.272
	MAE	1.666	1.662	1.083	0.608	0.457	0.408	0.524	0.248	0.380	0.386	0.763
	MAPE	0.014	0.012	0.009	0.008	0.008	0.007	0.008	0.006	0.008	0.008	0.011
4Y	RMSE	2.590	2.961	1.678	1.298	0.855	0.884	1.019	0.693	0.937	0.994	1.506
	MAE	1.675	1.682	1.161	0.697	0.562	0.532	0.635	0.302	0.540	0.554	0.918
	MAPE	0.012	0.010	0.008	0.007	0.007	0.006	0.006	0.005	0.008	0.008	0.010
5Y	RMSE	2.576	2.948	1.737	1.377	1.011	1.052	1.174	0.746	1.157	1.144	1.625
	MAE	1.648	1.714	1.203	0.769	0.660	0.640	0.711	0.343	0.691	0.698	1.037
	MAPE	0.010	0.009	0.007	0.006	0.006	0.006	0.006	0.004	0.007	0.007	0.010
7Y	RMSE	2.548	2.943	1.672	1.427	1.091	1.150	1.255	0.821	1.178	1.141	1.942
	MAE	1.656	1.728	1.155	0.798	0.728	0.764	0.787	0.409	0.746	0.775	1.308
	MAPE	0.010	0.008	0.006	0.005	0.005	0.005	0.005	0.003	0.006	0.006	0.009
10Y	RMSE	4.050	2.938	1.636	1.477	1.160	1.241	1.327	0.864	1.212	1.179	2.120
	MAE	1.911	1.747	1.134	0.818	0.780	0.805	0.843	0.445	0.781	0.815	1.445
	MAPE	0.010	0.007	0.005	0.004	0.005	0.005	0.005	0.003	0.005	0.006	0.009
20Y	RMSE	2.409	3.016	1.635	1.587	1.281	1.437	1.428	0.940	1.643	1.328	2.365
	MAE	1.580	1.767	1.146	0.894	0.857	0.895	0.919	0.504	1.123	0.957	1.649
	MAPE	0.008	0.007	0.005	0.004	0.005	0.005	0.005	0.003	0.007	0.006	0.010
30Y	RMSE	2.386	2.977	1.619	1.596	1.303	1.473	1.446	0.983	1.639	1.272	2.345
	MAE	1.555	1.781	1.148	0.876	0.874	0.873	0.914	0.517	1.127	0.919	1.671
	MAPE	0.008	0.007	0.005	0.004	0.005	0.005	0.004	0.003	0.007	0.006	0.009

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table A5: The performance of ARDL models for the manufacturing sector trained on 2018/19 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.532	2.757	1.265	0.682	0.526	0.475	0.571	0.338	0.202	0.180	0.620
	MAE	1.585	1.626	0.887	0.369	0.349	0.329	0.384	0.150	0.121	0.104	0.400
	MAPE	0.026	0.025	0.023	0.019	0.022	0.017	0.017	0.010	0.009	0.008	0.014
1Y	RMSE	2.789	2.994	1.446	0.805	0.500	0.631	0.643	0.431	0.294	0.297	0.829
	MAE	1.785	1.800	1.028	0.461	0.359	0.414	0.431	0.189	0.151	0.135	0.485
	MAPE	0.025	0.024	0.020	0.018	0.017	0.018	0.016	0.011	0.009	0.008	0.015
2Y	RMSE	2.800	2.955	1.625	0.994	0.596	0.799	0.806	0.535	0.461	0.460	1.025
	MAE	1.805	1.834	1.164	0.602	0.430	0.521	0.527	0.234	0.239	0.228	0.624
	MAPE	0.019	0.017	0.014	0.013	0.012	0.014	0.012	0.008	0.009	0.008	0.013
3Y	RMSE	2.772	2.998	1.810	1.256	0.745	1.064	0.977	0.670	0.670	0.699	1.256
	MAE	1.819	1.876	1.295	0.782	0.539	0.679	0.634	0.305	0.371	0.377	0.785
	MAPE	0.015	0.014	0.011	0.010	0.010	0.011	0.009	0.007	0.008	0.008	0.012
4Y	RMSE	2.773	3.063	1.960	1.452	0.929	1.389	1.218	0.794	0.899	0.950	1.514
	MAE	1.821	1.925	1.396	0.922	0.669	0.894	0.788	0.390	0.512	0.533	0.961
	MAPE	0.013	0.012	0.009	0.009	0.008	0.011	0.008	0.006	0.007	0.008	0.011
5Y	RMSE	2.801	3.123	2.033	1.571	1.107	1.615	1.386	0.878	1.104	1.098	1.693
	MAE	1.855	1.972	1.442	1.019	0.794	1.066	0.906	0.457	0.666	0.686	1.113
	MAPE	0.011	0.010	0.008	0.007	0.007	0.010	0.007	0.005	0.007	0.007	0.010
7Y	RMSE	2.673	3.059	1.912	1.534	1.147	1.514	1.369	0.976	1.094	1.072	1.938
	MAE	1.745	1.875	1.367	0.955	0.817	1.048	0.920	0.538	0.715	0.736	1.297
	MAPE	0.010	0.009	0.007	0.006	0.006	0.007	0.006	0.004	0.006	0.006	0.009
10Y	RMSE	4.061	3.079	1.906	1.604	1.219	1.628	1.447	1.034	1.123	1.100	2.119
	MAE	1.994	1.909	1.366	1.003	0.881	1.126	0.981	0.584	0.758	0.762	1.435
	MAPE	0.011	0.008	0.006	0.005	0.005	0.007	0.005	0.004	0.005	0.005	0.009
20Y	RMSE	2.664	3.269	2.050	1.837	1.380	2.036	1.627	1.174	1.495	1.216	2.452
	MAE	1.789	2.065	1.489	1.180	1.008	1.335	1.083	0.679	1.070	0.888	1.667
	MAPE	0.009	0.008	0.006	0.006	0.006	0.007	0.005	0.004	0.007	0.006	0.010
30Y	RMSE	2.666	3.308	2.085	1.863	1.418	2.099	1.674	1.197	1.459	1.153	2.478
	MAE	1.781	2.085	1.499	1.192	1.037	1.383	1.123	0.696	1.045	0.837	1.716
	MAPE	0.009	0.008	0.006	0.006	0.006	0.007	0.005	0.004	0.006	0.005	0.009

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

B. The performance of the forecasting models for the consumer goods sector

Table B1: The performance of ARDL models for the consumer goods sector trained on 2010/11 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.149	0.785	0.527	0.483	0.264	0.275	0.229	0.149	0.163	0.206	0.310
	MAE	0.691	0.505	0.380	0.216	0.155	0.152	0.149	0.086	0.113	0.128	0.214
	MAPE	0.021	0.022	0.026	0.025	0.023	0.021	0.016	0.011	0.011	0.011	0.016
1Y	RMSE	1.143	0.759	0.501	0.487	0.206	0.252	0.223	0.178	0.253	0.301	0.314
	MAE	0.688	0.507	0.366	0.220	0.133	0.142	0.150	0.093	0.151	0.157	0.213
	MAPE	0.018	0.021	0.021	0.020	0.015	0.016	0.013	0.010	0.012	0.012	0.014
2Y	RMSE	1.152	0.801	0.530	0.535	0.223	0.276	0.225	0.184	0.345	0.414	0.429
	MAE	0.702	0.513	0.397	0.259	0.150	0.161	0.152	0.103	0.208	0.228	0.292
	MAPE	0.014	0.014	0.014	0.013	0.009	0.011	0.009	0.007	0.011	0.011	0.014
3Y	RMSE	1.167	0.819	0.554	0.626	0.279	0.350	0.263	0.217	0.498	0.577	0.545
	MAE	0.717	0.520	0.421	0.295	0.191	0.194	0.165	0.126	0.313	0.333	0.366
	MAPE	0.012	0.010	0.010	0.009	0.007	0.009	0.007	0.006	0.010	0.011	0.013
4Y	RMSE	1.170	0.840	0.604	0.754	0.350	0.416	0.345	0.279	0.716	0.796	0.677
	MAE	0.708	0.529	0.460	0.355	0.241	0.219	0.197	0.151	0.441	0.460	0.451
	MAPE	0.010	0.008	0.008	0.008	0.007	0.007	0.006	0.005	0.010	0.011	0.012
5Y	RMSE	1.206	0.893	0.653	0.895	0.446	0.541	0.398	0.315	0.898	0.914	0.830
	MAE	0.735	0.547	0.494	0.416	0.295	0.271	0.229	0.174	0.571	0.572	0.555
	MAPE	0.009	0.007	0.007	0.007	0.006	0.006	0.005	0.004	0.010	0.010	0.012
7Y	RMSE	1.225	0.870	0.632	1.021	0.559	0.636	0.406	0.339	1.046	0.978	1.014
	MAE	0.732	0.561	0.481	0.463	0.369	0.314	0.238	0.225	0.682	0.678	0.684
	MAPE	0.008	0.006	0.005	0.005	0.005	0.005	0.004	0.004	0.009	0.009	0.011
10Y	RMSE	1.228	0.886	0.640	1.083	0.466	0.771	0.451	0.403	1.266	1.115	1.144
	MAE	0.734	0.587	0.483	0.493	0.325	0.370	0.279	0.288	0.828	0.794	0.786
	MAPE	0.007	0.005	0.005	0.005	0.004	0.005	0.004	0.004	0.009	0.009	0.011
20Y	RMSE	1.221	0.940	0.675	1.170	0.526	1.018	0.537	0.484	1.366	1.212	1.216
	MAE	0.736	0.630	0.493	0.553	0.355	0.456	0.325	0.341	0.906	0.875	0.848
	MAPE	0.006	0.005	0.004	0.005	0.003	0.005	0.004	0.004	0.009	0.009	0.011
30Y	RMSE	1.240	0.967	0.690	1.197	0.569	1.085	0.572	0.501	1.371	1.240	1.292
	MAE	0.754	0.647	0.500	0.573	0.378	0.482	0.344	0.348	0.902	0.891	0.905
	MAPE	0.006	0.005	0.004	0.005	0.003	0.005	0.004	0.004	0.009	0.008	0.011

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table B2: The performance of ARDL models for the consumer goods sector trained on 2012/13 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.216	0.789	0.514	0.443	0.247	0.264	0.221	0.140	0.171	0.195	0.289
	MAE	0.705	0.520	0.374	0.211	0.151	0.151	0.142	0.081	0.121	0.119	0.198
	MAPE	0.021	0.023	0.026	0.025	0.022	0.021	0.015	0.010	0.011	0.011	0.015
1Y	RMSE	1.224	0.783	0.491	0.439	0.197	0.245	0.218	0.163	0.240	0.274	0.309
	MAE	0.719	0.528	0.360	0.211	0.132	0.144	0.146	0.086	0.145	0.142	0.207
	MAPE	0.018	0.021	0.020	0.020	0.015	0.016	0.013	0.009	0.012	0.011	0.014
2Y	RMSE	1.225	0.840	0.519	0.487	0.217	0.281	0.218	0.170	0.329	0.382	0.411
	MAE	0.715	0.548	0.383	0.241	0.149	0.165	0.148	0.097	0.203	0.206	0.271
	MAPE	0.014	0.014	0.013	0.012	0.009	0.011	0.009	0.007	0.010	0.010	0.013
3Y	RMSE	1.194	0.829	0.541	0.599	0.275	0.353	0.259	0.208	0.478	0.545	0.534
	MAE	0.703	0.537	0.400	0.282	0.191	0.196	0.161	0.117	0.296	0.311	0.351
	MAPE	0.011	0.010	0.010	0.009	0.007	0.009	0.007	0.006	0.010	0.010	0.012
4Y	RMSE	1.198	0.854	0.589	0.721	0.341	0.424	0.334	0.270	0.679	0.752	0.672
	MAE	0.697	0.532	0.431	0.339	0.237	0.219	0.191	0.146	0.412	0.424	0.444
	MAPE	0.009	0.008	0.008	0.008	0.006	0.007	0.006	0.005	0.010	0.010	0.012
5Y	RMSE	1.216	0.905	0.637	0.866	0.439	0.546	0.387	0.310	0.862	0.877	0.827
	MAE	0.714	0.553	0.468	0.399	0.288	0.269	0.218	0.172	0.544	0.543	0.549
	MAPE	0.008	0.007	0.007	0.007	0.006	0.006	0.005	0.004	0.010	0.009	0.012
7Y	RMSE	1.239	0.882	0.615	0.983	0.533	0.634	0.387	0.336	1.010	0.942	1.006
	MAE	0.715	0.561	0.452	0.440	0.353	0.303	0.218	0.226	0.651	0.640	0.676
	MAPE	0.008	0.006	0.005	0.005	0.005	0.005	0.003	0.004	0.008	0.008	0.011
10Y	RMSE	1.247	0.904	0.626	1.039	0.438	0.747	0.421	0.400	1.227	1.073	1.141
	MAE	0.725	0.589	0.452	0.463	0.305	0.345	0.243	0.284	0.779	0.748	0.778
	MAPE	0.007	0.005	0.004	0.005	0.003	0.004	0.003	0.004	0.009	0.008	0.011
20Y	RMSE	1.237	0.969	0.660	1.126	0.505	0.984	0.506	0.485	1.334	1.163	1.218
	MAE	0.730	0.636	0.462	0.519	0.334	0.419	0.287	0.339	0.860	0.818	0.844
	MAPE	0.006	0.005	0.004	0.004	0.003	0.004	0.003	0.004	0.008	0.008	0.011
30Y	RMSE	1.257	0.994	0.673	1.153	0.549	1.051	0.540	0.501	1.342	1.196	1.285
	MAE	0.751	0.646	0.469	0.536	0.358	0.442	0.299	0.347	0.856	0.844	0.896
	MAPE	0.006	0.005	0.004	0.004	0.003	0.004	0.003	0.004	0.008	0.008	0.011

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table B3: The performance of ARDL models for the consumer goods sector trained on 2014/15 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.363	0.835	0.559	0.448	0.235	0.253	0.221	0.140	0.164	0.193	0.286
	MAE	0.817	0.553	0.426	0.226	0.151	0.148	0.143	0.085	0.115	0.118	0.184
	MAPE	0.024	0.024	0.030	0.027	0.022	0.021	0.015	0.010	0.011	0.011	0.014
1Y	RMSE	1.305	0.809	0.519	0.446	0.192	0.233	0.213	0.159	0.228	0.267	0.296
	MAE	0.785	0.531	0.394	0.218	0.127	0.130	0.137	0.085	0.132	0.138	0.187
	MAPE	0.020	0.021	0.022	0.020	0.014	0.015	0.012	0.009	0.011	0.010	0.012
2Y	RMSE	1.229	0.823	0.537	0.505	0.211	0.266	0.212	0.169	0.327	0.383	0.408
	MAE	0.730	0.517	0.404	0.248	0.142	0.146	0.137	0.094	0.198	0.211	0.260
	MAPE	0.014	0.014	0.014	0.012	0.009	0.010	0.008	0.007	0.010	0.010	0.012
3Y	RMSE	1.227	0.823	0.565	0.610	0.271	0.340	0.254	0.206	0.481	0.544	0.540
	MAE	0.738	0.514	0.424	0.283	0.186	0.178	0.153	0.119	0.306	0.316	0.347
	MAPE	0.012	0.010	0.010	0.009	0.007	0.008	0.006	0.006	0.010	0.010	0.012
4Y	RMSE	1.212	0.843	0.611	0.735	0.339	0.411	0.331	0.266	0.691	0.759	0.674
	MAE	0.723	0.513	0.454	0.341	0.233	0.204	0.183	0.143	0.428	0.442	0.434
	MAPE	0.010	0.008	0.008	0.008	0.006	0.006	0.005	0.005	0.010	0.010	0.012
5Y	RMSE	1.237	0.894	0.658	0.876	0.438	0.533	0.383	0.305	0.874	0.888	0.825
	MAE	0.742	0.527	0.482	0.402	0.288	0.259	0.211	0.168	0.553	0.558	0.542
	MAPE	0.009	0.006	0.007	0.007	0.006	0.006	0.005	0.004	0.010	0.010	0.012
7Y	RMSE	1.278	0.874	0.644	0.997	0.529	0.619	0.387	0.327	1.014	0.947	1.018
	MAE	0.748	0.546	0.470	0.445	0.346	0.287	0.216	0.212	0.664	0.646	0.670
	MAPE	0.008	0.005	0.005	0.005	0.005	0.005	0.003	0.004	0.009	0.008	0.011
10Y	RMSE	1.321	0.907	0.663	1.060	0.437	0.726	0.419	0.397	1.209	1.069	1.176
	MAE	0.776	0.583	0.482	0.474	0.297	0.320	0.237	0.277	0.780	0.741	0.790
	MAPE	0.007	0.005	0.005	0.005	0.003	0.004	0.003	0.004	0.009	0.008	0.011
20Y	RMSE	1.375	0.998	0.724	1.172	0.491	0.926	0.498	0.505	1.322	1.175	1.283
	MAE	0.829	0.655	0.528	0.558	0.326	0.401	0.284	0.340	0.868	0.830	0.889
	MAPE	0.007	0.005	0.004	0.005	0.003	0.004	0.003	0.004	0.009	0.008	0.011
30Y	RMSE	1.404	1.035	0.743	1.204	0.529	0.983	0.532	0.527	1.331	1.206	1.347
	MAE	0.858	0.682	0.541	0.585	0.347	0.425	0.300	0.351	0.867	0.863	0.946
	MAPE	0.007	0.005	0.004	0.005	0.003	0.004	0.003	0.004	0.008	0.008	0.011

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table B4: The performance of ARDL models for the consumer goods sector trained on 2016/17 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.257	0.808	0.530	0.447	0.240	0.256	0.216	0.136	0.159	0.183	0.272
	MAE	0.731	0.518	0.392	0.213	0.146	0.141	0.132	0.075	0.109	0.106	0.171
	MAPE	0.022	0.022	0.027	0.025	0.021	0.020	0.014	0.009	0.010	0.009	0.012
1Y	RMSE	1.286	0.806	0.512	0.447	0.191	0.236	0.211	0.157	0.232	0.261	0.295
	MAE	0.760	0.526	0.387	0.214	0.125	0.130	0.134	0.078	0.134	0.129	0.184
	MAPE	0.020	0.021	0.022	0.020	0.014	0.015	0.012	0.008	0.011	0.010	0.012
2Y	RMSE	1.267	0.842	0.544	0.504	0.209	0.270	0.212	0.166	0.332	0.370	0.417
	MAE	0.743	0.532	0.413	0.249	0.141	0.146	0.138	0.092	0.202	0.202	0.264
	MAPE	0.015	0.014	0.014	0.012	0.009	0.010	0.008	0.006	0.010	0.010	0.012
3Y	RMSE	1.251	0.837	0.570	0.612	0.271	0.343	0.253	0.204	0.488	0.530	0.550
	MAE	0.743	0.523	0.431	0.281	0.186	0.175	0.151	0.116	0.310	0.306	0.351
	MAPE	0.012	0.010	0.010	0.009	0.007	0.008	0.006	0.005	0.010	0.010	0.012
4Y	RMSE	1.255	0.860	0.623	0.740	0.338	0.416	0.327	0.265	0.699	0.740	0.693
	MAE	0.740	0.526	0.466	0.340	0.234	0.201	0.179	0.142	0.435	0.428	0.443
	MAPE	0.010	0.008	0.008	0.008	0.006	0.006	0.005	0.005	0.010	0.010	0.012
5Y	RMSE	1.277	0.916	0.673	0.883	0.443	0.537	0.377	0.303	0.889	0.873	0.848
	MAE	0.761	0.544	0.497	0.396	0.293	0.248	0.204	0.164	0.566	0.547	0.543
	MAPE	0.009	0.007	0.007	0.007	0.006	0.006	0.005	0.004	0.010	0.009	0.012
7Y	RMSE	1.268	0.889	0.641	0.996	0.538	0.619	0.382	0.324	1.026	0.938	1.021
	MAE	0.745	0.558	0.472	0.440	0.349	0.283	0.209	0.207	0.670	0.637	0.661
	MAPE	0.008	0.006	0.005	0.005	0.005	0.004	0.003	0.003	0.009	0.008	0.011
10Y	RMSE	1.283	0.919	0.653	1.055	0.446	0.733	0.420	0.383	1.221	1.061	1.163
	MAE	0.760	0.595	0.476	0.468	0.302	0.328	0.243	0.261	0.781	0.732	0.770
	MAPE	0.007	0.005	0.005	0.005	0.003	0.004	0.003	0.004	0.009	0.008	0.011
20Y	RMSE	1.276	0.982	0.688	1.142	0.504	0.961	0.501	0.466	1.323	1.154	1.237
	MAE	0.774	0.638	0.493	0.521	0.329	0.406	0.285	0.315	0.854	0.801	0.844
	MAPE	0.006	0.005	0.004	0.004	0.003	0.004	0.003	0.004	0.008	0.008	0.011
30Y	RMSE	1.295	1.013	0.702	1.169	0.544	1.027	0.535	0.481	1.330	1.184	1.307
	MAE	0.798	0.653	0.501	0.538	0.349	0.427	0.298	0.320	0.852	0.824	0.901
	MAPE	0.006	0.005	0.004	0.004	0.003	0.004	0.003	0.004	0.008	0.008	0.011

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table B5: The performance of ARDL models for the consumer goods sector trained on 2018/19 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.269	0.823	0.534	0.447	0.239	0.257	0.217	0.136	0.147	0.179	0.283
	MAE	0.756	0.533	0.402	0.215	0.148	0.146	0.138	0.080	0.104	0.107	0.184
	MAPE	0.023	0.023	0.028	0.025	0.022	0.020	0.014	0.010	0.010	0.010	0.014
1Y	RMSE	1.348	0.837	0.528	0.445	0.191	0.240	0.215	0.156	0.222	0.256	0.314
	MAE	0.803	0.555	0.401	0.219	0.128	0.139	0.142	0.084	0.129	0.133	0.204
	MAPE	0.021	0.022	0.023	0.020	0.015	0.016	0.013	0.009	0.010	0.010	0.014
2Y	RMSE	1.301	0.856	0.543	0.500	0.209	0.276	0.214	0.168	0.315	0.365	0.425
	MAE	0.757	0.552	0.405	0.254	0.144	0.156	0.142	0.099	0.195	0.204	0.280
	MAPE	0.015	0.014	0.014	0.013	0.009	0.011	0.008	0.007	0.010	0.010	0.013
3Y	RMSE	1.292	0.874	0.569	0.629	0.270	0.369	0.272	0.217	0.449	0.511	0.602
	MAE	0.795	0.564	0.435	0.318	0.193	0.214	0.185	0.134	0.293	0.311	0.407
	MAPE	0.013	0.011	0.010	0.010	0.008	0.010	0.008	0.006	0.010	0.010	0.014
4Y	RMSE	1.280	0.906	0.619	0.752	0.341	0.456	0.362	0.282	0.636	0.719	0.739
	MAE	0.782	0.583	0.462	0.379	0.250	0.258	0.236	0.172	0.410	0.436	0.497
	MAPE	0.011	0.009	0.008	0.009	0.007	0.008	0.007	0.006	0.009	0.010	0.013
5Y	RMSE	1.304	0.969	0.679	0.912	0.457	0.580	0.429	0.337	0.798	0.852	0.893
	MAE	0.815	0.619	0.513	0.458	0.315	0.322	0.276	0.215	0.527	0.555	0.607
	MAPE	0.009	0.007	0.007	0.008	0.006	0.008	0.006	0.005	0.009	0.010	0.013
7Y	RMSE	1.295	0.964	0.672	1.002	0.548	0.649	0.415	0.351	0.975	0.929	1.034
	MAE	0.777	0.603	0.491	0.487	0.375	0.321	0.256	0.245	0.643	0.630	0.692
	MAPE	0.008	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.008	0.008	0.011
10Y	RMSE	1.329	1.032	0.730	1.071	0.493	0.760	0.478	0.417	1.169	1.041	1.206
	MAE	0.811	0.675	0.539	0.539	0.360	0.402	0.320	0.304	0.747	0.728	0.825
	MAPE	0.008	0.006	0.005	0.005	0.004	0.005	0.004	0.004	0.008	0.008	0.011
20Y	RMSE	1.334	1.125	0.793	1.166	0.569	0.969	0.566	0.506	1.264	1.130	1.281
	MAE	0.824	0.753	0.582	0.611	0.397	0.498	0.376	0.366	0.819	0.799	0.899
	MAPE	0.007	0.006	0.005	0.005	0.004	0.005	0.004	0.004	0.008	0.008	0.011
30Y	RMSE	1.344	1.156	0.812	1.196	0.611	1.030	0.603	0.528	1.263	1.161	1.336
	MAE	0.834	0.778	0.594	0.634	0.418	0.526	0.396	0.377	0.809	0.829	0.945
	MAPE	0.006	0.006	0.005	0.005	0.004	0.005	0.004	0.004	0.008	0.008	0.011

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

C. The performance of the forecasting models for the banking sector

Table C1: The performance of ARDL models for the banking sector trained on 2010/11 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	5.494	9.199	5.451	1.430	0.632	0.653	1.208	0.395	0.371	0.404	1.213
	MAE	4.014	5.267	3.868	0.982	0.446	0.460	0.682	0.252	0.246	0.280	0.735
	MAPE	0.054	0.066	0.057	0.057	0.029	0.026	0.031	0.022	0.019	0.021	0.027
1Y	RMSE	5.540	9.267	5.317	1.540	0.623	0.725	1.199	0.408	0.453	0.517	1.551
	MAE	4.040	5.255	3.829	1.060	0.455	0.501	0.694	0.263	0.298	0.373	0.862
	MAPE	0.048	0.056	0.047	0.042	0.022	0.022	0.023	0.016	0.016	0.020	0.026
2Y	RMSE	5.415	8.906	5.262	1.679	0.722	0.840	1.483	0.455	0.591	0.641	1.754
	MAE	3.942	5.140	3.850	1.146	0.544	0.556	0.845	0.300	0.387	0.462	0.971
	MAPE	0.040	0.041	0.034	0.029	0.018	0.018	0.020	0.013	0.016	0.019	0.025
3Y	RMSE	5.307	8.710	5.084	1.994	0.916	0.944	1.953	0.561	0.789	0.861	2.066
	MAE	3.893	5.146	3.710	1.307	0.639	0.633	1.069	0.383	0.535	0.613	1.200
	MAPE	0.035	0.035	0.027	0.023	0.016	0.015	0.020	0.012	0.017	0.020	0.027
4Y	RMSE	5.127	8.346	5.099	2.115	1.076	1.066	2.165	0.689	0.968	1.132	2.226
	MAE	3.774	4.944	3.806	1.405	0.771	0.700	1.174	0.483	0.657	0.805	1.276
	MAPE	0.031	0.030	0.024	0.019	0.015	0.013	0.018	0.013	0.016	0.021	0.026
5Y	RMSE	5.097	8.054	5.070	2.282	1.274	1.270	2.435	0.826	1.173	1.385	2.444
	MAE	3.764	4.863	3.797	1.508	0.906	0.811	1.336	0.576	0.786	0.979	1.430
	MAPE	0.029	0.027	0.022	0.017	0.015	0.012	0.017	0.012	0.015	0.020	0.025
7Y	RMSE	5.073	7.867	5.033	2.358	1.496	1.415	2.698	0.989	1.238	1.496	2.603
	MAE	3.763	4.823	3.785	1.557	1.084	0.948	1.502	0.704	0.848	1.070	1.563
	MAPE	0.029	0.026	0.021	0.014	0.013	0.011	0.015	0.010	0.012	0.016	0.022
10Y	RMSE	5.228	7.797	5.170	2.380	1.696	1.607	2.920	1.021	1.149	1.530	2.819
	MAE	3.858	4.806	3.797	1.469	1.244	1.100	1.683	0.705	0.755	1.134	1.697
	MAPE	0.029	0.025	0.020	0.011	0.012	0.010	0.014	0.008	0.009	0.013	0.020
20Y	RMSE	5.020	7.787	5.011	2.482	2.443	2.092	3.208	1.374	1.327	1.753	2.793
	MAE	3.728	4.836	3.783	1.591	1.780	1.384	1.850	0.987	0.950	1.276	1.822
	MAPE	0.027	0.025	0.019	0.011	0.014	0.011	0.013	0.009	0.009	0.013	0.019
30Y	RMSE	5.024	7.780	5.001	2.512	2.723	2.243	3.270	1.448	1.330	1.852	2.858
	MAE	3.747	4.838	3.773	1.591	1.942	1.463	1.898	1.040	0.958	1.361	1.891
	MAPE	0.027	0.025	0.019	0.011	0.015	0.011	0.013	0.009	0.009	0.012	0.018

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table C2: The performance of ARDL models for the banking sector trained on 2012/13 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	5.507	10.129	4.938	1.422	0.625	0.644	1.370	0.447	0.526	0.609	1.762
	MAE	3.998	5.858	3.552	0.965	0.458	0.459	0.764	0.314	0.405	0.433	1.096
	MAPE	0.054	0.070	0.053	0.055	0.030	0.026	0.034	0.027	0.032	0.033	0.040
1Y	RMSE	5.528	10.024	4.848	1.550	0.609	0.633	1.346	0.453	0.568	0.688	1.933
	MAE	3.992	5.776	3.500	1.026	0.436	0.437	0.767	0.323	0.429	0.498	1.143
	MAPE	0.047	0.059	0.043	0.040	0.021	0.019	0.025	0.019	0.024	0.028	0.034
2Y	RMSE	5.448	9.389	4.884	1.670	0.716	0.736	1.629	0.507	0.689	0.788	1.880
	MAE	3.889	5.504	3.538	1.103	0.516	0.490	0.880	0.354	0.507	0.571	1.144
	MAPE	0.039	0.043	0.031	0.027	0.017	0.015	0.021	0.015	0.021	0.024	0.029
3Y	RMSE	5.445	9.115	4.748	1.834	0.864	0.893	1.925	0.549	0.784	0.931	2.158
	MAE	3.896	5.367	3.478	1.178	0.602	0.585	1.048	0.369	0.557	0.666	1.230
	MAPE	0.035	0.036	0.025	0.021	0.015	0.014	0.019	0.012	0.018	0.022	0.027
4Y	RMSE	5.372	8.741	4.674	1.982	1.055	1.072	2.206	0.645	0.957	1.143	2.299
	MAE	3.872	5.206	3.429	1.256	0.734	0.672	1.205	0.435	0.662	0.817	1.333
	MAPE	0.032	0.031	0.022	0.017	0.015	0.012	0.018	0.011	0.016	0.021	0.026
5Y	RMSE	5.358	8.468	4.639	2.115	1.246	1.280	2.490	0.757	1.158	1.386	2.510
	MAE	3.882	5.191	3.411	1.326	0.864	0.781	1.385	0.503	0.793	0.983	1.479
	MAPE	0.030	0.029	0.020	0.014	0.014	0.012	0.017	0.010	0.016	0.020	0.026
7Y	RMSE	5.314	8.274	4.586	2.153	1.449	1.393	2.759	0.910	1.240	1.499	2.626
	MAE	3.855	5.156	3.376	1.337	1.028	0.882	1.553	0.626	0.876	1.070	1.579
	MAPE	0.029	0.027	0.019	0.012	0.012	0.010	0.015	0.009	0.013	0.016	0.022
10Y	RMSE	5.384	8.181	4.567	2.196	1.616	1.588	2.997	1.057	1.294	1.614	2.698
	MAE	3.904	5.138	3.375	1.351	1.151	1.020	1.700	0.729	0.950	1.179	1.651
	MAPE	0.029	0.027	0.018	0.010	0.011	0.010	0.014	0.009	0.011	0.014	0.020
20Y	RMSE	5.248	8.185	4.642	2.199	2.416	2.039	3.325	1.313	1.456	1.817	2.691
	MAE	3.802	5.162	3.421	1.288	1.687	1.261	1.884	0.913	1.102	1.341	1.770
	MAPE	0.028	0.026	0.017	0.009	0.014	0.010	0.013	0.009	0.011	0.013	0.018
30Y	RMSE	5.260	8.161	4.632	2.227	2.722	2.196	3.400	1.395	1.488	1.923	2.750
	MAE	3.821	5.154	3.412	1.297	1.857	1.338	1.940	0.969	1.130	1.428	1.833
	MAPE	0.028	0.026	0.017	0.009	0.014	0.010	0.013	0.009	0.010	0.013	0.018

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table C3: The performance of ARDL models for the banking sector trained on 2014/15 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	6.291	10.559	5.928	1.615	0.631	0.528	1.340	0.437	0.407	0.430	1.416
	MAE	4.592	5.929	4.207	1.058	0.444	0.356	0.730	0.283	0.280	0.295	0.798
	MAPE	0.062	0.072	0.064	0.061	0.029	0.020	0.033	0.025	0.021	0.022	0.029
1Y	RMSE	6.246	10.456	5.667	1.723	0.603	0.519	1.315	0.445	0.494	0.554	1.757
	MAE	4.519	5.804	4.083	1.121	0.423	0.346	0.716	0.288	0.330	0.389	0.967
	MAPE	0.053	0.060	0.051	0.044	0.020	0.015	0.023	0.017	0.018	0.021	0.029
2Y	RMSE	5.570	9.204	5.127	1.711	0.689	0.636	1.473	0.439	0.588	0.624	1.775
	MAE	3.975	5.152	3.710	1.083	0.490	0.407	0.759	0.274	0.378	0.436	0.931
	MAPE	0.040	0.041	0.033	0.027	0.016	0.013	0.018	0.012	0.015	0.018	0.023
3Y	RMSE	5.485	9.038	5.016	1.866	0.833	0.779	1.778	0.512	0.721	0.804	1.941
	MAE	3.897	5.118	3.662	1.150	0.585	0.486	0.906	0.312	0.460	0.555	1.021
	MAPE	0.035	0.035	0.026	0.020	0.015	0.011	0.016	0.010	0.014	0.018	0.023
4Y	RMSE	5.495	8.623	5.010	1.998	1.018	0.924	2.063	0.603	0.877	0.997	2.119
	MAE	3.909	5.037	3.661	1.223	0.704	0.560	1.064	0.373	0.564	0.688	1.122
	MAPE	0.032	0.030	0.023	0.016	0.014	0.010	0.016	0.010	0.014	0.018	0.022
5Y	RMSE	5.368	8.355	4.927	2.147	1.211	1.119	2.322	0.715	1.094	1.236	2.328
	MAE	3.852	4.887	3.605	1.271	0.829	0.656	1.208	0.431	0.680	0.849	1.259
	MAPE	0.030	0.027	0.021	0.014	0.013	0.010	0.015	0.009	0.013	0.017	0.022
7Y	RMSE	5.457	8.260	4.930	2.167	1.357	1.198	2.548	0.857	1.115	1.265	2.490
	MAE	3.889	4.946	3.609	1.291	0.961	0.743	1.369	0.540	0.722	0.894	1.388
	MAPE	0.029	0.026	0.020	0.011	0.011	0.008	0.013	0.008	0.010	0.013	0.019
10Y	RMSE	5.547	8.308	4.872	2.199	1.501	1.310	2.748	0.989	1.144	1.352	2.484
	MAE	3.966	5.045	3.601	1.328	1.076	0.868	1.514	0.643	0.761	0.979	1.463
	MAPE	0.029	0.026	0.019	0.010	0.011	0.008	0.013	0.008	0.009	0.012	0.018
20Y	RMSE	6.043	8.898	5.401	2.464	2.186	1.761	3.371	1.322	1.285	1.533	2.869
	MAE	4.409	5.398	4.004	1.459	1.551	1.144	1.890	0.920	0.877	1.133	1.732
	MAPE	0.032	0.027	0.021	0.010	0.013	0.009	0.013	0.009	0.008	0.011	0.018
30Y	RMSE	6.142	9.016	5.511	2.563	2.426	1.920	3.496	1.427	1.313	1.632	2.948
	MAE	4.539	5.487	4.113	1.522	1.701	1.246	1.996	0.999	0.897	1.209	1.798
	MAPE	0.033	0.028	0.021	0.010	0.013	0.009	0.014	0.009	0.008	0.011	0.017

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table C4: The performance of ARDL models for the banking sector trained on 2016/17 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	5.540	9.453	5.247	1.438	0.598	0.528	1.207	0.385	0.373	0.396	1.235
	MAE	4.002	5.286	3.733	0.943	0.414	0.354	0.619	0.237	0.242	0.265	0.717
	MAPE	0.054	0.066	0.055	0.054	0.027	0.020	0.027	0.020	0.018	0.020	0.026
1Y	RMSE	5.614	9.500	5.194	1.559	0.589	0.547	1.151	0.391	0.455	0.507	1.548
	MAE	4.026	5.283	3.704	1.021	0.423	0.376	0.614	0.248	0.295	0.359	0.850
	MAPE	0.047	0.056	0.045	0.040	0.020	0.016	0.020	0.015	0.016	0.020	0.025
2Y	RMSE	5.577	9.202	5.161	1.692	0.704	0.678	1.420	0.434	0.595	0.626	1.767
	MAE	3.960	5.199	3.742	1.085	0.514	0.450	0.750	0.280	0.387	0.445	0.967
	MAPE	0.040	0.042	0.033	0.027	0.017	0.014	0.018	0.012	0.016	0.019	0.024
3Y	RMSE	5.512	9.020	5.098	1.847	0.849	0.850	1.726	0.500	0.731	0.801	1.941
	MAE	3.920	5.144	3.734	1.159	0.608	0.558	0.917	0.316	0.474	0.563	1.071
	MAPE	0.035	0.035	0.027	0.020	0.015	0.013	0.017	0.010	0.015	0.018	0.024
4Y	RMSE	5.416	8.635	5.053	1.985	1.044	1.024	1.994	0.584	0.909	0.999	2.104
	MAE	3.866	5.003	3.704	1.226	0.738	0.649	1.058	0.367	0.582	0.705	1.163
	MAPE	0.032	0.030	0.023	0.016	0.015	0.012	0.016	0.009	0.014	0.018	0.023
5Y	RMSE	5.420	8.577	4.995	2.186	1.277	1.258	2.172	0.720	1.150	1.250	2.307
	MAE	3.919	5.138	3.681	1.337	0.900	0.822	1.217	0.464	0.722	0.878	1.317
	MAPE	0.030	0.028	0.021	0.015	0.014	0.012	0.015	0.009	0.014	0.018	0.023
7Y	RMSE	5.373	8.635	5.086	2.257	1.498	1.428	2.331	0.843	1.249	1.309	2.494
	MAE	3.957	5.175	3.731	1.389	1.090	0.985	1.329	0.567	0.814	0.937	1.457
	MAPE	0.030	0.027	0.021	0.012	0.013	0.011	0.013	0.008	0.012	0.014	0.020
10Y	RMSE	5.408	8.490	5.051	2.296	1.674	1.594	2.513	0.953	1.246	1.353	2.589
	MAE	3.970	5.122	3.711	1.400	1.217	1.122	1.438	0.638	0.828	0.973	1.545
	MAPE	0.029	0.027	0.020	0.011	0.012	0.011	0.012	0.007	0.010	0.011	0.019
20Y	RMSE	5.306	8.188	4.959	2.285	2.434	1.936	2.758	1.108	1.266	1.457	2.747
	MAE	3.902	4.982	3.643	1.359	1.751	1.336	1.615	0.740	0.853	1.042	1.667
	MAPE	0.028	0.025	0.019	0.009	0.014	0.010	0.011	0.007	0.008	0.010	0.017
30Y	RMSE	5.299	8.198	4.975	2.311	2.734	2.075	2.846	1.182	1.235	1.516	2.647
	MAE	3.910	4.996	3.653	1.333	1.900	1.389	1.667	0.776	0.832	1.082	1.631
	MAPE	0.028	0.025	0.018	0.009	0.015	0.010	0.011	0.007	0.007	0.010	0.016

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table C5: The performance of ARDL models for the banking sector trained on 2018/19 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	5.786	9.172	5.414	1.467	0.602	0.543	1.245	0.383	0.349	0.381	1.243
	MAE	4.159	5.241	3.815	0.975	0.422	0.369	0.641	0.240	0.238	0.256	0.716
	MAPE	0.056	0.066	0.056	0.056	0.028	0.021	0.028	0.021	0.018	0.019	0.026
1Y	RMSE	5.783	9.304	5.255	1.593	0.584	0.557	1.205	0.393	0.421	0.492	1.532
	MAE	4.174	5.286	3.739	1.052	0.418	0.380	0.633	0.257	0.280	0.347	0.828
	MAPE	0.049	0.056	0.046	0.041	0.020	0.017	0.021	0.015	0.015	0.019	0.025
2Y	RMSE	5.635	9.500	5.182	1.716	0.719	0.689	1.485	0.437	0.570	0.611	2.397
	MAE	4.166	5.511	3.872	1.195	0.512	0.444	0.791	0.274	0.369	0.439	1.176
	MAPE	0.043	0.043	0.034	0.030	0.017	0.014	0.019	0.012	0.015	0.018	0.028
3Y	RMSE	5.738	9.559	5.267	1.959	0.879	1.050	1.881	0.556	0.673	0.761	2.036
	MAE	4.121	5.560	3.847	1.345	0.647	0.773	1.070	0.362	0.450	0.537	1.118
	MAPE	0.038	0.037	0.028	0.023	0.016	0.018	0.020	0.012	0.014	0.017	0.025
4Y	RMSE	5.592	8.545	5.087	2.012	1.043	1.013	2.090	0.599	0.832	0.991	2.123
	MAE	4.022	5.114	3.719	1.266	0.730	0.652	1.097	0.395	0.538	0.697	1.143
	MAPE	0.033	0.031	0.024	0.017	0.015	0.012	0.016	0.010	0.013	0.018	0.023
5Y	RMSE	5.598	8.754	5.263	2.345	1.296	1.560	2.449	0.792	1.022	1.173	2.422
	MAE	4.067	5.390	3.837	1.597	0.953	1.113	1.443	0.520	0.658	0.825	1.387
	MAPE	0.031	0.030	0.022	0.017	0.015	0.017	0.018	0.010	0.013	0.017	0.024
7Y	RMSE	5.440	8.123	4.945	2.194	1.413	1.325	2.611	0.818	1.051	1.234	2.478
	MAE	3.963	4.968	3.601	1.358	0.998	0.864	1.377	0.522	0.666	0.870	1.392
	MAPE	0.030	0.027	0.020	0.012	0.012	0.010	0.014	0.008	0.010	0.013	0.019
10Y	RMSE	5.471	8.093	4.994	2.235	1.566	1.743	2.817	0.975	1.069	1.248	2.488
	MAE	3.935	4.982	3.674	1.423	1.140	1.124	1.558	0.591	0.684	0.905	1.455
	MAPE	0.029	0.026	0.019	0.011	0.011	0.011	0.013	0.007	0.008	0.011	0.017
20Y	RMSE	5.377	8.086	4.985	2.276	2.297	2.056	3.114	1.164	1.067	1.338	2.549
	MAE	3.868	4.997	3.678	1.363	1.647	1.314	1.728	0.704	0.680	0.968	1.536
	MAPE	0.028	0.026	0.019	0.009	0.013	0.010	0.012	0.007	0.006	0.009	0.016
30Y	RMSE	5.363	8.109	4.936	2.217	2.539	2.033	3.130	1.171	1.053	1.401	2.616
	MAE	3.869	4.915	3.601	1.261	1.728	1.191	1.676	0.720	0.673	1.003	1.608
	MAPE	0.028	0.025	0.018	0.009	0.013	0.009	0.011	0.006	0.006	0.009	0.015

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

D. The performance of the forecasting models for the energy sector

Table D1: The performance of ARDL models for the energy sector trained on 2010/11 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.167	1.580	1.300	0.437	0.462	1.374	2.498	0.259	0.243	0.197	1.349
	MAE	1.358	0.916	0.683	0.255	0.247	0.688	1.285	0.165	0.147	0.137	0.765
	MAPE	0.037	0.029	0.028	0.027	0.024	0.024	0.025	0.014	0.015	0.012	0.022
1Y	RMSE	2.019	1.699	1.264	0.495	0.447	1.385	2.484	0.338	0.270	0.272	1.393
	MAE	1.330	0.982	0.691	0.283	0.264	0.697	1.296	0.193	0.156	0.168	0.816
	MAPE	0.030	0.025	0.021	0.018	0.019	0.022	0.023	0.014	0.014	0.013	0.021
2Y	RMSE	1.940	1.749	1.274	0.573	0.583	1.437	2.758	0.457	0.406	0.427	1.720
	MAE	1.293	1.033	0.730	0.346	0.332	0.775	1.654	0.287	0.244	0.274	1.012
	MAPE	0.022	0.018	0.014	0.012	0.014	0.016	0.017	0.011	0.013	0.013	0.019
3Y	RMSE	2.029	1.755	1.210	0.748	0.764	1.719	3.215	0.620	0.742	0.698	2.140
	MAE	1.320	1.074	0.741	0.447	0.437	0.927	1.989	0.406	0.436	0.459	1.245
	MAPE	0.018	0.015	0.010	0.010	0.012	0.013	0.014	0.010	0.013	0.013	0.018
4Y	RMSE	2.045	1.872	1.292	0.839	1.024	2.075	3.660	0.816	1.057	0.994	2.483
	MAE	1.313	1.139	0.777	0.522	0.568	1.154	2.306	0.548	0.617	0.658	1.454
	MAPE	0.015	0.013	0.008	0.008	0.011	0.012	0.013	0.009	0.012	0.012	0.017
5Y	RMSE	2.049	1.886	1.441	0.900	1.340	2.361	4.118	1.015	1.375	1.274	2.813
	MAE	1.320	1.172	0.824	0.561	0.737	1.327	2.578	0.694	0.808	0.852	1.672
	MAPE	0.013	0.011	0.007	0.007	0.010	0.011	0.013	0.008	0.011	0.012	0.016
7Y	RMSE	2.045	1.903	1.526	0.933	1.890	3.078	4.390	1.342	1.396	1.314	2.964
	MAE	1.323	1.175	0.835	0.593	0.970	1.689	2.823	0.901	0.855	0.906	1.830
	MAPE	0.012	0.010	0.006	0.005	0.010	0.012	0.012	0.007	0.009	0.009	0.014
10Y	RMSE	1.965	1.956	1.591	0.957	2.074	3.304	4.846	1.641	1.397	1.426	3.195
	MAE	1.312	1.212	0.842	0.616	1.103	1.821	3.091	1.030	0.880	1.022	1.960
	MAPE	0.011	0.009	0.006	0.005	0.009	0.011	0.012	0.007	0.008	0.009	0.014
20Y	RMSE	1.932	1.973	1.665	1.116	2.901	3.690	5.614	1.919	1.339	1.539	3.550
	MAE	1.305	1.277	0.905	0.733	1.498	2.103	3.359	1.219	0.886	1.146	2.213
	MAPE	0.010	0.009	0.005	0.005	0.011	0.011	0.012	0.008	0.007	0.009	0.014
30Y	RMSE	1.928	2.007	1.689	1.178	3.142	3.767	5.833	1.983	1.382	1.586	3.652
	MAE	1.308	1.298	0.920	0.758	1.598	2.141	3.445	1.247	0.921	1.197	2.282
	MAPE	0.010	0.008	0.005	0.005	0.012	0.011	0.012	0.008	0.007	0.009	0.014

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table D2: The performance of ARDL models for the energy sector trained on 2012/13 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.177	1.566	1.250	0.425	0.462	1.350	2.442	0.256	0.250	0.204	1.382
	MAE	1.376	0.906	0.674	0.249	0.246	0.684	1.273	0.164	0.160	0.148	0.835
	MAPE	0.038	0.029	0.028	0.027	0.024	0.024	0.025	0.014	0.016	0.013	0.025
1Y	RMSE	2.032	1.735	1.228	0.473	0.453	1.374	2.427	0.322	0.270	0.265	1.401
	MAE	1.330	0.986	0.683	0.265	0.262	0.692	1.283	0.180	0.156	0.167	0.815
	MAPE	0.030	0.025	0.021	0.017	0.019	0.022	0.023	0.013	0.014	0.013	0.021
2Y	RMSE	1.964	1.776	1.246	0.545	0.591	1.462	2.737	0.436	0.406	0.415	1.690
	MAE	1.298	1.041	0.703	0.316	0.324	0.783	1.602	0.267	0.237	0.264	0.975
	MAPE	0.022	0.019	0.013	0.011	0.013	0.016	0.016	0.011	0.012	0.013	0.018
3Y	RMSE	2.065	1.795	1.184	0.710	0.771	1.777	3.210	0.601	0.734	0.690	2.037
	MAE	1.338	1.105	0.722	0.421	0.437	0.969	1.909	0.381	0.428	0.446	1.194
	MAPE	0.018	0.015	0.010	0.009	0.012	0.014	0.014	0.009	0.013	0.013	0.017
4Y	RMSE	2.086	1.929	1.247	0.788	1.042	2.117	3.658	0.800	1.046	0.993	2.335
	MAE	1.340	1.184	0.733	0.490	0.576	1.195	2.220	0.522	0.612	0.649	1.372
	MAPE	0.015	0.013	0.008	0.008	0.011	0.012	0.013	0.008	0.012	0.012	0.016
5Y	RMSE	2.090	1.917	1.388	0.842	1.359	2.435	4.154	1.010	1.335	1.270	2.666
	MAE	1.349	1.197	0.781	0.536	0.741	1.389	2.547	0.673	0.792	0.847	1.600
	MAPE	0.013	0.011	0.007	0.006	0.010	0.011	0.012	0.008	0.011	0.012	0.016
7Y	RMSE	2.086	1.910	1.471	0.887	1.899	3.194	4.459	1.333	1.355	1.299	2.852
	MAE	1.353	1.185	0.784	0.558	0.952	1.786	2.789	0.876	0.823	0.915	1.745
	MAPE	0.012	0.010	0.006	0.005	0.009	0.012	0.012	0.007	0.008	0.010	0.014
10Y	RMSE	2.000	1.952	1.541	0.900	2.081	3.418	4.928	1.618	1.345	1.407	3.134
	MAE	1.328	1.198	0.779	0.568	1.069	1.916	3.071	1.010	0.831	1.023	1.907
	MAPE	0.011	0.009	0.005	0.004	0.009	0.011	0.012	0.007	0.007	0.009	0.013
20Y	RMSE	1.981	2.079	1.629	1.004	2.934	3.676	5.599	1.888	1.367	1.484	3.374
	MAE	1.315	1.271	0.809	0.616	1.460	2.089	3.354	1.151	0.858	1.100	2.039
	MAPE	0.010	0.008	0.005	0.004	0.011	0.011	0.012	0.007	0.006	0.008	0.013
30Y	RMSE	1.982	2.125	1.653	1.056	3.170	3.758	5.818	1.950	1.405	1.528	3.459
	MAE	1.320	1.298	0.823	0.637	1.548	2.132	3.445	1.180	0.904	1.139	2.087
	MAPE	0.010	0.008	0.005	0.004	0.012	0.011	0.012	0.007	0.006	0.008	0.013

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table D3: The performance of ARDL models for the energy sector trained on 2014/15 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.260	1.598	1.283	0.448	0.452	1.303	2.455	0.284	0.253	0.230	1.540
	MAE	1.453	0.944	0.721	0.272	0.250	0.685	1.341	0.195	0.165	0.169	0.948
	MAPE	0.040	0.030	0.030	0.029	0.025	0.024	0.027	0.016	0.017	0.015	0.028
1Y	RMSE	2.104	1.706	1.257	0.507	0.444	1.303	2.424	0.342	0.277	0.277	1.510
	MAE	1.408	1.021	0.737	0.307	0.268	0.680	1.312	0.209	0.170	0.186	0.945
	MAPE	0.032	0.026	0.023	0.020	0.019	0.022	0.024	0.016	0.015	0.015	0.025
2Y	RMSE	2.015	1.741	1.303	0.594	0.579	1.378	2.698	0.468	0.419	0.418	1.797
	MAE	1.345	1.086	0.801	0.380	0.333	0.782	1.652	0.304	0.260	0.281	1.131
	MAPE	0.023	0.020	0.015	0.013	0.014	0.016	0.017	0.012	0.014	0.013	0.022
3Y	RMSE	2.102	1.762	1.265	0.775	0.755	1.670	3.161	0.641	0.740	0.691	2.169
	MAE	1.371	1.148	0.819	0.496	0.435	0.959	1.995	0.437	0.449	0.471	1.337
	MAPE	0.018	0.016	0.011	0.011	0.012	0.014	0.015	0.010	0.014	0.013	0.020
4Y	RMSE	2.102	1.880	1.343	0.870	1.018	2.042	3.613	0.838	1.053	0.988	2.490
	MAE	1.356	1.224	0.854	0.575	0.567	1.189	2.313	0.574	0.640	0.671	1.525
	MAPE	0.015	0.014	0.009	0.009	0.011	0.012	0.013	0.009	0.012	0.013	0.018
5Y	RMSE	2.099	1.917	1.499	0.966	1.326	2.351	4.100	1.045	1.361	1.273	2.835
	MAE	1.357	1.283	0.926	0.639	0.738	1.352	2.610	0.725	0.826	0.870	1.758
	MAPE	0.013	0.012	0.008	0.007	0.010	0.011	0.013	0.009	0.012	0.012	0.017
7Y	RMSE	2.140	2.086	1.711	1.158	1.819	3.044	4.475	1.469	1.401	1.362	3.370
	MAE	1.430	1.399	1.080	0.779	0.968	1.735	2.978	1.045	0.899	0.965	2.135
	MAPE	0.013	0.011	0.008	0.007	0.010	0.012	0.012	0.009	0.009	0.010	0.017
10Y	RMSE	2.068	2.172	1.792	1.221	1.996	3.242	4.895	1.752	1.422	1.489	3.624
	MAE	1.426	1.450	1.129	0.829	1.097	1.866	3.236	1.173	0.946	1.069	2.289
	MAPE	0.012	0.011	0.007	0.006	0.009	0.011	0.013	0.009	0.008	0.009	0.016
20Y	RMSE	2.101	2.337	1.961	1.380	2.758	3.549	5.611	2.065	1.536	1.580	3.898
	MAE	1.456	1.606	1.244	0.947	1.507	2.122	3.575	1.359	1.053	1.135	2.508
	MAPE	0.011	0.011	0.007	0.006	0.012	0.011	0.013	0.009	0.008	0.009	0.016
30Y	RMSE	2.117	2.412	2.026	1.458	2.967	3.653	5.852	2.155	1.610	1.644	4.044
	MAE	1.478	1.672	1.298	0.990	1.613	2.185	3.681	1.408	1.108	1.187	2.622
	MAPE	0.011	0.011	0.008	0.007	0.012	0.011	0.013	0.009	0.008	0.009	0.016

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table D4: The performance of ARDL models for the energy sector trained on 2016/17 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.177	1.585	1.261	0.429	0.459	1.358	2.444	0.253	0.245	0.196	1.372
	MAE	1.367	0.914	0.675	0.249	0.243	0.688	1.260	0.160	0.151	0.138	0.795
	MAPE	0.037	0.029	0.028	0.027	0.024	0.024	0.025	0.013	0.015	0.013	0.024
1Y	RMSE	2.055	1.718	1.227	0.478	0.451	1.372	2.413	0.315	0.270	0.262	1.443
	MAE	1.350	1.010	0.701	0.278	0.264	0.701	1.278	0.178	0.159	0.166	0.846
	MAPE	0.030	0.026	0.022	0.018	0.019	0.022	0.023	0.013	0.014	0.013	0.022
2Y	RMSE	1.956	1.762	1.255	0.564	0.595	1.459	2.702	0.433	0.414	0.419	1.737
	MAE	1.298	1.055	0.726	0.340	0.336	0.792	1.618	0.265	0.245	0.269	1.019
	MAPE	0.022	0.019	0.014	0.011	0.014	0.016	0.017	0.010	0.013	0.013	0.020
3Y	RMSE	2.027	1.783	1.209	0.747	0.772	1.761	3.171	0.598	0.758	0.701	2.112
	MAE	1.312	1.110	0.744	0.448	0.459	0.961	1.931	0.381	0.443	0.463	1.228
	MAPE	0.018	0.015	0.010	0.010	0.012	0.014	0.014	0.009	0.013	0.013	0.018
4Y	RMSE	2.042	1.912	1.292	0.832	1.029	2.133	3.611	0.788	1.089	1.010	2.418
	MAE	1.301	1.192	0.778	0.523	0.596	1.186	2.233	0.515	0.634	0.671	1.408
	MAPE	0.015	0.013	0.008	0.008	0.011	0.012	0.013	0.008	0.012	0.013	0.017
5Y	RMSE	2.049	1.928	1.448	0.898	1.344	2.431	4.064	0.980	1.411	1.286	2.749
	MAE	1.308	1.238	0.837	0.578	0.767	1.363	2.512	0.651	0.828	0.863	1.625
	MAPE	0.013	0.012	0.007	0.007	0.010	0.011	0.012	0.008	0.012	0.012	0.016
7Y	RMSE	2.045	1.939	1.533	0.941	1.913	3.149	4.327	1.299	1.432	1.335	2.898
	MAE	1.309	1.241	0.844	0.608	1.007	1.731	2.758	0.865	0.874	0.927	1.779
	MAPE	0.012	0.010	0.006	0.005	0.010	0.012	0.012	0.007	0.009	0.010	0.014
10Y	RMSE	1.975	1.994	1.606	0.992	2.069	3.358	4.750	1.596	1.425	1.421	3.145
	MAE	1.298	1.301	0.870	0.653	1.122	1.849	3.038	0.988	0.900	1.009	1.932
	MAPE	0.011	0.010	0.006	0.005	0.010	0.011	0.012	0.007	0.008	0.009	0.013
20Y	RMSE	1.948	2.115	1.698	1.109	2.966	3.577	5.398	1.852	1.471	1.507	3.363
	MAE	1.282	1.390	0.910	0.725	1.522	2.005	3.345	1.134	0.951	1.094	2.077
	MAPE	0.010	0.009	0.005	0.005	0.012	0.011	0.012	0.007	0.007	0.008	0.013
30Y	RMSE	1.943	2.151	1.721	1.169	3.219	3.654	5.623	1.912	1.507	1.557	3.469
	MAE	1.285	1.413	0.923	0.752	1.615	2.046	3.426	1.160	0.989	1.144	2.156
	MAPE	0.010	0.009	0.005	0.005	0.012	0.011	0.012	0.007	0.007	0.008	0.013

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table D5: The performance of ARDL models for the energy sector trained on 2018/19 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.188	1.579	1.221	0.433	0.458	1.394	2.507	0.257	0.221	0.196	1.376
	MAE	1.398	0.913	0.648	0.261	0.249	0.692	1.254	0.164	0.137	0.137	0.784
	MAPE	0.039	0.029	0.028	0.028	0.024	0.024	0.025	0.014	0.014	0.012	0.023
1Y	RMSE	2.106	1.734	1.210	0.484	0.454	1.410	2.498	0.316	0.247	0.253	1.448
	MAE	1.411	1.003	0.701	0.290	0.270	0.709	1.294	0.186	0.146	0.159	0.847
	MAPE	0.032	0.026	0.022	0.019	0.019	0.023	0.023	0.014	0.013	0.013	0.022
2Y	RMSE	2.017	1.721	1.246	0.569	0.593	1.507	2.726	0.447	0.376	0.393	1.733
	MAE	1.371	1.026	0.743	0.352	0.331	0.834	1.599	0.282	0.227	0.257	1.052
	MAPE	0.023	0.018	0.014	0.012	0.014	0.017	0.017	0.011	0.012	0.012	0.020
3Y	RMSE	2.094	1.728	1.224	0.755	0.771	1.834	3.218	0.632	0.674	0.656	2.139
	MAE	1.389	1.097	0.779	0.473	0.450	1.064	1.950	0.418	0.399	0.443	1.316
	MAPE	0.019	0.015	0.011	0.010	0.012	0.015	0.014	0.010	0.012	0.013	0.019
4Y	RMSE	2.119	1.823	1.306	0.871	1.042	2.232	3.704	0.852	0.949	0.947	2.446
	MAE	1.389	1.172	0.808	0.561	0.591	1.299	2.262	0.571	0.563	0.642	1.509
	MAPE	0.016	0.013	0.009	0.009	0.011	0.014	0.013	0.009	0.011	0.012	0.018
5Y	RMSE	2.107	1.884	1.447	0.953	1.343	2.592	4.194	1.079	1.225	1.216	2.780
	MAE	1.383	1.252	0.882	0.630	0.756	1.504	2.571	0.731	0.735	0.835	1.737
	MAPE	0.014	0.012	0.008	0.007	0.010	0.012	0.013	0.009	0.010	0.012	0.017
7Y	RMSE	2.113	1.882	1.511	0.993	1.845	3.280	4.523	1.435	1.231	1.256	2.924
	MAE	1.397	1.203	0.854	0.650	0.982	1.895	2.825	0.951	0.781	0.893	1.858
	MAPE	0.013	0.010	0.006	0.006	0.010	0.013	0.012	0.008	0.008	0.009	0.015
10Y	RMSE	2.027	1.921	1.566	0.967	2.063	3.461	4.935	1.647	1.274	1.350	3.271
	MAE	1.365	1.224	0.834	0.660	1.099	1.980	3.049	1.030	0.805	0.977	2.009
	MAPE	0.012	0.009	0.006	0.005	0.009	0.012	0.012	0.007	0.007	0.009	0.014
20Y	RMSE	2.015	2.059	1.660	1.055	2.834	3.733	5.618	1.929	1.303	1.426	3.480
	MAE	1.354	1.297	0.883	0.707	1.475	2.147	3.370	1.179	0.822	1.049	2.120
	MAPE	0.010	0.009	0.005	0.005	0.011	0.011	0.012	0.008	0.006	0.008	0.013
30Y	RMSE	2.005	2.099	1.678	1.102	3.045	3.823	5.837	1.994	1.344	1.471	3.597
	MAE	1.359	1.321	0.886	0.721	1.544	2.174	3.451	1.211	0.862	1.089	2.196
	MAPE	0.010	0.009	0.005	0.005	0.011	0.011	0.012	0.008	0.006	0.008	0.013

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

E. The performance of the forecasting models for the services sector

Table E1: The performance of ARDL models for the services sector trained on 2010/11 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.621	1.468	0.906	0.579	0.368	0.291	0.386	0.202	0.216	0.702	0.779
	MAE	1.036	0.905	0.628	0.314	0.253	0.188	0.254	0.130	0.144	0.230	0.495
	MAPE	0.021	0.025	0.025	0.024	0.023	0.017	0.020	0.013	0.012	0.016	0.019
1Y	RMSE	1.673	1.479	0.958	0.619	0.349	0.309	0.390	0.240	0.325	0.605	0.899
	MAE	1.024	0.930	0.681	0.342	0.246	0.206	0.256	0.138	0.192	0.251	0.568
	MAPE	0.017	0.022	0.021	0.020	0.018	0.015	0.017	0.012	0.014	0.015	0.019
2Y	RMSE	1.575	1.488	1.006	0.712	0.387	0.361	0.471	0.301	0.447	0.606	1.061
	MAE	0.988	0.941	0.729	0.404	0.272	0.256	0.311	0.172	0.283	0.348	0.671
	MAPE	0.012	0.014	0.014	0.013	0.011	0.011	0.012	0.009	0.013	0.015	0.017
3Y	RMSE	1.616	1.546	1.065	0.825	0.509	0.469	0.566	0.408	0.595	0.713	1.250
	MAE	1.025	0.954	0.783	0.457	0.356	0.322	0.360	0.213	0.360	0.434	0.765
	MAPE	0.010	0.011	0.010	0.009	0.009	0.009	0.009	0.007	0.010	0.012	0.015
4Y	RMSE	1.560	1.620	1.096	0.979	0.615	0.579	0.691	0.482	0.770	0.887	1.409
	MAE	1.006	1.003	0.793	0.556	0.431	0.392	0.437	0.270	0.476	0.557	0.904
	MAPE	0.009	0.009	0.008	0.008	0.008	0.007	0.008	0.006	0.009	0.011	0.014
5Y	RMSE	1.568	1.627	1.153	1.064	0.736	0.695	0.800	0.551	0.956	1.059	1.607
	MAE	1.016	1.021	0.846	0.598	0.515	0.476	0.504	0.310	0.612	0.693	0.993
	MAPE	0.008	0.008	0.007	0.006	0.007	0.007	0.007	0.005	0.009	0.011	0.013
7Y	RMSE	1.455	1.584	1.134	1.104	0.802	0.792	0.911	0.604	0.993	1.182	1.828
	MAE	0.939	1.004	0.837	0.644	0.574	0.537	0.605	0.391	0.696	0.817	1.162
	MAPE	0.007	0.006	0.006	0.005	0.006	0.005	0.006	0.004	0.008	0.009	0.012
10Y	RMSE	1.422	1.583	1.178	1.221	0.858	0.910	0.984	0.680	1.068	1.216	1.875
	MAE	0.925	1.005	0.872	0.706	0.614	0.612	0.663	0.457	0.739	0.879	1.222
	MAPE	0.006	0.006	0.006	0.005	0.005	0.005	0.006	0.004	0.007	0.009	0.011
20Y	RMSE	1.382	1.627	1.210	1.303	0.936	1.018	1.052	0.768	1.175	1.316	1.957
	MAE	0.894	1.048	0.900	0.734	0.652	0.691	0.701	0.530	0.815	0.960	1.256
	MAPE	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.004	0.007	0.008	0.010
30Y	RMSE	1.381	1.641	1.221	1.333	0.979	1.040	1.078	0.794	1.175	1.343	1.978
	MAE	0.897	1.060	0.908	0.746	0.679	0.709	0.716	0.545	0.816	0.983	1.273
	MAPE	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.004	0.007	0.008	0.010

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table E2: The performance of ARDL models for the services sector trained on 2012/13 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.690	1.697	0.855	0.543	0.359	0.321	0.395	0.200	0.188	0.711	0.914
	MAE	1.090	1.015	0.600	0.305	0.251	0.224	0.265	0.120	0.117	0.225	0.523
	MAPE	0.022	0.028	0.024	0.023	0.023	0.020	0.021	0.012	0.010	0.015	0.019
1Y	RMSE	1.909	1.672	0.882	0.570	0.353	0.337	0.404	0.242	0.323	0.603	1.287
	MAE	1.207	1.036	0.628	0.315	0.249	0.236	0.263	0.139	0.190	0.252	0.733
	MAPE	0.020	0.024	0.019	0.018	0.019	0.017	0.017	0.012	0.013	0.015	0.024
2Y	RMSE	1.776	1.689	0.901	0.648	0.405	0.391	0.467	0.301	0.423	0.565	1.389
	MAE	1.147	1.035	0.647	0.369	0.279	0.280	0.308	0.166	0.242	0.298	0.810
	MAPE	0.014	0.016	0.012	0.011	0.012	0.012	0.012	0.008	0.011	0.012	0.019
3Y	RMSE	1.772	1.747	0.971	0.750	0.519	0.497	0.568	0.410	0.584	0.668	1.500
	MAE	1.107	1.074	0.710	0.428	0.358	0.343	0.368	0.204	0.332	0.393	0.900
	MAPE	0.011	0.012	0.009	0.008	0.009	0.009	0.009	0.007	0.009	0.011	0.017
4Y	RMSE	1.744	1.825	1.003	0.884	0.635	0.618	0.707	0.481	0.775	0.835	1.670
	MAE	1.128	1.139	0.729	0.515	0.440	0.427	0.454	0.247	0.462	0.516	1.020
	MAPE	0.010	0.010	0.008	0.007	0.008	0.008	0.008	0.005	0.009	0.010	0.016
5Y	RMSE	1.707	1.795	1.068	0.990	0.742	0.667	0.808	0.540	0.889	0.994	1.703
	MAE	1.060	1.121	0.775	0.564	0.530	0.461	0.485	0.279	0.538	0.612	1.031
	MAPE	0.008	0.008	0.007	0.006	0.007	0.007	0.006	0.004	0.008	0.009	0.013
7Y	RMSE	1.618	1.700	1.062	1.007	0.772	0.767	0.900	0.571	0.879	1.090	1.817
	MAE	0.987	1.065	0.772	0.592	0.550	0.526	0.572	0.355	0.604	0.744	1.158
	MAPE	0.007	0.007	0.006	0.005	0.005	0.005	0.006	0.004	0.007	0.008	0.012
10Y	RMSE	1.571	1.700	1.068	1.100	0.789	0.855	0.949	0.628	0.909	1.117	1.849
	MAE	0.958	1.071	0.768	0.637	0.547	0.579	0.592	0.413	0.624	0.790	1.195
	MAPE	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.004	0.006	0.008	0.011
20Y	RMSE	1.506	1.746	1.107	1.191	0.861	0.966	1.031	0.718	1.012	1.230	1.941
	MAE	0.909	1.116	0.798	0.674	0.594	0.656	0.638	0.482	0.698	0.875	1.248
	MAPE	0.006	0.006	0.005	0.004	0.005	0.005	0.005	0.004	0.006	0.007	0.010
30Y	RMSE	1.490	1.762	1.099	1.220	0.882	0.976	1.029	0.736	1.005	1.250	1.947
	MAE	0.914	1.133	0.793	0.697	0.607	0.668	0.640	0.491	0.709	0.887	1.254
	MAPE	0.006	0.006	0.005	0.004	0.005	0.005	0.005	0.004	0.006	0.007	0.010

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table E3: The performance of ARDL models for the services sector trained on 2014/15 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.327	1.846	0.957	0.694	0.349	0.277	0.370	0.187	0.210	0.670	0.941
	MAE	1.685	1.080	0.737	0.430	0.236	0.179	0.242	0.110	0.137	0.214	0.613
	MAPE	0.035	0.028	0.030	0.031	0.022	0.016	0.019	0.011	0.012	0.014	0.023
1Y	RMSE	2.538	1.858	0.998	0.697	0.322	0.277	0.372	0.232	0.293	0.565	1.130
	MAE	1.818	1.052	0.760	0.420	0.220	0.177	0.239	0.125	0.162	0.216	0.709
	MAPE	0.031	0.023	0.024	0.024	0.016	0.013	0.016	0.010	0.011	0.013	0.024
2Y	RMSE	1.723	1.703	0.973	0.709	0.356	0.311	0.423	0.288	0.376	0.527	1.108
	MAE	1.056	0.986	0.699	0.375	0.246	0.208	0.260	0.141	0.196	0.240	0.595
	MAPE	0.013	0.015	0.013	0.012	0.010	0.009	0.010	0.007	0.009	0.010	0.014
3Y	RMSE	1.741	1.736	1.051	0.820	0.475	0.415	0.518	0.391	0.531	0.623	1.271
	MAE	1.045	1.030	0.753	0.441	0.318	0.274	0.311	0.183	0.292	0.335	0.721
	MAPE	0.011	0.012	0.010	0.009	0.008	0.007	0.008	0.006	0.008	0.009	0.014
4Y	RMSE	1.695	1.819	1.088	0.945	0.576	0.533	0.644	0.463	0.715	0.780	1.449
	MAE	1.041	1.085	0.791	0.505	0.386	0.351	0.380	0.224	0.413	0.455	0.833
	MAPE	0.009	0.010	0.008	0.007	0.007	0.007	0.007	0.005	0.008	0.009	0.013
5Y	RMSE	1.697	1.796	1.133	1.052	0.688	0.623	0.732	0.534	0.871	0.932	1.631
	MAE	1.054	1.096	0.818	0.576	0.469	0.419	0.432	0.276	0.522	0.574	0.974
	MAPE	0.008	0.008	0.007	0.006	0.006	0.006	0.006	0.004	0.008	0.009	0.012
7Y	RMSE	1.664	1.771	1.122	1.072	0.715	0.684	0.836	0.576	0.878	1.042	1.822
	MAE	1.012	1.089	0.819	0.607	0.501	0.447	0.496	0.355	0.583	0.713	1.099
	MAPE	0.007	0.007	0.006	0.005	0.005	0.005	0.005	0.004	0.006	0.008	0.011
10Y	RMSE	1.618	1.798	1.133	1.170	0.750	0.764	0.880	0.638	0.923	1.083	1.882
	MAE	1.004	1.111	0.816	0.664	0.512	0.507	0.534	0.415	0.631	0.764	1.155
	MAPE	0.007	0.006	0.005	0.005	0.004	0.004	0.005	0.004	0.006	0.007	0.011
20Y	RMSE	1.615	1.850	1.187	1.285	0.809	0.846	1.013	0.738	1.057	1.221	2.078
	MAE	0.992	1.178	0.870	0.710	0.561	0.585	0.625	0.510	0.716	0.864	1.285
	MAPE	0.006	0.006	0.005	0.005	0.004	0.005	0.005	0.004	0.006	0.007	0.011
30Y	RMSE	1.597	1.953	1.205	1.303	0.852	0.881	0.988	0.762	1.013	1.216	2.052
	MAE	0.998	1.231	0.878	0.735	0.576	0.586	0.593	0.513	0.705	0.861	1.260
	MAPE	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.006	0.007	0.010

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table E4: The performance of ARDL models for the services sector trained on 2016/17 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	1.671	1.561	0.916	0.558	0.357	0.278	0.348	0.186	0.193	0.687	0.779
	MAE	1.035	0.937	0.645	0.291	0.242	0.180	0.224	0.111	0.126	0.182	0.466
	MAPE	0.021	0.026	0.025	0.022	0.022	0.016	0.018	0.011	0.011	0.012	0.017
1Y	RMSE	1.843	1.630	0.967	0.600	0.331	0.281	0.354	0.224	0.274	0.578	0.922
	MAE	1.121	0.955	0.679	0.307	0.224	0.184	0.221	0.119	0.148	0.190	0.501
	MAPE	0.019	0.022	0.021	0.018	0.017	0.013	0.014	0.010	0.010	0.011	0.017
2Y	RMSE	1.728	1.639	0.984	0.698	0.370	0.326	0.415	0.278	0.378	0.528	1.088
	MAE	1.069	0.966	0.710	0.366	0.250	0.224	0.265	0.140	0.207	0.241	0.605
	MAPE	0.013	0.015	0.013	0.011	0.010	0.009	0.010	0.007	0.009	0.010	0.015
3Y	RMSE	1.778	1.701	1.083	0.812	0.489	0.444	0.506	0.380	0.537	0.629	1.288
	MAE	1.097	1.030	0.788	0.438	0.326	0.304	0.311	0.190	0.304	0.342	0.748
	MAPE	0.011	0.012	0.010	0.009	0.008	0.008	0.008	0.006	0.009	0.010	0.014
4Y	RMSE	1.721	1.764	1.113	0.942	0.591	0.564	0.632	0.454	0.722	0.788	1.443
	MAE	1.084	1.082	0.814	0.506	0.393	0.384	0.382	0.235	0.427	0.463	0.848
	MAPE	0.009	0.010	0.008	0.007	0.007	0.007	0.007	0.005	0.009	0.009	0.013
5Y	RMSE	1.636	1.715	1.105	1.030	0.694	0.643	0.737	0.521	0.873	0.948	1.607
	MAE	1.005	1.064	0.795	0.554	0.466	0.432	0.435	0.266	0.527	0.581	0.957
	MAPE	0.007	0.008	0.007	0.006	0.006	0.006	0.006	0.004	0.008	0.009	0.012
7Y	RMSE	1.620	1.745	1.143	1.073	0.743	0.744	0.797	0.548	0.875	1.057	1.759
	MAE	1.001	1.102	0.848	0.620	0.522	0.508	0.490	0.342	0.600	0.712	1.105
	MAPE	0.007	0.007	0.006	0.005	0.005	0.005	0.005	0.004	0.007	0.008	0.011
10Y	RMSE	1.544	1.707	1.127	1.130	0.771	0.825	0.863	0.615	0.940	1.096	1.867
	MAE	0.968	1.071	0.815	0.634	0.537	0.550	0.523	0.401	0.640	0.771	1.151
	MAPE	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.004	0.006	0.007	0.010
20Y	RMSE	1.468	1.735	1.128	1.223	0.828	0.887	0.952	0.713	1.049	1.204	1.940
	MAE	0.892	1.098	0.813	0.655	0.564	0.583	0.571	0.475	0.711	0.855	1.188
	MAPE	0.006	0.006	0.005	0.004	0.004	0.004	0.004	0.004	0.006	0.007	0.010
30Y	RMSE	1.464	1.756	1.136	1.248	0.863	0.908	0.977	0.735	1.038	1.231	1.957
	MAE	0.896	1.112	0.820	0.666	0.587	0.596	0.583	0.486	0.710	0.881	1.207
	MAPE	0.005	0.006	0.005	0.004	0.004	0.004	0.004	0.004	0.006	0.007	0.010

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table E5: The performance of ARDL models for the services sector trained on 2018/19 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.019	1.825	1.112	0.609	0.389	0.423	0.426	0.211	0.180	0.711	0.746
	MAE	1.349	1.161	0.823	0.372	0.280	0.303	0.290	0.133	0.113	0.209	0.472
	MAPE	0.027	0.032	0.032	0.028	0.026	0.027	0.023	0.014	0.010	0.014	0.018
1Y	RMSE	2.130	1.800	1.118	0.647	0.356	0.466	0.444	0.234	0.257	0.547	0.927
	MAE	1.325	1.128	0.796	0.382	0.252	0.285	0.282	0.132	0.131	0.185	0.528
	MAPE	0.022	0.026	0.024	0.022	0.019	0.020	0.019	0.011	0.009	0.011	0.017
2Y	RMSE	2.138	1.850	1.240	0.798	0.435	0.613	0.534	0.305	0.354	0.496	1.079
	MAE	1.384	1.174	0.904	0.499	0.312	0.381	0.353	0.161	0.188	0.238	0.625
	MAPE	0.017	0.018	0.017	0.015	0.013	0.016	0.014	0.008	0.008	0.010	0.015
3Y	RMSE	1.870	1.765	1.088	0.814	0.499	0.452	0.560	0.385	0.497	0.603	1.298
	MAE	1.120	1.062	0.795	0.463	0.337	0.305	0.349	0.193	0.267	0.336	0.755
	MAPE	0.011	0.012	0.011	0.009	0.009	0.008	0.009	0.006	0.008	0.010	0.014
4Y	RMSE	1.811	1.831	1.109	0.949	0.612	0.573	0.692	0.465	0.667	0.763	1.444
	MAE	1.096	1.115	0.814	0.529	0.413	0.386	0.421	0.242	0.383	0.450	0.859
	MAPE	0.009	0.010	0.008	0.007	0.007	0.007	0.007	0.005	0.008	0.009	0.013
5Y	RMSE	1.768	1.848	1.131	1.054	0.720	0.677	0.767	0.548	0.825	0.931	1.600
	MAE	1.082	1.134	0.834	0.600	0.484	0.459	0.467	0.296	0.501	0.577	0.974
	MAPE	0.008	0.008	0.007	0.006	0.007	0.006	0.006	0.005	0.007	0.009	0.012
7Y	RMSE	1.688	1.813	1.110	1.084	0.755	0.739	0.858	0.588	0.824	1.040	1.786
	MAE	1.026	1.107	0.826	0.634	0.522	0.495	0.522	0.361	0.570	0.712	1.099
	MAPE	0.007	0.007	0.006	0.005	0.005	0.005	0.005	0.004	0.006	0.008	0.011
10Y	RMSE	1.712	2.002	1.215	1.231	0.817	0.874	0.963	0.684	0.839	1.047	1.973
	MAE	1.086	1.219	0.894	0.741	0.586	0.633	0.610	0.467	0.597	0.734	1.256
	MAPE	0.007	0.007	0.006	0.005	0.005	0.006	0.005	0.005	0.006	0.007	0.011
20Y	RMSE	1.793	2.241	1.514	1.512	1.007	1.387	1.125	0.880	0.964	1.140	2.093
	MAE	1.193	1.437	1.170	0.977	0.752	0.972	0.729	0.592	0.664	0.817	1.309
	MAPE	0.007	0.008	0.007	0.006	0.006	0.008	0.006	0.005	0.006	0.007	0.011
30Y	RMSE	1.812	2.292	1.543	1.578	1.084	1.518	1.166	0.900	0.939	1.167	2.110
	MAE	1.191	1.469	1.172	1.021	0.803	1.020	0.747	0.594	0.658	0.838	1.331
	MAPE	0.007	0.008	0.007	0.006	0.006	0.008	0.005	0.005	0.005	0.007	0.011

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

F. The performance of the forecasting models for the financial excluding banks sector

Table F1: The performance of ARDL models for the banking sector trained on 2010/11 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.037	2.396	1.308	0.491	0.512	0.425	0.525	0.370	0.300	0.266	0.799
	MAE	1.371	1.476	0.913	0.301	0.304	0.258	0.319	0.186	0.204	0.180	0.509
	MAPE	0.016	0.021	0.019	0.012	0.014	0.010	0.010	0.006	0.007	0.006	0.013
1Y	RMSE	2.043	2.455	1.299	0.517	0.452	0.474	0.561	0.513	0.380	0.401	1.008
	MAE	1.401	1.520	0.888	0.328	0.288	0.324	0.366	0.252	0.241	0.218	0.587
	MAPE	0.014	0.019	0.015	0.010	0.011	0.011	0.010	0.007	0.007	0.006	0.013
2Y	RMSE	2.036	2.492	1.325	0.610	0.408	0.422	0.578	0.469	0.377	0.422	0.996
	MAE	1.373	1.552	0.934	0.363	0.262	0.276	0.352	0.209	0.223	0.217	0.549
	MAPE	0.012	0.015	0.011	0.007	0.007	0.006	0.007	0.005	0.005	0.005	0.010
3Y	RMSE	2.063	2.511	1.333	0.691	0.469	0.556	0.699	0.542	0.514	0.521	1.180
	MAE	1.368	1.569	0.958	0.434	0.322	0.386	0.427	0.276	0.313	0.290	0.650
	MAPE	0.010	0.012	0.009	0.006	0.006	0.007	0.006	0.005	0.006	0.005	0.009
4Y	RMSE	1.831	2.321	1.342	0.764	0.472	0.638	0.811	0.546	0.546	0.587	1.233
	MAE	1.309	1.503	0.977	0.491	0.350	0.452	0.525	0.332	0.363	0.346	0.715
	MAPE	0.009	0.010	0.008	0.006	0.005	0.006	0.006	0.005	0.005	0.005	0.009
5Y	RMSE	1.825	2.369	1.346	0.848	0.523	0.698	0.948	0.525	0.611	0.620	1.361
	MAE	1.312	1.534	0.981	0.542	0.391	0.496	0.598	0.345	0.417	0.392	0.786
	MAPE	0.008	0.009	0.007	0.005	0.005	0.006	0.006	0.004	0.005	0.004	0.008
7Y	RMSE	2.047	2.541	1.351	0.939	0.661	0.786	1.226	0.583	0.697	0.706	1.633
	MAE	1.366	1.642	0.989	0.570	0.464	0.559	0.751	0.391	0.496	0.503	0.991
	MAPE	0.008	0.009	0.006	0.004	0.004	0.005	0.006	0.004	0.005	0.005	0.009
10Y	RMSE	2.123	2.585	1.345	0.989	0.813	0.853	1.270	0.577	0.693	0.744	1.639
	MAE	1.405	1.667	0.987	0.617	0.552	0.570	0.747	0.411	0.503	0.541	1.026
	MAPE	0.008	0.009	0.006	0.004	0.005	0.005	0.005	0.003	0.004	0.004	0.008
20Y	RMSE	2.048	2.601	1.353	1.053	1.017	1.037	1.409	0.644	0.669	0.624	1.632
	MAE	1.342	1.710	1.012	0.647	0.664	0.675	0.844	0.432	0.477	0.456	0.967
	MAPE	0.007	0.008	0.005	0.004	0.005	0.005	0.005	0.003	0.004	0.003	0.007
30Y	RMSE	2.088	2.628	1.350	1.036	0.999	1.030	1.430	0.677	0.662	0.641	1.607
	MAE	1.374	1.702	1.014	0.605	0.642	0.702	0.876	0.427	0.466	0.478	0.974
	MAPE	0.007	0.008	0.005	0.004	0.005	0.005	0.005	0.003	0.003	0.003	0.007

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table F2: The performance of ARDL models for the banking sector trained on 2012/13 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.124	2.590	1.202	0.487	0.513	0.458	0.533	0.400	0.407	0.361	0.924
	MAE	1.453	1.569	0.829	0.304	0.317	0.287	0.346	0.227	0.300	0.256	0.619
	MAPE	0.017	0.022	0.017	0.012	0.015	0.011	0.011	0.008	0.010	0.008	0.016
1Y	RMSE	2.068	2.658	1.217	0.510	0.440	0.436	0.518	0.490	0.401	0.432	1.031
	MAE	1.420	1.618	0.816	0.313	0.276	0.276	0.341	0.229	0.269	0.245	0.631
	MAPE	0.014	0.020	0.014	0.010	0.010	0.009	0.009	0.007	0.008	0.007	0.014
2Y	RMSE	2.082	2.601	1.284	0.572	0.397	0.411	0.587	0.449	0.383	0.428	1.055
	MAE	1.406	1.571	0.898	0.345	0.257	0.278	0.377	0.215	0.233	0.238	0.611
	MAPE	0.012	0.015	0.011	0.007	0.006	0.006	0.007	0.005	0.005	0.005	0.011
3Y	RMSE	2.079	2.705	1.273	0.658	0.437	0.456	0.705	0.499	0.487	0.527	1.249
	MAE	1.387	1.659	0.905	0.395	0.299	0.322	0.449	0.254	0.303	0.321	0.721
	MAPE	0.010	0.013	0.008	0.006	0.006	0.006	0.006	0.004	0.005	0.006	0.010
4Y	RMSE	2.082	2.639	1.305	0.720	0.464	0.503	0.790	0.534	0.550	0.598	1.370
	MAE	1.366	1.606	0.925	0.423	0.321	0.345	0.481	0.256	0.328	0.343	0.731
	MAPE	0.009	0.011	0.007	0.005	0.005	0.005	0.005	0.003	0.005	0.005	0.009
5Y	RMSE	2.059	2.663	1.302	0.796	0.510	0.563	0.905	0.488	0.616	0.631	1.501
	MAE	1.347	1.630	0.930	0.466	0.361	0.387	0.541	0.261	0.378	0.390	0.805
	MAPE	0.008	0.010	0.006	0.004	0.004	0.004	0.005	0.003	0.004	0.004	0.008
7Y	RMSE	2.116	2.682	1.302	0.839	0.599	0.682	1.062	0.477	0.579	0.584	1.509
	MAE	1.355	1.652	0.929	0.479	0.410	0.448	0.625	0.277	0.378	0.382	0.848
	MAPE	0.008	0.009	0.006	0.004	0.004	0.004	0.005	0.002	0.003	0.004	0.007
10Y	RMSE	2.164	2.717	1.305	0.885	0.748	0.763	1.162	0.481	0.574	0.554	1.541
	MAE	1.385	1.679	0.934	0.508	0.489	0.484	0.682	0.298	0.384	0.379	0.874
	MAPE	0.008	0.009	0.005	0.004	0.004	0.004	0.005	0.002	0.003	0.003	0.007
20Y	RMSE	2.123	2.748	1.304	0.952	0.932	0.885	1.298	0.564	0.583	0.561	1.522
	MAE	1.355	1.715	0.942	0.538	0.578	0.546	0.761	0.346	0.396	0.401	0.879
	MAPE	0.008	0.008	0.005	0.003	0.004	0.004	0.005	0.002	0.003	0.003	0.006
30Y	RMSE	2.115	2.742	1.280	0.979	0.969	0.927	1.370	0.620	0.624	0.585	1.548
	MAE	1.355	1.724	0.930	0.553	0.601	0.570	0.800	0.373	0.425	0.430	0.916
	MAPE	0.007	0.008	0.005	0.003	0.004	0.004	0.005	0.003	0.003	0.003	0.006

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table F3: The performance of ARDL models for the banking sector trained on 2014/15 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.653	3.251	1.528	0.572	0.439	0.361	0.524	0.363	0.213	0.180	0.724
	MAE	1.809	1.858	1.078	0.360	0.276	0.203	0.289	0.146	0.123	0.103	0.393
	MAPE	0.021	0.025	0.022	0.014	0.013	0.008	0.009	0.005	0.004	0.003	0.010
1Y	RMSE	2.443	3.184	1.448	0.580	0.374	0.332	0.503	0.444	0.275	0.321	0.901
	MAE	1.627	1.771	1.025	0.356	0.239	0.192	0.286	0.182	0.152	0.165	0.463
	MAPE	0.016	0.021	0.018	0.011	0.009	0.006	0.007	0.005	0.005	0.005	0.010
2Y	RMSE	2.619	3.271	1.519	0.696	0.376	0.342	0.640	0.450	0.352	0.404	1.066
	MAE	1.709	1.825	1.087	0.406	0.249	0.226	0.375	0.209	0.208	0.230	0.561
	MAPE	0.015	0.017	0.013	0.008	0.006	0.005	0.007	0.005	0.005	0.005	0.010
3Y	RMSE	2.342	2.984	1.405	0.711	0.395	0.382	0.689	0.459	0.410	0.433	1.179
	MAE	1.540	1.674	0.993	0.406	0.263	0.248	0.387	0.204	0.229	0.239	0.583
	MAPE	0.011	0.013	0.009	0.006	0.005	0.004	0.005	0.004	0.004	0.004	0.008
4Y	RMSE	2.317	2.916	1.404	0.781	0.436	0.427	0.794	0.508	0.505	0.534	1.334
	MAE	1.514	1.654	1.001	0.440	0.297	0.281	0.437	0.237	0.285	0.301	0.660
	MAPE	0.010	0.011	0.008	0.005	0.004	0.004	0.005	0.003	0.004	0.004	0.008
5Y	RMSE	2.234	2.883	1.387	0.845	0.490	0.481	0.889	0.478	0.573	0.583	1.480
	MAE	1.458	1.660	0.997	0.477	0.340	0.317	0.481	0.248	0.336	0.355	0.754
	MAPE	0.009	0.010	0.007	0.005	0.004	0.004	0.004	0.003	0.004	0.004	0.008
7Y	RMSE	2.283	2.881	1.382	0.877	0.582	0.592	1.062	0.473	0.551	0.549	1.490
	MAE	1.455	1.679	0.992	0.481	0.393	0.384	0.572	0.271	0.344	0.361	0.787
	MAPE	0.008	0.009	0.006	0.004	0.004	0.003	0.004	0.002	0.003	0.003	0.007
10Y	RMSE	2.305	2.912	1.401	0.923	0.731	0.688	1.163	0.484	0.515	0.545	1.475
	MAE	1.473	1.700	0.999	0.512	0.483	0.426	0.613	0.282	0.326	0.372	0.768
	MAPE	0.009	0.009	0.006	0.004	0.004	0.003	0.004	0.002	0.003	0.003	0.006
20Y	RMSE	2.321	2.999	1.420	0.994	0.902	0.812	1.325	0.579	0.533	0.555	1.499
	MAE	1.476	1.764	1.020	0.548	0.579	0.485	0.714	0.340	0.350	0.394	0.796
	MAPE	0.008	0.008	0.005	0.004	0.004	0.003	0.004	0.002	0.003	0.003	0.006
30Y	RMSE	2.340	3.001	1.426	1.017	0.941	0.848	1.368	0.627	0.561	0.577	1.515
	MAE	1.498	1.761	1.027	0.559	0.603	0.503	0.741	0.369	0.370	0.417	0.808
	MAPE	0.008	0.008	0.005	0.004	0.004	0.003	0.004	0.003	0.003	0.003	0.005

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table F4: The performance of ARDL models for the banking sector trained on 2016/17 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.174	2.671	1.352	0.481	0.505	0.418	0.442	0.299	0.189	0.205	0.667
	MAE	1.440	1.505	0.928	0.290	0.290	0.223	0.231	0.122	0.116	0.110	0.350
	MAPE	0.017	0.021	0.019	0.011	0.014	0.009	0.007	0.004	0.004	0.004	0.009
1Y	RMSE	2.202	2.808	1.381	0.513	0.416	0.394	0.437	0.419	0.264	0.342	0.837
	MAE	1.475	1.588	0.942	0.308	0.248	0.230	0.240	0.151	0.140	0.143	0.416
	MAPE	0.015	0.019	0.016	0.010	0.009	0.007	0.006	0.004	0.004	0.004	0.009
2Y	RMSE	2.255	2.762	1.404	0.598	0.385	0.392	0.520	0.410	0.313	0.372	0.960
	MAE	1.487	1.583	0.968	0.344	0.247	0.259	0.295	0.170	0.175	0.180	0.475
	MAPE	0.013	0.015	0.011	0.007	0.006	0.006	0.005	0.004	0.004	0.004	0.008
3Y	RMSE	2.280	2.863	1.410	0.680	0.425	0.455	0.614	0.456	0.404	0.459	1.146
	MAE	1.506	1.614	0.980	0.393	0.287	0.317	0.359	0.198	0.224	0.241	0.549
	MAPE	0.011	0.012	0.009	0.006	0.005	0.005	0.005	0.003	0.004	0.004	0.008
4Y	RMSE	2.297	2.830	1.416	0.750	0.465	0.510	0.715	0.500	0.507	0.566	1.306
	MAE	1.520	1.602	0.994	0.431	0.329	0.357	0.416	0.231	0.290	0.319	0.635
	MAPE	0.010	0.011	0.008	0.005	0.005	0.005	0.005	0.003	0.004	0.004	0.008
5Y	RMSE	2.150	2.743	1.383	0.812	0.506	0.540	0.844	0.466	0.561	0.604	1.423
	MAE	1.389	1.612	0.982	0.455	0.351	0.371	0.475	0.228	0.325	0.347	0.702
	MAPE	0.009	0.009	0.007	0.004	0.004	0.004	0.004	0.003	0.004	0.004	0.007
7Y	RMSE	2.273	2.889	1.432	0.867	0.625	0.705	0.935	0.460	0.550	0.581	1.488
	MAE	1.482	1.740	1.024	0.491	0.432	0.489	0.557	0.277	0.355	0.371	0.794
	MAPE	0.008	0.009	0.006	0.004	0.004	0.004	0.004	0.002	0.003	0.003	0.007
10Y	RMSE	2.314	2.920	1.434	0.924	0.783	0.788	1.030	0.468	0.569	0.545	1.519
	MAE	1.526	1.787	1.035	0.530	0.518	0.529	0.617	0.307	0.386	0.373	0.822
	MAPE	0.009	0.009	0.006	0.004	0.004	0.004	0.004	0.002	0.003	0.003	0.006
20Y	RMSE	2.322	3.059	1.487	0.999	0.976	0.941	1.147	0.555	0.592	0.561	1.528
	MAE	1.562	1.907	1.091	0.589	0.626	0.621	0.704	0.370	0.408	0.399	0.855
	MAPE	0.009	0.009	0.006	0.004	0.005	0.004	0.004	0.003	0.003	0.003	0.006
30Y	RMSE	2.346	3.060	1.492	1.024	1.019	0.977	1.183	0.601	0.618	0.587	1.540
	MAE	1.589	1.896	1.097	0.602	0.652	0.643	0.725	0.399	0.432	0.424	0.871
	MAPE	0.008	0.009	0.006	0.004	0.005	0.004	0.004	0.003	0.003	0.003	0.006

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.

Table F5: The performance of ARDL models for the banking sector trained on 2018/19 data sets.

Maturity	Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/21*
6M	RMSE	2.276	2.851	1.397	0.505	0.472	0.401	0.480	0.317	0.168	0.168	0.655
	MAE	1.500	1.586	0.962	0.312	0.278	0.211	0.252	0.106	0.078	0.074	0.301
	MAPE	0.018	0.022	0.020	0.012	0.013	0.008	0.008	0.004	0.003	0.002	0.007
1Y	RMSE	2.588	3.294	1.593	0.602	0.414	0.497	0.568	0.439	0.247	0.290	0.884
	MAE	1.807	1.902	1.107	0.388	0.271	0.285	0.327	0.155	0.106	0.111	0.412
	MAPE	0.018	0.023	0.019	0.012	0.010	0.009	0.009	0.005	0.003	0.003	0.009
2Y	RMSE	2.500	3.102	1.583	0.684	0.409	0.574	0.653	0.427	0.293	0.328	0.983
	MAE	1.714	1.797	1.111	0.446	0.282	0.356	0.397	0.179	0.138	0.158	0.484
	MAPE	0.015	0.017	0.013	0.009	0.007	0.008	0.007	0.004	0.003	0.003	0.008
3Y	RMSE	2.347	3.027	1.419	0.731	0.408	0.426	0.713	0.460	0.370	0.422	1.171
	MAE	1.558	1.731	0.989	0.427	0.271	0.270	0.392	0.198	0.192	0.216	0.562
	MAPE	0.011	0.013	0.009	0.006	0.005	0.005	0.005	0.003	0.003	0.004	0.008
4Y	RMSE	2.379	2.954	1.532	0.870	0.494	0.700	0.874	0.542	0.469	0.514	1.314
	MAE	1.600	1.772	1.093	0.549	0.354	0.478	0.528	0.252	0.254	0.280	0.654
	MAPE	0.011	0.012	0.008	0.006	0.005	0.007	0.006	0.003	0.004	0.004	0.008
5Y	RMSE	2.221	2.894	1.384	0.874	0.514	0.534	0.920	0.471	0.528	0.579	1.467
	MAE	1.451	1.706	0.979	0.506	0.366	0.356	0.504	0.242	0.301	0.344	0.737
	MAPE	0.009	0.010	0.007	0.005	0.004	0.004	0.005	0.003	0.003	0.004	0.007
7Y	RMSE	2.204	2.902	1.369	0.884	0.604	0.638	1.071	0.466	0.483	0.537	1.462
	MAE	1.414	1.723	0.966	0.480	0.411	0.405	0.583	0.270	0.292	0.343	0.765
	MAPE	0.008	0.009	0.006	0.004	0.004	0.004	0.004	0.002	0.003	0.003	0.006
10Y	RMSE	2.234	2.858	1.365	0.932	0.771	0.741	1.164	0.469	0.472	0.514	1.492
	MAE	1.444	1.731	0.971	0.519	0.502	0.469	0.653	0.294	0.295	0.352	0.790
	MAPE	0.008	0.009	0.005	0.004	0.004	0.004	0.004	0.002	0.002	0.003	0.006
20Y	RMSE	2.196	2.935	1.372	0.993	0.946	0.865	1.301	0.558	0.479	0.505	1.513
	MAE	1.411	1.807	0.996	0.548	0.595	0.529	0.741	0.351	0.310	0.370	0.832
	MAPE	0.008	0.009	0.005	0.004	0.004	0.004	0.005	0.003	0.002	0.003	0.006
30Y	RMSE	2.237	2.903	1.396	0.993	0.965	0.861	1.337	0.611	0.527	0.553	1.504
	MAE	1.427	1.741	1.010	0.542	0.603	0.500	0.729	0.369	0.344	0.406	0.824
	MAPE	0.008	0.008	0.005	0.003	0.004	0.003	0.004	0.003	0.003	0.003	0.006

*11 March 2020–10 March 2021

A grey cell indicates that the value is lower than for the benchmark.