

Simditahmin.com’s Nowcasting Performance for Turkish GDP Growth Rates

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1 Introduction

It is important for policy makers and market participants to know the current state of the economy in a timely fashion. However, gross domestic product (GDP) which is closely followed by all types of economic agents for assessing the current and future status of the economy is released with a significant delay. Especially, for the Turkish economy, GDP is released with a very long delay between 10 and 13 weeks after the end of the reference quarter due to lack of early or advance estimates. To mitigate with this problem, we nowcast¹ GDP using a dynamic factor model (DFM) and release predictions of GDP in a timely fashion through a website called Simditahmin.com. By releasing GDP nowcasts through a website, we believe that public may have a better opinion on the current state of the economy.

Modugno, Soybilgen and Yazgan (2016) develop a nowcasting model for predicting Turkish GDP growth rates. We show that our DFM outperforms naive forecasting models, bridge equations as well as professional forecasters for nowcasting Turkish GDP growth rates.² We test the nowcasting performance of our model between 2008:M01 and 2013:M12 in the paper. Following the paper, we began to release nowcasts through Simditahmin.com in 2014:M08.

Since 2014:M08, we nowcasted 8 reference quarters from 2014:Q3 to 2016:Q2. Out of these 8 reference quarters, we outperformed market expectations 5 times and market expectations

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¹Nowcasting can be defined as the prediction of variables released with a delay using more timely data. Furthermore, Bańbura et al. (2013) define nowcasting more generally as the prediction of the present, the very near future and the very recent past.

²DFMs are also shown to successfully nowcast GDPs of major economies in other studies such as: Dahlhaus et al. (2015) for Brazil, Russia, India, China and Mexico; Bańbura and Rńnstler (2011) and Angelini et al. (2011) for Euro Area; Barhoumi et al. (2010) for France; Giannone et al. (2008) for US and so forth.

had better forecast accuracy than Simditahmin.com 3 times.³ Furthermore, we nowcasted annual GDP 2 times for 2014 and 2015. Simditahmin.com beat market expectations for the 2014 annual GDP growth rate but the market outperform Simditahmin.com for the 2015 annual GDP growth rate. Our model's prediction were worse than market expectations both in 2015:Q4 and 2016:Q1, so we made some changes in our model. After the revisions, we predict the growth rate in 2016:Q2 correctly.

In Simditahmin.com, we nowcast both seasonally adjusted (SA) quarter over quarter (QoQ) GDP growth rates, non-SA (NSA) year over year (YoY) GDP growth rates and annual GDP growth rates. Our main focus is NSA YoY and annual GDP growth rates which draw more interest than SA QoQ growth rates.⁴ We also present one step ahead predictions of other variables in the website.

The remainder of this paper is as follows. Section 2 explains the dataset. Section 3 shows nowcasting performance of SimdiTahmin.com and section 4 concludes.

2 The dataset

We use a medium-scale dataset including 10 variables in SimdiTamin.com to nowcast Turkish GDP. Initially, our dataset is including 15 variables as shown in Modugno et al. (2016). However, our experience shows that especially financial variables are too volatile and this in turn causes our nowcasts to fluctuate erratically. Therefore, we drop all financial variables. Furthermore, we remove the CNBC-e's/Bloomberg HT's consumer confidence index and the non-agricultural unemployment rate to reduce the volatility of our nowcasts and improve nowcasts. Since 2016:M08, we use a dataset that includes only hard and soft data.⁵

By taking account of Turkish economy's structure, we determine 9 economic indicators to nowcast GDP. These are the industrial production index (IPI), automobile production, the import volume index, the export volume index, the Ercan Türkan Consumer Index, the

³We compare the last market expectation with last prediction released by Simditahmin.com

⁴The Turkish Statistical Agency (Turkstat) started to release NSA GDP since 2010 so market participants are still closely following NSA growth rates.

⁵Initially as in Modugno et al. (2016), we determine a single best parameter. As Kuzin et al. (2013) show that combining DFMs with various parameters using equal weights reduce instability problem of single models as well as improving forecast accuracy of individual models, we begin to compute nowcasts by combining all predictions produced by DFMs with 9 different parametrization using equal weights since 2016:M08.

total employment excluding agriculture, the capacity utilization rate (CUR), the Turkstat’s consumer confidence index (CCI), and the real sector confidence index (RSCI). Surveys are usually more timely than hard data and especially in early nowcasting horizons it is greatly beneficial for nowcasting output. However, hard data become more important for nowcasting in later periods. As hard data, we first include the IPI which is one of the most correlated indicator with GDP in our dataset and market practitioners usually rely on the IPI to predict GDP growth rates. Secondly, we use automobile production which is released generally more timely than the IPI and it is one of the key drivers of industrial production in Turkey. Thirdly, we include the import volume index and the Ercan Türkan Consumer Index that is based on credit and debit card data because growth in Turkey is usually based on domestic demand so consumption based indicators generally perform well for nowcasting GDP. As exports are one of the important components of GDP, we also include the export volume index. Finally, we use total employment excluding agriculture in our dataset.

In Simditahmin.com, we nowcast SA QoQ, NSA YoY and annual GDP growth rates. We compute nowcasts of annual GDP growth rates by using NSA YoY GDP growth rates as shown in Modugno et al. (2016). SA GDP figures have been releasing only since 2010 so Turkish public is more accustomed to NSA GDP figures. Therefore our main focus in Simditahmin.com is NSA YoY GDP and annual GDP growth rates.

We use NSA data to nowcast NSA YoY GDP growth rates and we use SA data, whenever applicable, to nowcast SA QoQ GDP growth rates. If data aren’t seasonally adjusted by any institution, we seasonally adjust those variables using Tramo-Seats. In the front page of Simditahmin.com, we are also presenting one step ahead level predictions of other variables in the NSA dataset. All data are retrieved from Turkish Data Manager automatically.

3 Nowcasting Performance of Simditahmin.com

Figures 1, 2, 3 and 4 show NSA YoY GDP growth rate nowcasts of SimdiTamin.com throughout successive periods, actual GDP growth rates and latest market expectations. Table 1 shows latest market expectations, latest nowcasts of Simditahmin.com and actual GDP growth rates. Furthermore, interactive figures are also present in Simditahmin.com’s website. Interactive figures allow us to understand how each news affect the nowcast revision. We don’t present nowcasts for SA YoY GDP growth rate nowcasts here, but they are present in the website.

As seen in the figure 1, Simditahmin.com began nowcasting the NSA YoY 2014:Q3 GDP growth rate in 2014:M08. The first nowcast for the 2014:Q3 GDP growth rate was 2.4% and nowcasts remained above 2% until the beginning of 2014:M09. With the release of CNBC-e/Bloomberg HT consumer confidence index, nowcasts for 2014:Q3 GDP growth rate dropped below 2%. With each successive news, nowcasts fell to 1%. Then, they fluctuated around 1% until the mid of 2014:M10. Afterwards with the release of labor market indicators and trade volume indices, nowcasts for the 2014:Q3 GDP growth rate increased sharply and began to fluctuate around 2% until the release of GDP data. The NSA YoY GDP Growth rate for 2014:Q3 was announced as 1.7% and its final nowcast by Simditahmin.com was 2.1%. Simditahmin.com significantly outperformed the latest market expectation which was 2.9%. Throughout the whole nowcast period, Simditahmin.com has powerful nowcast performance.

Simditahmin.com nowcasted the NSA YoY 2014:Q4 GDP growth rate between the beginning of 2014:M10 and 2015:M03. The first nowcast for the 2014:Q4 GDP growth rate was 2.5%. With the announcement of automobile production and labor market indicators in the mid of 2014:M10, the nowcast for the GDP growth rate jumped to 3.6%. It was the peak nowcast for the 2014:Q4 GDP growth rate and nowcasts began to fall slowly after that point. The final nowcast of Simditahmin.com was 2.8%. The NSA YoY GDP growth rate for 2014:Q4 was announced as 2.6% and the latest market expectation was 2.2%. The final nowcast was very close to the announced growth rate. As shown in the literature (e.g., Giannone et al., 2008; Bańbura and Rünstler, 2011; Bańbura and Modugno, 2014; Modugno et al., 2016) and clearly seen in the figure 1, timely data increases the forecast accuracy of DFMs.

Simditahmin.com doesn't have an alternate model for nowcasting annual GDP growth rates. The annual GDP growth rate is computed by using nowcasted NSA YoY GDP growth rates. Therefore, the evolution of the annual GDP growth rate is similar to its quarterly counterpart. For the 2014 annual GDP growth rate, Simditahmin.com beat market expectations slightly as seen in the table 1.

For the 2015:Q1 GDP growth rate, SimdiTahmin's first nowcast was 2.4% which was very close to the announced growth rate of 2.3% as shown in the figure 2. Similar to previous reference periods, automobile production caused nowcasts to jump initially. Then, nowcasts began to fell with the release of the IPI in 2015:M03 and the final nowcast for the reference period was 2.6% which was much better than the latest market expectation of 1.6%. However, Simditahmin.com performed significantly worse than the market expectation for 2015:Q2.

The first nowcast of Simditahmin.com was 3.5% but with each news, nowcasts deteriorated and the final nowcast was 2.4%. The 2015:Q2 GDP growth rate was announced as 3.8% and the latest market expectation was 3.5%.

Except a small period, Simditahmin's nowcasts for 2015:Q3 were pretty stable. The first nowcast for this reference period was 2.7% and the last nowcast was 2.9%. The GDP growth rate for 2014:Q3 was released as 4.0% and Simditahmin.com performed slightly better than the market expectation which was 2.7% but both of them were below the realized growth rate.

The growth rate for 2015:Q4 was announced unexpectedly high. It was 5.7%. Nowcasts of Simditahmin.com were greatly below the announced growth rate throughout the nowcast period. The peak nowcast of all period was 4.1% and the last nowcast was 3.1%. The latest market expectation was 4.8% which was significantly better than the Simditahmin.com's last nowcast. As Simditahmin.com's last prediction was significantly below the released GDP growth rate, the Simditahmin.com's annual prediction for 2015 was also worse than the latest market expectation as a consequence.

The figure 3 shows that Simditahmin.com began nowcasting the NSA YoY 2016:Q1 GDP growth rate in the end of 2015:M12. The first nowcast was 5.0%. In the first quarter of 2016, released news usually reduced nowcasts and they fell as low as 3.0%. In the second quarter of 2016, positive news began to pile up and the last nowcast was 4.1% which was still below both the latest market expectation of 4.4% and the released GDP growth rate of 4.8%. Finally, Simditahmin.com nowcasted 2016:Q2 growth rate from the end of 2016:M3 until the release date of GDP data as seen in the figure 4. Nowcasts of Simditahmin.com was consistently higher than the realized GDP growth rate until the last day. However with the release of the IPI, which was below the expectations, the nowcast of SimdiTahmin reduced to 3.1% and the GDP growth rate for this period also announced as 3.1%.

Overall, figures show that Simditahmin.com's forecast performance is strong even though there are some periods at which DFMs perform very poorly. As seen in table 1 out of 10 periods, Simditahmin.com performed better than market expectations 6 times. Given that Ang et al. (2007) argue that professional forecasters perform better model based forecasts, the performance of Simditahmin.com is pretty impressive.

4 Conclusion

In this paper, we present the dataset used for nowcasting SA QoQ GDP growth rates, NSA YoY GDP growth rates and annual GDP growth rates. Then, we analyze the nowcasting performance of Simditahmin.com in detail between 2014:Q3 and 2016:Q2. Our main focus in Simditahmin.com is NSA YoY GDP growth rates and annual GDP growth rates so we don't present results for SA QoQ GDP growth rates in this study. However, they can be found in Simditahmin.com. Between this period, Simditahmin.com nowcasted 8 NSA YoY GDP growth rates and 2 annual GDP growth rates.

Our results show that the Simditahmin.com's forecasting performance is usually high and nowcasts of Simditahmin.com are close to the realized GDP growth rates in general. For nowcasting NSA YoY GDP growth rates, the last nowcast of Simditahmin.com beat the last market expectation 5 times out of 8 reference periods. For annual GDP growth rates, Simditahmin.com beat the market in 2014 and the last market expectation performed better than the nowcast of Simditahmin.com for the 2015 annual GDP growth rate. This shows that the Simditahmin.com's model performs better than professional forecasters up to this point. Furthermore, the forecasting performance of Simditahmin.com increases with each successive news and this show the power of timely information.

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Tables and Figures

Table 1: Last nowcasts of Simditahmin.com, last nowcasts of professional forecasters and actual data for the reference period

Reference Periods	Market Expectation	Simditahmin.com	Actual
2014:Q3	2.9	2.1	1.7
2014:Q4	2.2	2.8	2.6
2014	2.7	2.8	2.9
2015:Q1	1.6	2.6	2.3
2015:Q2	3.5	2.4	3.8
2015:Q3	2.7	2.9	4
2015:Q4	4.8	3.1	5.7
2015	3.8	3.4	4
2016:Q1	4.4	4.1	4.8
2016:Q2	3.3	3.1	3.1

Figure 1: Nowcasts of Simditahmin.com, Latest Market Expectations and Actual GDP Growth Rates for 2014:Q3, 2014:Q4 and 2014

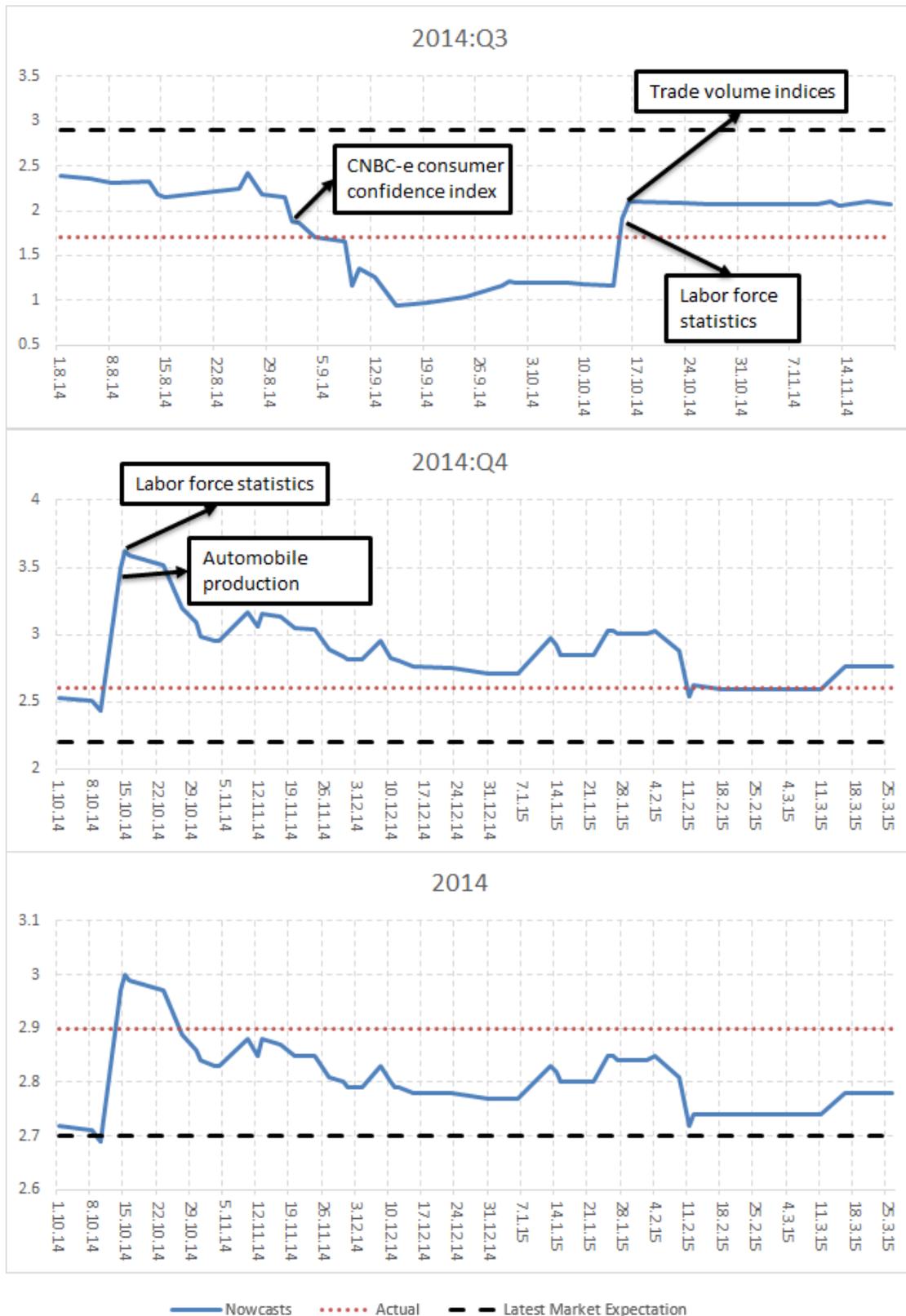


Figure 2: Nowcasts of Simditahmin.com, Latest Market Expectations and Actual GDP Growth Rates for 2015:Q1, 2015:Q2 and 2015:Q3

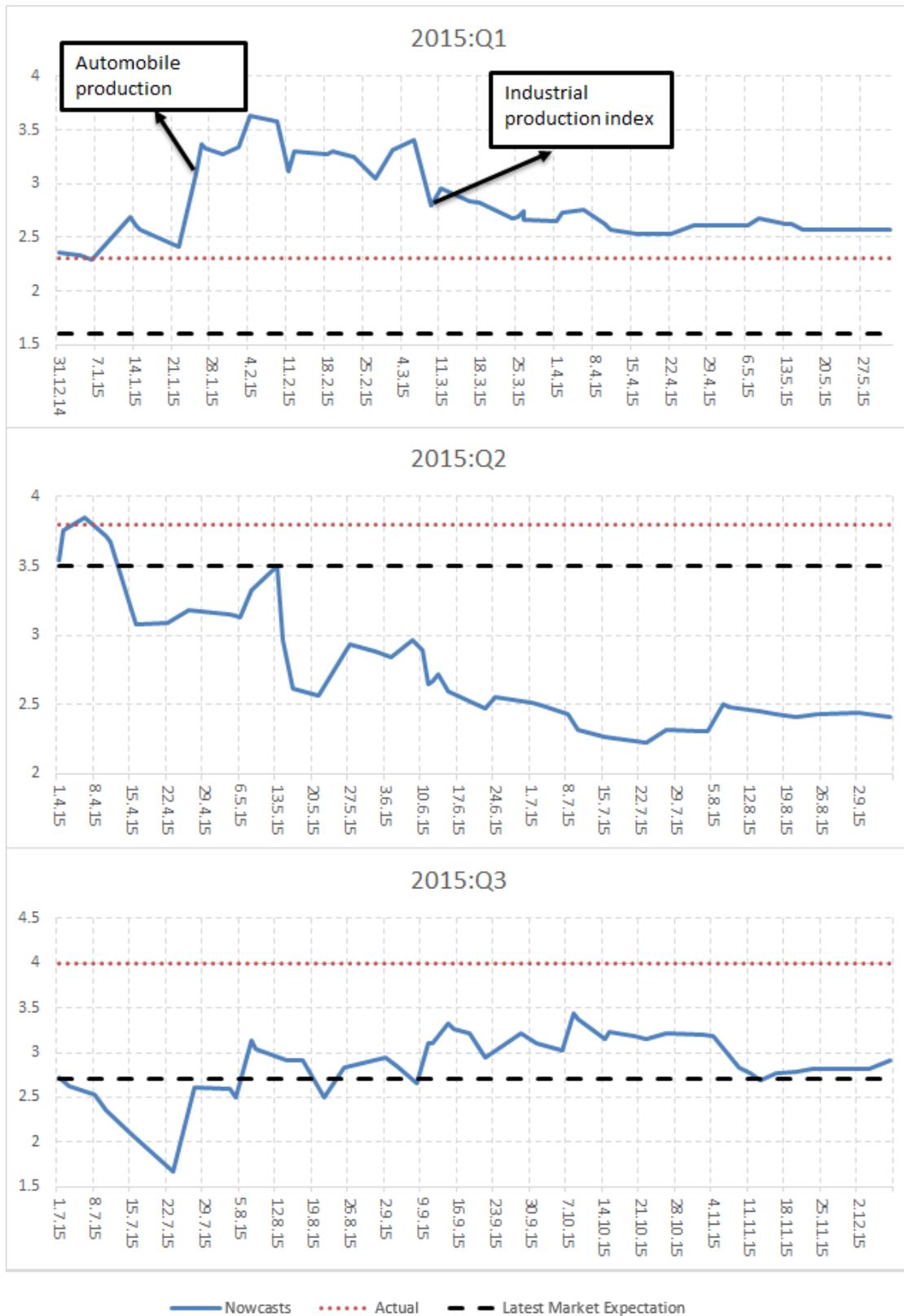


Figure 3: Nowcasts of Simditahmin.com, Latest Market Expectations and Actual GDP Growth Rates for 2015:Q4, 2015 and 2016:Q1

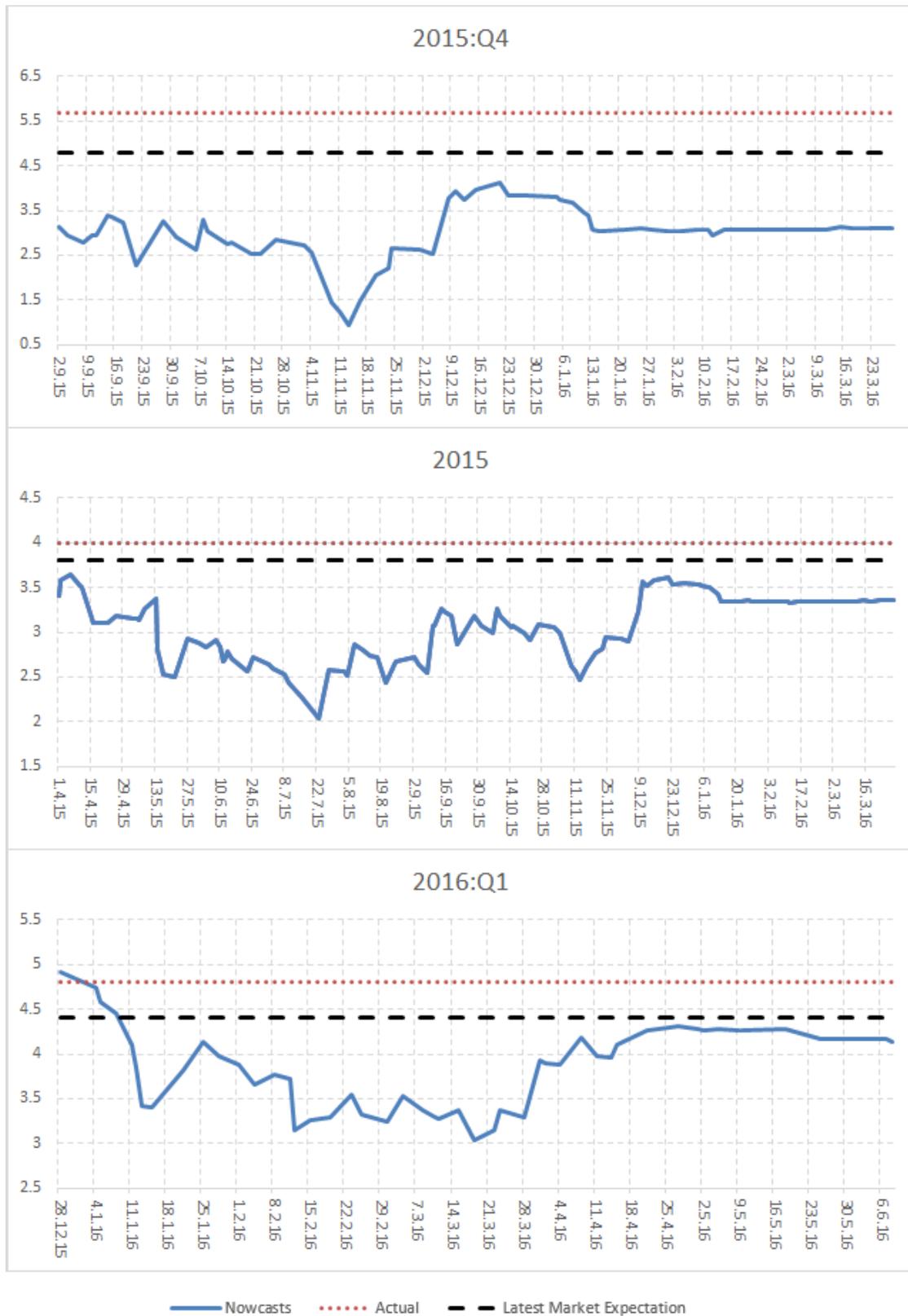


Figure 4: Nowcasts of Simditahmin.com, Latest Market Expectations and Actual GDP Growth Rates for 2016:Q2

