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AMAZING REVIZIONS IN GROWTH RATES

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Executive Summary

TurkStat started to estimate national accounts using a new method (chained volume index) and new data sets (especially firm tax records) from third quarter of 2016 that caused some controversies. Aside from the problems revealed by these controversies it seems that an additional problem emerged nowadays. We are witnessing large and sometimes opposite revisions in the annually and quarterly growth estimates released by the TurkStat. It is a common practice to make some revisions in each new statement after the first estimate of GDP. In order to release growth estimates as early as possible the whole collection of the related data is not considered as a necessity. Once the whole data is completed, the estimates announced previously are revised by national statistical institutes. However, these revisions remain within reasonable limits and are damped after a certain period of time.

However, when press releases by TurkStat on five quarters between third quarter of 2016 and third quarter of 2017 are examined, it is observed that the revisions made by TurkStat in the national accounts might hardly be considered as reasonable since revisions, often large and even in opposite directions, follow each other, and the expected damping does not occur in the repeated revisions. It is easy to admit that these revisions point to an exceptional case when these revisions are compared with the revisions made by TurkStat in old series and with the practices of the statistical institutes of Germany and France. We think that large and opposite revisions in past growth estimates create problems in understanding the dynamics of Turkish economy and make difficult to forecast future growth rates.

Introduction

Turkish Statistical Institute (TurkStat) started to use a new methodology to calculate GDP growth since third quarter of 2016 in order to comply with the standards of the System of National Accounts (SNA-2008) and European System of Accounts (ESA-2010). The first

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figures of the new national accounts serial was publicly announced by TurkStat on December 12, 2016. Quite large differences regarding definitions, levels and ratios between old and new series have been noted. Betam has published a research brief about these differences.[1]

Launching the new national accounts serial TurkStat had warned that from now on revisions in growth rates would be larger and more frequently. To be frank, we could not understand what that meant at that time.

With the new methodology, GDP estimates would be made using directly annual data. In the old series, TurkStat was making quarterly GDP estimates and was summing them in order to have annual GDP. Given this practice we thought that quarterly estimates would be revised after the annual GDP growth rate is announced. Annual data and quarterly data were expected to be harmonized at the end of the year. What was unexpected and surprising, however, is that large revisions and even in opposite directions would be done over and over again. We do not know how much of these revisions result from information update and from methodological framework. We think that TurkStat did not inform the public sufficiently.

It is also worth noting that, since GDP forecasting models use recent past data at some extent, revisions of past growth rates which have been spreading over time and showing major changes, have added additional difficulties to forecasting efforts.

Revisions in the new series

We have examined revisions made in the last five press releases of TurkStat from 2016Q3 to 2017Q3. Growth estimates from 2015Q1 can be seen in these press releases. These estimates may be revised by TurkStat in successive press releases. The fact is that number of growth estimates which are not revised or revised marginally is very rare. Moreover, there is no quarterly growth estimate which is not revised.

The revisions of growth estimates are not unexpected although TurkStat announces quarterly growth estimates with a delay of 70 days. All national statistical institutes make revisions but those revisions are quite limited. The examples for Germany and France can be examined below. However, TurkStat makes frequent and large revisions, even in opposite directions. It is normal to make revisions with additional information if it reveals over or under estimations. However, when revisions are repeated every quarter and deviates largely from the previous ones, this indicates that there is rather a serious problem. In this case, it can be claimed that there are either difficulties in accessing to additional information or

[1]Bakış, Ozan. Eski ve Yeni GSYH Serileri Arasındaki Farklar ve Nedenleri. Betam Araştırma Notu, 16/203
http://betam.bahcesehir.edu.tr/wp-content/uploads/2016/12/ArastirmaNotu203-1.pdf

measurement techniques are problematic. While these frequent and conflicting revisions question the TurkStat's dominance on the new methodology, it also challenges economists who make growth forecasts.

Table 1A: Revisions in the annually growth estimates (New Series)

Annually Growth (Growth rates compared to same quarter of previous year)		Press Releases Period					Last estimate
		2016Q3	2016Q4	2017Q1	2017Q2	2017Q3	2017Q3
2015	Q1	3.5	0.0	0.0	0.1	0.0	3.6
	Q2	7.2	0.0	0.0	0.0	0.0	7.2
	Q3	6.3	0.1	0.2	-0.1	0.2	6.7
	Q4	6.4	-0.2	-0.3	0.2	0.0	6.0
2016	Q1	4.1	-0.1	0.0	0.3	0.1	4.4
	Q2	3.8	0.6	0.1	-0.4	0.6	4.7
	Q3	-0.2	0.9	-0.4	0.5	-0.9	-0.1
	Q4		3.5	0.0	0.7	0.0	4.2
2017	Q1			4.7	0.2	0.5	5.4
	Q2				6.5	-0.1	6.4
	Q3					9.6	9.6

First Estimates (earliest number press release in question)
Differences between sequential press releases (Magnitude and direction of the revision)
Last estimates

Note: Summing of first estimation and revisions may not equal to last estimation due to rounding.

Table 1B: Revisions in the quarterly growth estimates (New Series)

Quarterly Growth (Growth rates compared to previous quarter)		Press Releases Period					Last estimate
		2016Q3	2016Q4	2017Q1	2017Q2	2017Q3	2017Q3
2015	Q1	1.9	0.2	-0.2	0.1	-0.1	1.9
	Q2	1.4	0.1	0.1	0.1	-0.3	1.5
	Q3	1.2	0.2	-0.3	-0.1	0.3	1.3
	Q4	1.9	-0.7	-0.2	0.1	0.1	1.0
2016	Q1	-0.4	0.3	0.4	0.4	-0.2	0.6
	Q2	1.1	0.7	-0.5	-0.6	0.5	1.2
	Q3	-2.7	0.6	0.5	0.4	-1.4	-2.6
	Q4		3.8	-0.4	0.5	1.0	4.9
2017	Q1			1.4	-0.1	0.4	1.6
	Q2				2.1	0.1	2.2
	Q3					1.2	1.2

First Estimates (earliest number press release in question)
Differences between sequential press releases (Magnitude and direction of the revision)
Last estimates

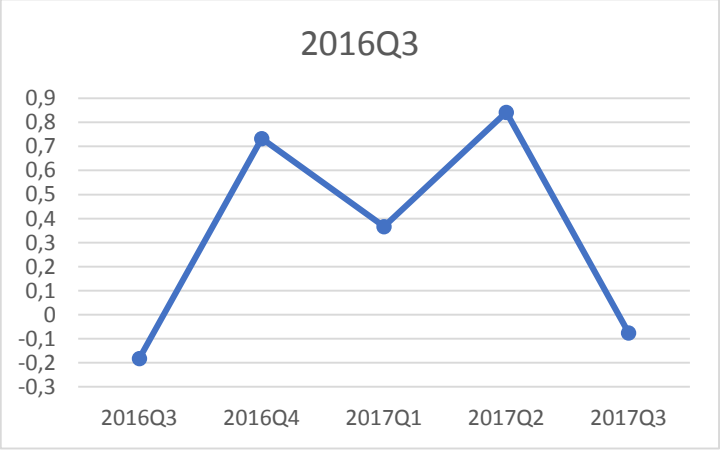
Note: Summing of first estimation and revisions may not equal to last estimation due to rounding.

Table 1A and 1B show growth rates estimated with new series in last five press releases by TurkStat. While Table 1A shows growth rates compared to same quarter of previous year and revisions, Table 1B shows growth rates compared to previous quarter and revisions.

The columns of Table 1A and Table 1B indicate TurkStat's press release periods and rows indicate quarters in which the growth estimate was announced for the first time then revisions of it. The yellow cells show first growth figures for quarters in question, the grey cells show revisions made between sequential periods and the green cells show the latest growth figures. For example, the annual growth estimate for first quarter of 2016 in the press release period of third quarter of 2016 was 4.1 percent. In the next press release, 2016Q4, -0.1 percentage point revision had made. Any revision was not made in 2017Q1 but in the following two press releases, 0.3 and 0.1 percentage point revisions have been made and finally in 2017Q3 press release, annual growth rate for 2016Q1 announced 4.4 percent as last estimate.

Table 1A and Table 1B is expressed graphically in Annex Graphs 1A and 1B. Upward or downward minor revisions in growth estimates are common while the convergence of revised figures into a certain value is preferable. However, both non-converge and inconsistent revisions in terms of magnitude and direction has to be interrogated. For example, revisions for the annually growth of 2016Q3 which is estimated using new methodology are not only large but also in opposite directions. (Figure 1).

Figure 1: Annually growth rates of 2016Q3 in the press releases

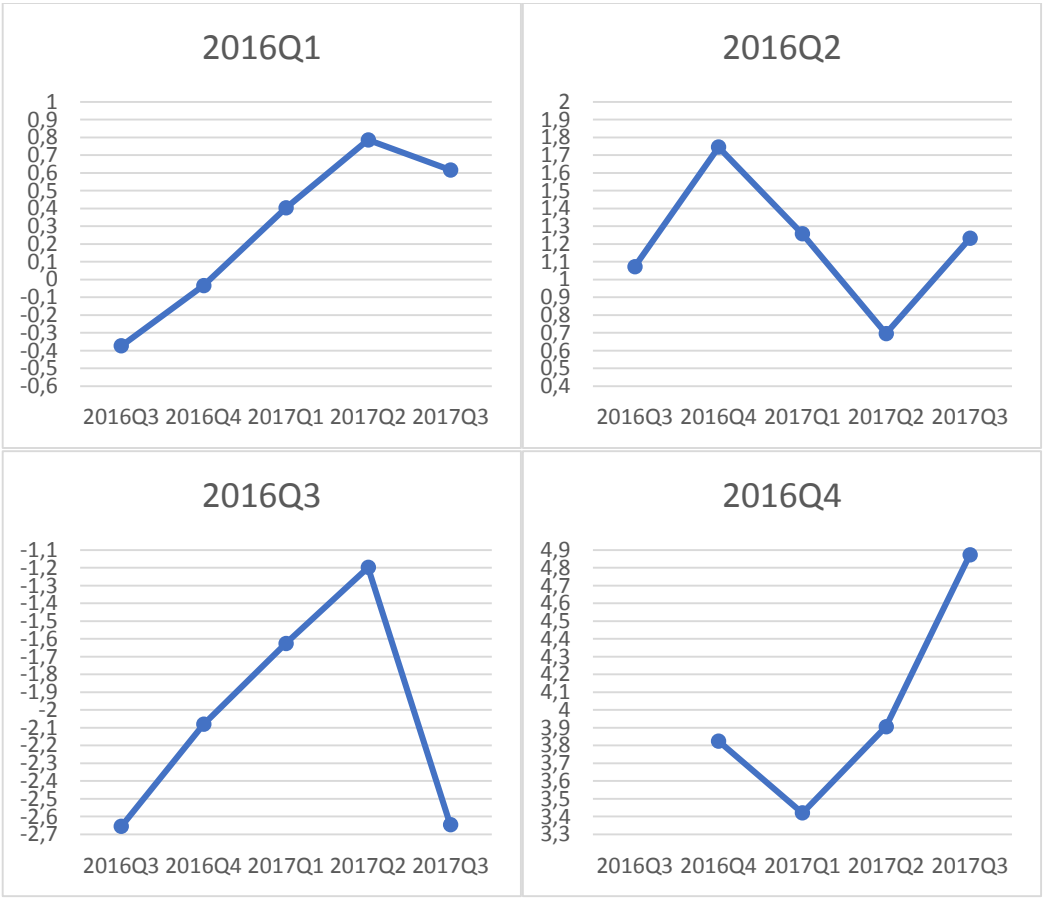


Calendar-day adjusted chain volume index annual growth rate of third quarter of 2016 was announced -0.2 percent in press release (2016Q3) published in December 12, 2016. However, this figure has been upward revised to 0.7 percent following an 0.9 percentage points increase in the following press release (2016Q4) published in March 31, 2017. Then, in the

press release (2017Q1) published in June 12, 2017, 0.4 percentage point downward revision followed decreasing the yearly growth rate to 0.3 percent. Interestingly, with a 0.5 percentage points upward revision, the annual growth rate of 2016Q3 has been revised to 0.8 percent in the press release (2017Q2) published in September 11, 2017. Finally, in the last press release (2017Q3) published in December 11, 2017, the annual growth rate of 2016Q3 was downwardly revised to -0.1 percent which is very close to its starting value one year ago.

When we look at the quarterly growth, revisions they appear even bigger and more volatile (Annex Graph 1B). We observe that all the quarter-on-quarter growth estimates of 2016 were revised incessantly. The quarterly growth of 2016Q3 were upwardly revised in the following three press releases from the first one, however in the last press release it has been downwardly revised to its first estimate (Figure 2).

Figure 2: Quarterly growth rates of 2016Q1-Q4 in the press releases



Revisions in the old series

Were these revision movements observed in the new series also existing in the old series? To answer this question we looked at the revisions of the five press releases that were published before the third quarter of 2016, when press releases with new series began. All annually and quarterly growth estimates and revisions from first quarter of 2012 (2012Q1) to second quarter of 2016 (2016Q2) can be seen in these press releases (Table 2A and Table 2A; Tables start from 2014). As above, we can look at the growth estimates on the graphs and evaluate revisions' directions and magnitudes. (Annex Graph 2A and 2B)

It can be clearly seen that, growth rate revisions in the old GDP series are limited and more consistent than new ones. The difference is very clear when comparing Tables 1A and 1B with Tables 2A and 2B. In the old series, annual growth is either not revised or is usually revised by 0,1 percentage point (exceptionally 0.4 percentage points). Even if more revisions are made for quarterly growths in old series, revisions are often limited to 0.1 or 0.2 percentage points (exceptionally 0.4 or 0.5). As we evidenced above revisions made in new series are larger and very frequent while revisions made in the old series are both limited and less frequent.

Table 2A: Revisions in the annually growth estimates (Old Series)

Annually Growth (Growth rates compared to same quarter of previous year)		Press Releases Period					Last estimate
		2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q2
2014	Q1	5.0	0.0	0.1	0.0	0.0	5.2
	Q2	2.6	0.0	0.0	-0.1	0.0	2.5
	Q3	1.8	0.0	0.0	0.0	0.0	1.8
	Q4	2.6	0.0	0.3	0.1	0.0	3.0
2015	Q1	2.6	0.0	-0.1	0.0	0.0	2.5
	Q2	3.8	0.0	-0.1	0.0	0.0	3.7
	Q3		5.4	-0.1	-0.4	0.0	4.9
	Q4			4.1	0.4	0.0	4.5
2016	Q1				4.5	-0.1	4.4
	Q2					3.0	3.0

First Estimates (earliest number press release in question)
Differences between sequential press releases (Magnitude and direction of the revision)
Last estimates

Note: Summing of first estimation and revisions may not equal to last estimation due to rounding.

Table 2B: Revisions in the quarterly growth estimates (Old Series)

Quarterly Growth (Growth rates compared to previous quarter)		Press Releases Period					Last estimate
		2015Q2	2015Q3	2015Q4	2016Q1	2016Q2	2016Q2
2014	Q1	1.5	0.0	0.1	0.1	0.0	1.6
	Q2	-0.2	0.0	-0.1	0.1	0.2	0.0
	Q3	0.4	-0.1	-0.1	0.2	-0.1	0.3
	Q4	1.0	0.1	0.3	-0.2	0.0	1.2
2015	Q1	1.5	0.1	-0.4	0.0	-0.1	1.1
	Q2	1.3	0.0	-0.1	-0.1	0.2	1.4
	Q3		1.3	-0.1	-0.1	-0.1	1.0
	Q4			0.7	0.5	-0.1	1.1
2016	Q1				0.8	-0.2	0.7
	Q2					0.3	0.3

First Estimates (earliest number press release in question)
Differences between sequential press releases (Magnitude and direction of the revision)
Last estimates

Note: Summing of first estimation and revisions may not equal to last estimation due to rounding.

German and French examples

Do we observe similar revisions to those made by TurkStat on growth estimates among the national statistical institutes of developed countries? We looked at the revision practices of the statistical institutes of Germany and France for the five periods between 2016Q3 and 2017Q3 which we analyzed above for Turkey.[2] In the case of Germany, the biggest annual growth revision made between two consecutive press releases is 0.3 percentage points. Moreover, there are no revisions in opposite directions between any two consecutive periods (Annex Graph 3A). Similarly, in the case of France, it is clear that quarterly growth revisions made by France's official statistics institute for the same period are much more limited and less volatile than those of TurkStat (Additional Graph 3A).

Conclusion

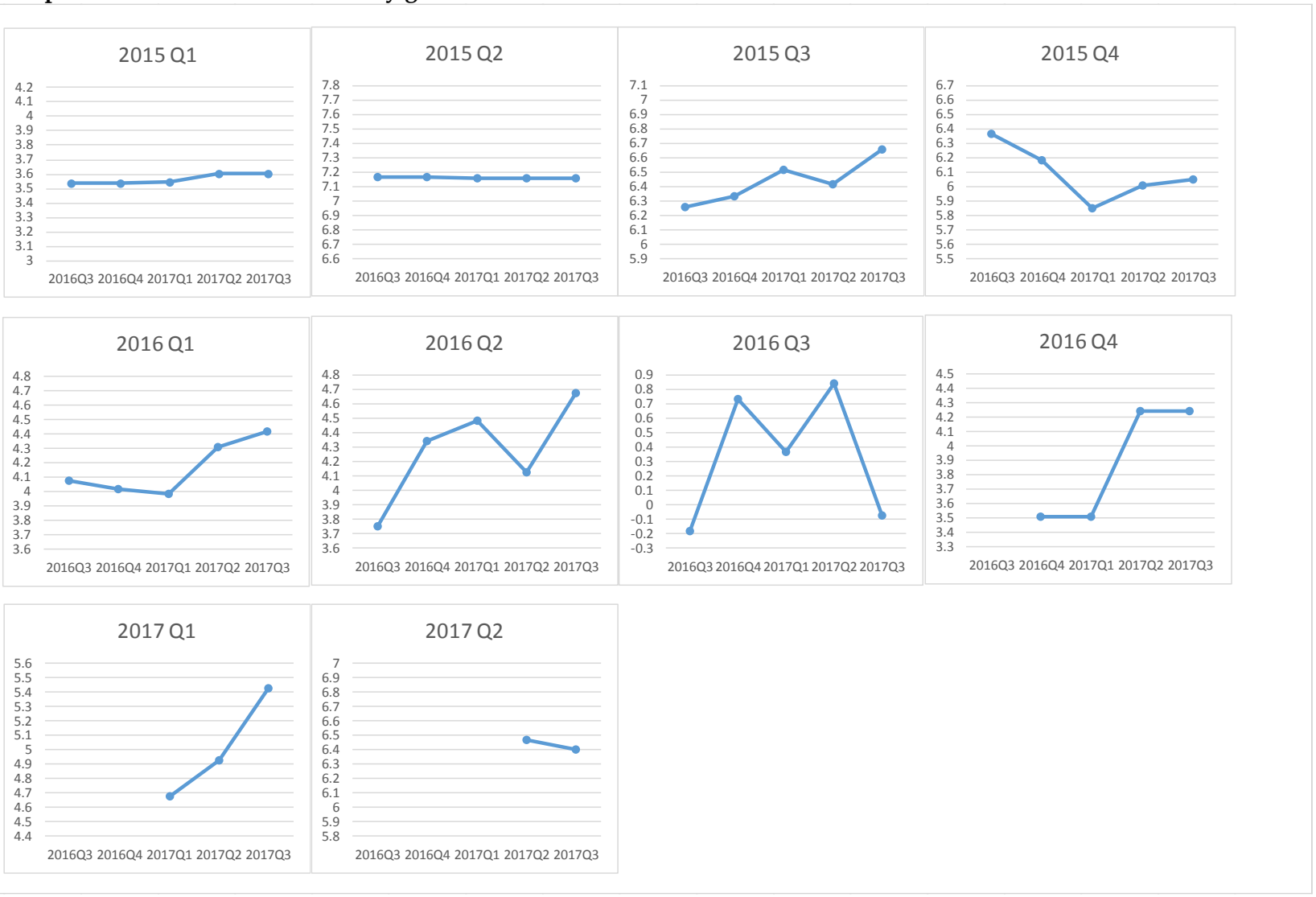
Revisions in growth estimates might be unavoidable due to additional data or some adjustments. Logically, the need for revision may arise when new information related to previous quarters becomes available. Revisions might also be repeated more than once. Nevertheless, if additional information says, at best, the growth rate has been largely over or under estimated and, at worst, the opposite direction of the last estimate, the credibility of

[2] https://www.destatis.de/ and https://www.insee.fr/ [Date accessed 01.25.2018]

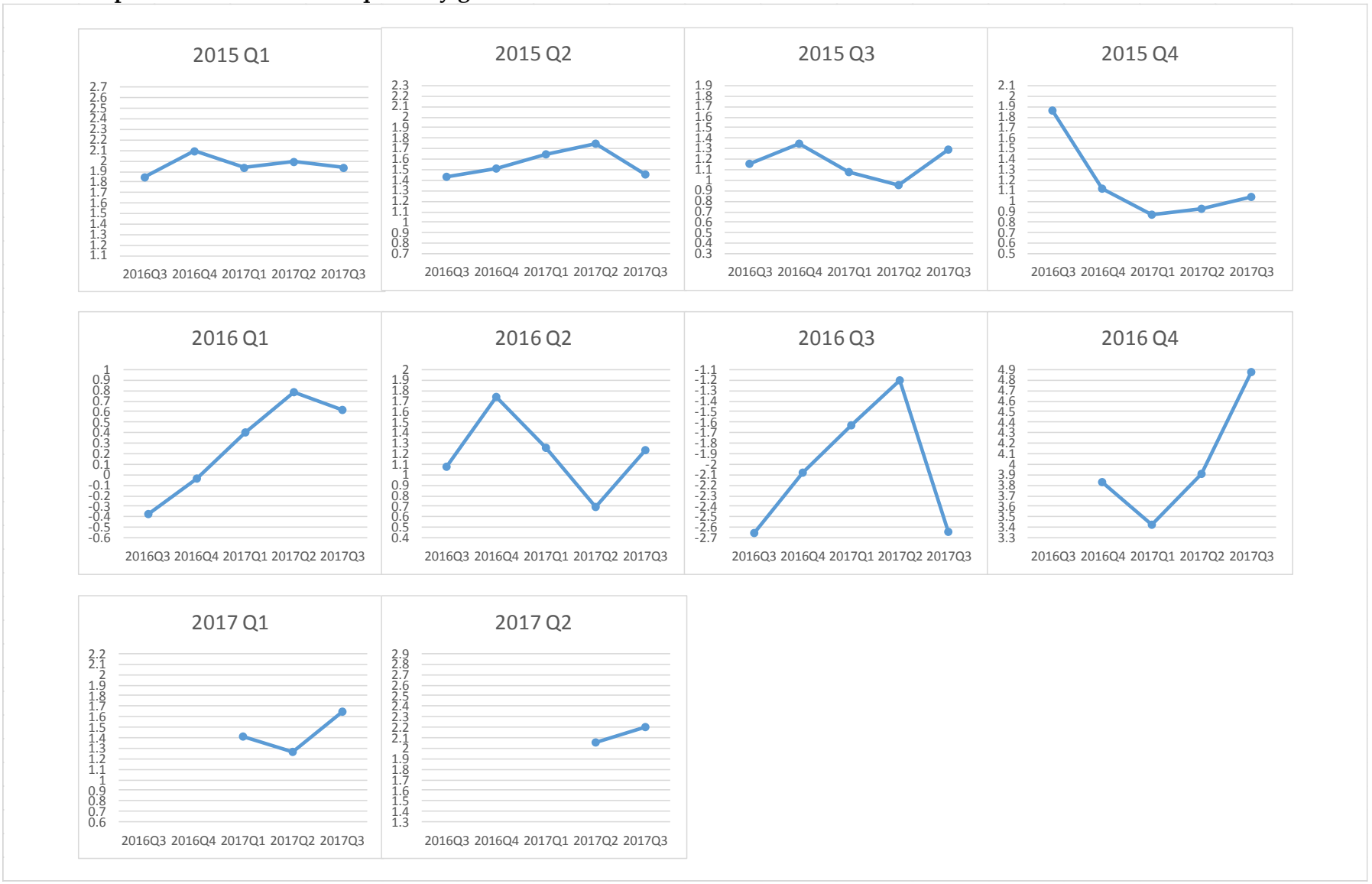
the growth estimates becomes questionable. If the frequency and size of growth revisions continue this way, the belief about "current rates will anyway be revised tremendously upwards or downwards (maybe both) in the coming press releases" will be settled among economic agents. For a statistical institution, this is probably the last desirable situation.

Sizable and inconsistent revisions that invalidate existing estimates make growth analysis and forecasts difficult as they are based on these estimates. In order to maintain credibility and to provide a stable framework for growth analysis, TurkStat should at least make a public statement for every important revision it makes. Sharing openly the reasons leading to these revisions with public will certainly increase the credibility of TurkStat.

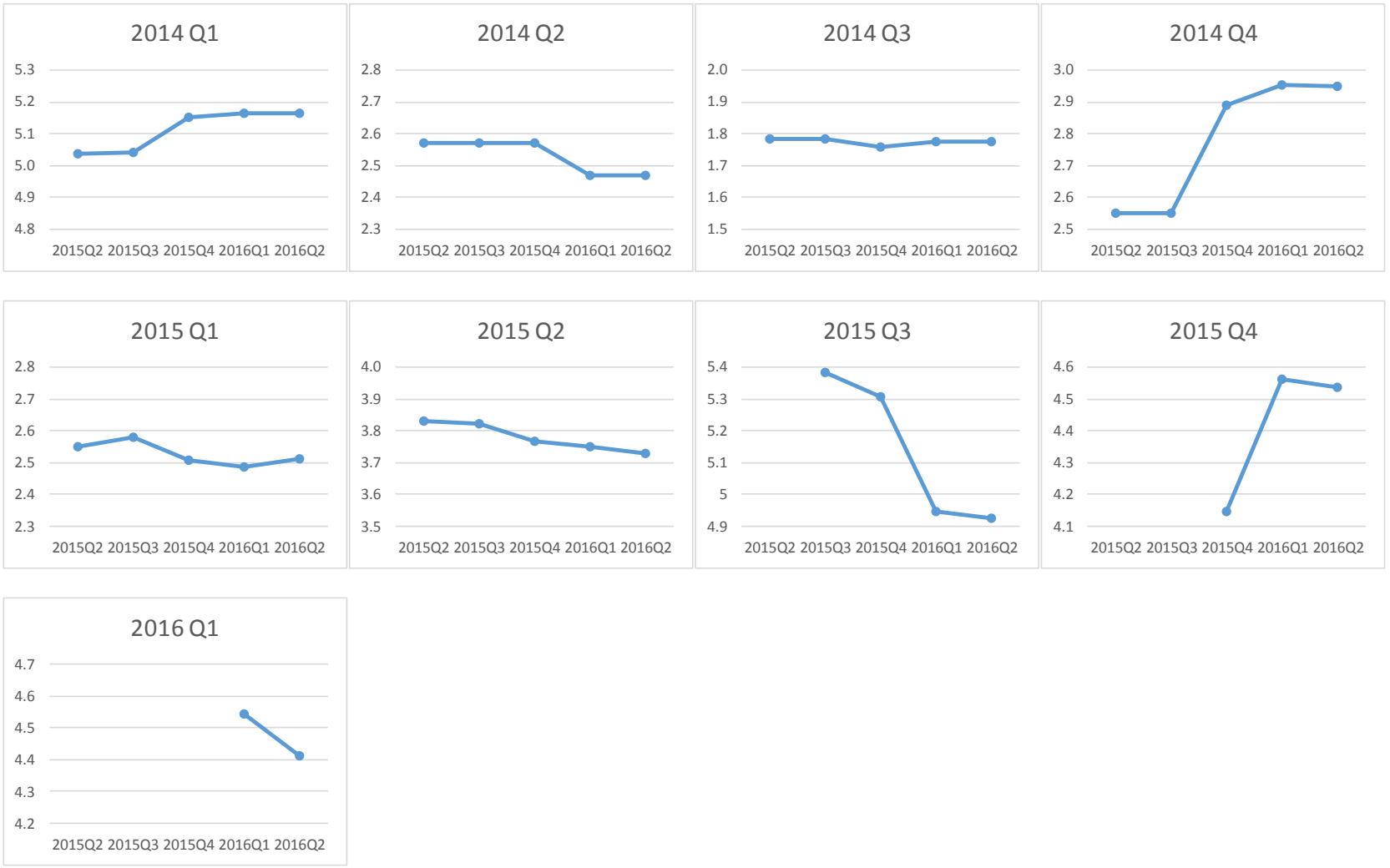
Annex Graph 1A: Revisions in the annually growth estimates (New Series)



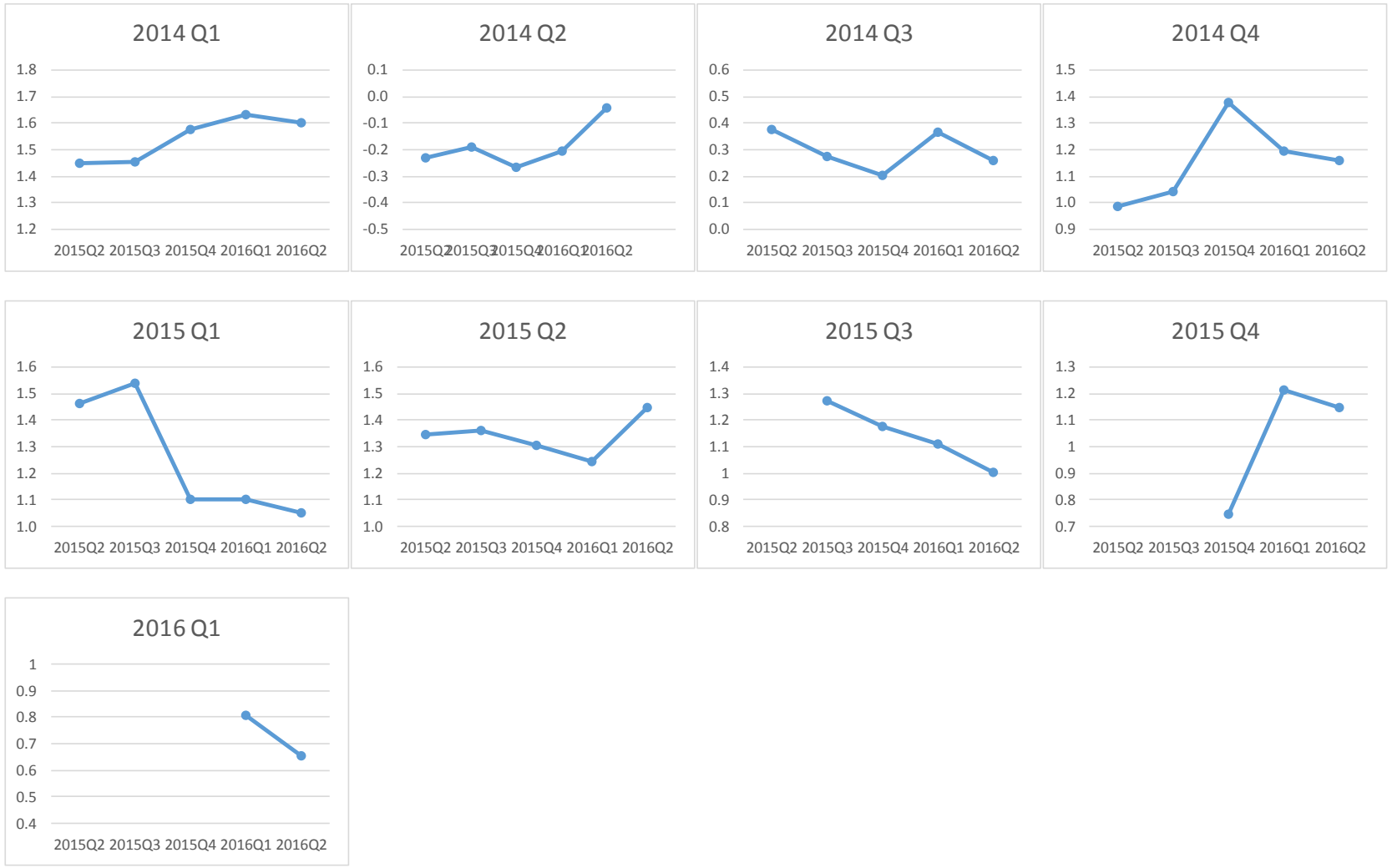
Annex Graph 1B: Revisions in the quarterly growth estimates (New Series)



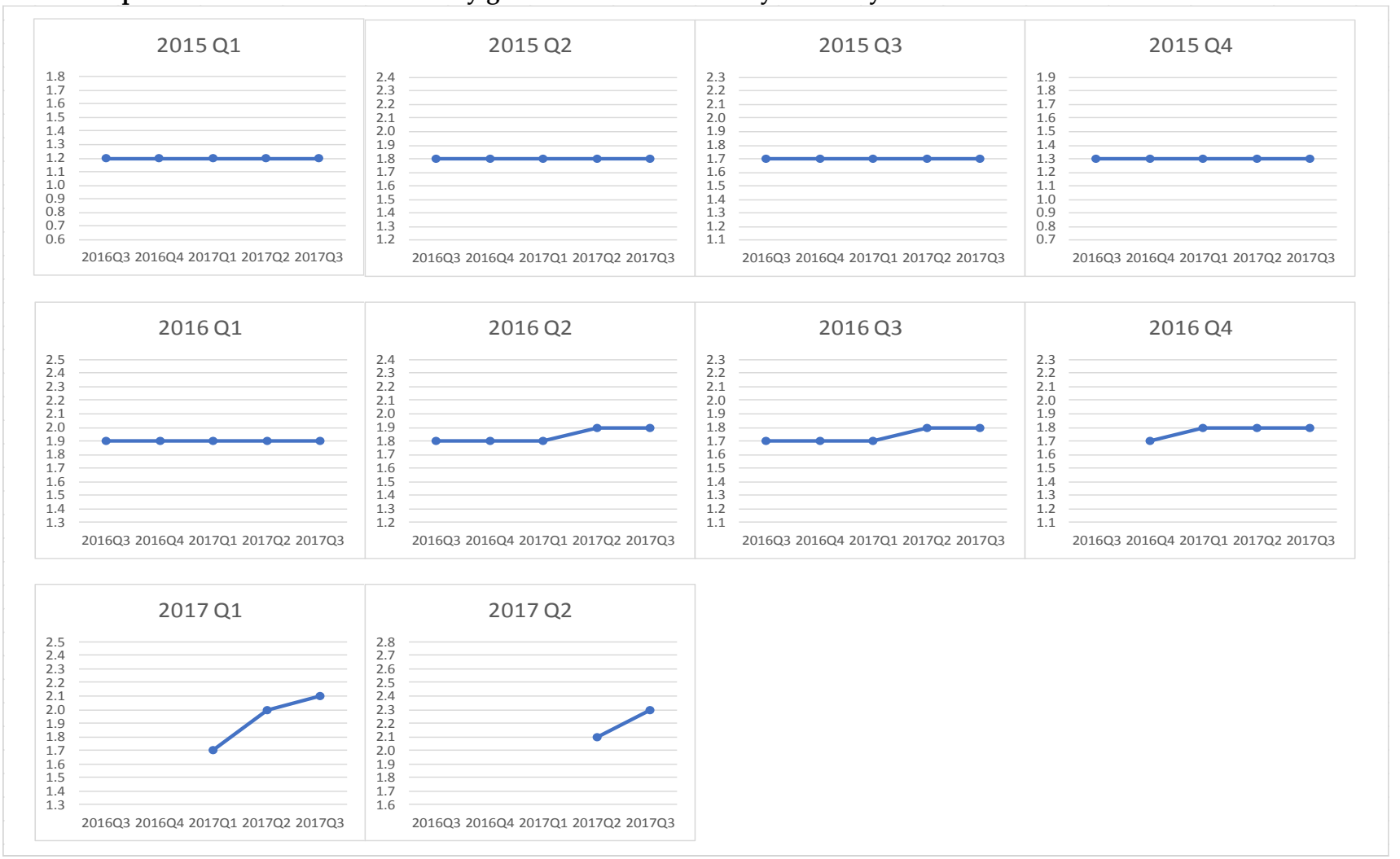
Annex Graph 2A: Revisions in the annually growth estimates (Old Series)



Annex Graph 2B: Revisions in the annually growth estimates (Old Series)

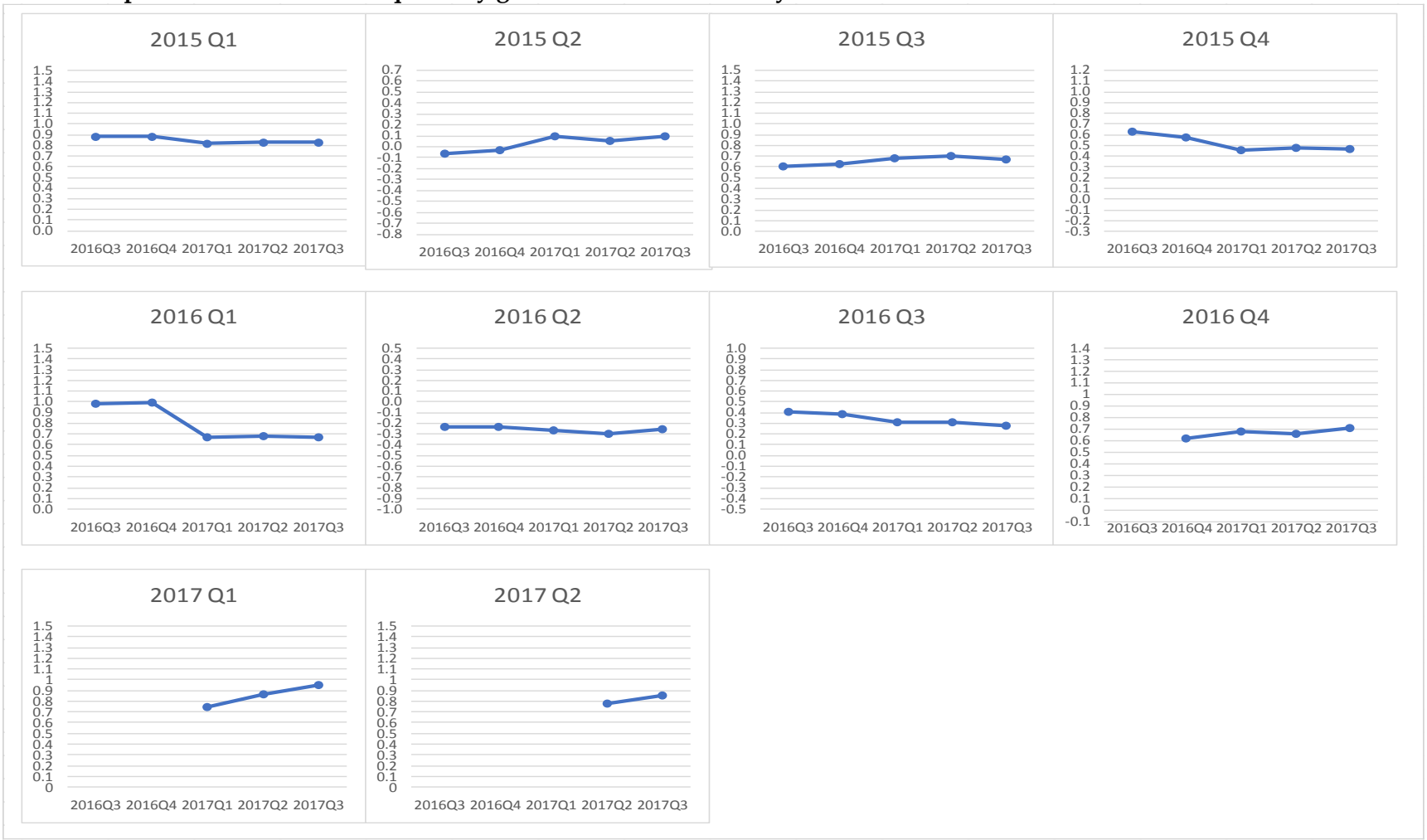


Annex Graph 3A: Revisions in the annually growth estimates made by Germany's official statistical institute[3]



[3] To see easily comparison of the size of revisions, graphs for annually growth revisions of Turkey and Germany are plotted in same range (1.2).

Annex Graph 3B: Revisions in the quarterly growth estimates made by France's official statistical institute [4]



[4] To see easily comparison of the size of revisions, graphs for quarterly growth revisions of Turkey and France are plotted in same range (1.5).