
Determining the Business Cycle of Turkey

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ABSTRACT

In this study, it is aimed to examine the basic characteristics of the cyclical fluctuations in the Turkish economy and to determine the business cycles (contraction and expansion). By using the Bry and Boschan (1971) algorithm, the turning points in the business cycles were obtained. In order to determine the business cycle, Turkey's monthly Industrial Production Index, monthly and quarterly Gross Domestic Product data were examined and analyzed. As a result of the analysis, the average business cycle for the Turkish economy was calculated as 5 years. It has been observed that this result is compatible with the related studies in the literature and the cycle characteristics of developing countries. Peak and trough points were obtained with the algorithm named "Harding-Pagan (Quarterly Bry-Boschan) Business Cycle Dating Procedure" in the BCDating R package released in 2019.

Keywords: *business cycle, Bry-Boschan procedure, economic crises, Tramo-Seats, temporal disaggregation, national accounts, industrial production*

JEL codes: *C22, E32 and P44*

1. INTRODUCTION

Business cycles can be expressed as repetitive and fluctuating movements in a country's economic activities. "The business cycle is the periodic but irregular up-and-down movements in economic activity measured by fluctuations in real GDP and other macroeconomic variables." (Parkin and Bade, 2015). The business cycle is critical to policymakers as it gives information about the state of the economy. Policymakers determine policies that will stabilize the fluctuations in the economy. Therefore, the business cycle analysis is an essential indicator for monetary policy. (Luvsannyam et al., 2019)

There are two primary approaches used to define the economy's cyclical behavior: classical and growth (or deviation) cycle approaches. The classical business cycles approach defines cycles in terms of absolute declines and increases of macroeconomic time series (Schumpeter, 1939). On the contrary, growth business cycles approach, turning points are

defined concerning deviations of the rate of growth of macroeconomic time series from their long-term trend component (Kydland and Prescott, 1990).

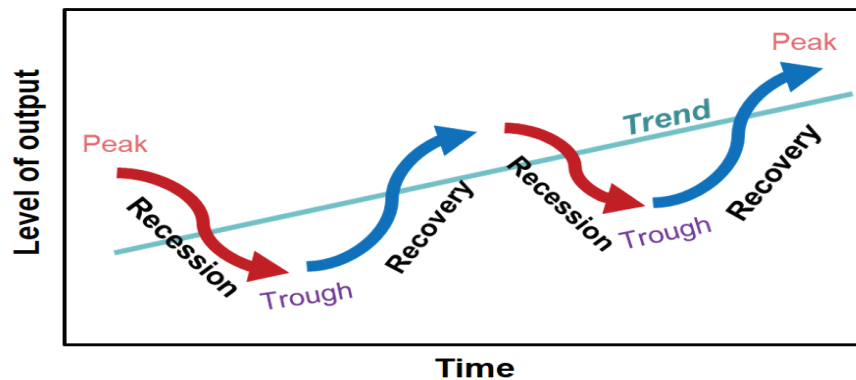
The essential reference to the business cycle is the turning points determined by NBER (National Bureau of Economic Research) for the US. Aims of the NBER dating process are to find large fluctuations, determine maximum and minimum points, and capture specific dates as a turning point. Nevertheless, consistency is lost over time since it is a non-programmed approach. (Christoffersen,2000) Although there are many different definitions, it can be said that there is a consensus in the literature about some features of business cycle fluctuations (Christiano and Fitzgerald (1998), Banerji and Hiris (2001), Klein and Moore (1982), Stock and Watson (1989), Zarnowitz (1987). These are;

- Business cycle fluctuations are defined as the joint movement of many economic variables.
- The cyclical fluctuations are repetitive but non-periodic.
- Business cycle fluctuations must be precise and continuous; small and short movements do not reflect this situation.

There are four stages of the business cycle;

- In the **Expansion** stage, time series have increasing movement and are above the trend.
- In the **Recession** stage, the time series decreases even though it is above the trend.
- In the **Depression** stage, the time series is below the trend and has decreasing movement.
- In the **Recovery** stage, the time series increases despite being below the trend.

Figure 1



The classical analysis of business cycle fluctuations was first made by Burns and Mitchell (1946). Their studies made some suggestions, such as using seasonally adjusted series while determining the business cycle. The other one is that the business cycle should last for at least 15 months and at most 10-12 years. They also used "reference dates" to determine the turning points of the business cycle. The method developed by Burns and Mitchell for calculating turning points was translated into a computer algorithm in 1971 by Bry and Boschan. The Bry-Boschan algorithm has been developed and applied in many studies. The most well-known works are by Stock and Watson (1989), Artis (1995).

There are many studies on Turkey's business cycle calculation in the literature. Leading indicators were estimated for Turkey by Selçuk (1994) by using the business cycle approach. Atabek et al. (2005) obtained the turning points using the Bry and Boschan algorithm. In their study, Özkan and Erden (2007), analyzed the monthly industrial production index to learn the basic characteristics of business cycles. By using the Bry-Boschan algorithm to determine the turning points of the cycles, it has been revealed that the cycle time is between two and six years. Alp et al. (2011) used two different methods to estimate the smoothing parameter in the Hodrick-Prescott (HP) filter used in business cycle analysis. The average cycle length in Turkey was approximately four years were calculated.

This study, it is aimed to examine the main features of the cyclical fluctuations in the Turkish economy and, to date or in other words, to determine the cycle duration (contraction and expansion). Since the studies conducted in the national field are in the past, the data used in this study contribute to the literature as it covers a long period and is up-to-date. Since the Gross Domestic Product (GDP) data has been used with quarterly frequencies in the studies carried out in this context so far, a special feature of this study is the monthly Gross Domestic Product (how to obtain the data is explained in the next section) data used.

2. LITERATURE

Cyclical fluctuations have been the subject of many scientific studies and discussions. There is extensive literature attempting to find reliable estimating tools for the business cycle, from the first landmark study by Burns and Mitchell (1946) to the more complex Stock and Watson (1989). In the international literature, Stock and Watson examined the leading indicators of the business cycles of the USA, and Artis (1995) examined the OECD countries. The detection of turning points begins with defining the concept of a cycle. In the classical cycle, fluctuations in the absolute level of the series are identified. The early NBER approach identified cycles as recurrent sequences of alternating phases of expansion and contraction in the levels of a large number of economic time series (Burns and Mitchell, 1946; Bry and Boschan, 1971).

With the general move towards estimating turning points in business cycles, much attention has been given to which models the best estimate these points. Such models include linear, non-linear (including Markov switching) parametric, and non-parametric models. However, some schools of thought suggest that turning point determination should instead be based on the business cycle's fundamental (theoretical) definition, as defined by Burns and Mitchell (1946), as opposed to model-based approaches. Burns and Mitchell (1946) defined business cycles as a type of fluctuation found in the aggregated economic activity of nations that organize their work mainly in business enterprises:

- a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle,
- the sequence of change is recurrent but not periodic,
- business cycles vary from more than one year to ten or twelve years,
- business cycles are not divisible into shorter cycles of similar character with amplitudes approximating their own.

Bry and Boschan (BB) (1971) replicated the Burns and Mitchell approach to determining turning points and later introduced a method for working with quarterly data. They coded the BB procedure into an algorithm that could easily be applied. Harding and Pagan

(2002) developed a BBQ (Quarterly Bry-Boschan) version of this method. Similarly, Moore (1980) noted that expansions and contractions should reflect an absolute rise and fall in trend-adjusted aggregate economic activity. Moore and Zarnovitz (1986) used a weighted average of several series rather than a single series. Burns and Mitchell (1946) also did not have a GDP series available to them at the time and instead extracted a reference cycle from many series to determine turning points. They dated turning points based on where the data clustered during peaks and troughs.

3. METHODOLOGY

3.1. Bry and Boschan Procedure

Studying the duration and width of the determined business cycle fluctuations requires a separate analysis study. The method developed by Burns and Mitchell for calculating the trough and peak point was transferred to a computer algorithm with Bry and Boschan in 1971. Bry and Boschan formulated it with computer codes using the business cycle criteria determined by NBER. In this method, which is widely used in the literature in order to determine the turning points in a series, the following path is basically followed.

- a) The peak is determined based on consecutive decreases in the absolute level of the series.
- b) The trough is determined based on successive increases in the series level.
- c) Peaks and troughs need to change in different cycles. For this, multiple observed equal peaks and troughs will not be considered.
- d) In order for consecutive increases (decreases) to be defined as an expansion (contraction) phase, they must complete at least two months in quarterly series and at least five months in monthly series.
- e) For the cycles to be defined as a business cycle, the contraction and expansion phases should last at least five months or longer in quarterly series and at least 15 months or longer in monthly series.

Additionally, the Bry-Boschan (BB) and Harding Pagan (H-P) algorithms end the turning points as follows:

- The data is smoothed after outlier adjustment by constructing short-term moving averages.
- The preliminary set of turning points are selected for the smoothed series subject to the criterion described later.
- Turning points in the raw series are identified, taking results from smoothed series as the reference (Pandey et al., 2017).

3.2. Tramo-Seats

TRAMO and SEATS, a time series decomposition method, are two programs developed by Victor Gomez and Agustin Maravall with the support of Gianluca Caporello for the analysis of monthly, quarterly, semi-annual and annual data. (Gomez and Maravall, 1996). It is a method based on econometric model estimation and developed by the Bank of Spain, also recommended by EUROSTAT.¹

This method estimates effects with a parametric method and separates them from the statistically significant data. Therefore, a seasonal or calendar effect that is not statistically significant is not excluded from the data. TRAMO (Time Series Regression with ARIMA Noise, Missing Observations and Outliers) is used to estimate and predict a regression model,

¹ <http://ec.europa.eu/eurostat/documents/3859598/6830795/KS-GQ-15-001-EN-N.pdf>

taking into account non-stationary (ARIMA) error terms and missing observations. The program detects and corrects several types of outliers by estimating missing observations by interpolation. It also predicts special effects such as the calendar effect and Easter or exogenous variables. Fully automatic pattern detection and outlier correction procedures are also available. SEATS (Signal Extraction in ARIMA Time Series) is a program used to predict components in the time series that cannot be directly observed using the ARIMA model obtained in the TRAMO stage. The two programs are configured to be used together.

3.3. Temporal Disaggregation

The time series to be used in the analysis may not always be at the desired frequency. Temporal disaggregation methods are used to disaggregate low frequency time series to higher frequency series. The most used methods are Denton (Denton, 1971), Chow-Lin (Chow and Lin, 1971), Fernandez (Fernández, 1981) and Litterman (Litterman, 1983). Chow-Lin's (Chow and Lin, 1971) method executes a regression on the low frequency series which are stationary or cointegrated. (Sax and Steiner, 2013)

4. ECONOMIC CRISES OF TURKEY

The meanings of words such as "danger", "distress" and "depression" can be loaded into the crisis. The economic crisis appears as a phenomenon in which some external and internal factors lead to adverse developments suddenly or unexpectedly, causing severe damage to both firms and the country (Yılmaz,2005).

In Turkey, the period of 1988-1993 was when the growth strategy based on the expansion of domestic demand and the use of external resources was maintained, and growth was preferred to stability. However, regular and stable growth could not be achieved in GDP, the instability in the economy deepened, and annual inflation settled around 60% on average. There was severe stagflation in 1988, and this stagflation was tried to be overcome with monetary and fiscal measures on February 4, 1989. As a result of applications, the crisis in financial markets was partially stopped, but inflation in the economy increased from 50% to 60% on average (Şahin, 2014). The unfavorable conjuncture caused by the Gulf War in 1991 had a high cost to Turkey, and revival in the economy in 1990 stopped again in 1991. After the problematic and uncontrolled growth in 1992-1993, the economy experienced a severe crisis in 1994, and the GDP shrank by 6.1%.

As a result of the deepening crisis in 1994, the economic stabilization program known as the "April 5 Decisions" was put into practice. With the April 5 Decisions put into practice, stability in the money and foreign exchange markets in the short term were achieved, economic growth gained momentum, the exchange rate was brought under control, and confidence in the Turkish Lira (TL) increased. Even if the measures of April 5 Decisions regarding internal and external imbalances were seen as successful in the short term, they could not reach their goals in the long term (Toprak,1996).

In order to end macroeconomic instability, Turkey implemented the new economic program at the beginning of 2000. Based on the stand-by agreement with the IMF, the program suffered a strong shock in November 2000 and collapsed in February 2001. While the interest rate and exchange rate are rising, The Central Bank of the Turkish Republic's (CBRT) foreign exchange reserves has melted (Özatay, 2013).

The 2001 February Crisis was a continuation of the currency crisis of November 2000. Exchange rate losses in the November Crisis increased the imbalances in macroeconomic indicators in the economy, which led to political tensions in the country and the deepening of the crisis (Boratav, 2000). The long-term stabilization program, which was initiated with the

"Transition to a Strong Economy Program" after the February 2001 crisis, included a series of structural reforms as well as inflation targeting, exchange rate, foreign trade, monetary, fiscal and income policies.²

The cyclical fluctuations and the growth rates of the national economies are closely related. One of the general characteristics of the crisis periods of the Turkish economy was the decline in GDP. After the 2001 crisis, economic growth was achieved due to the transition to a Strong Economy Programme. In the last quarter of 2008, it was interrupted by the world's global crisis, and a contraction was observed until the first quarter of 2009. The growth that started with the "Transition to a Strong Economy Program" has become sustainable in the long run. In times of crisis, the contraction in the economy brought along high inflation and an increase in unemployment rates. With the transition to inflation targeting, which includes a more extended period, together with the "Transition to a Strong Economy Program", inflation rates were reduced to single digits, limited interventions were made to the exchange rate in the short term, and inflation assumed the anchor role. However, in this period, the value of TL increased at high levels in the floating exchange rate (Firat and Demirtaş, 2012).

While the wounds inflicted by the economic crises experienced in the past years could not be healed yet, a global crisis broke out in August 2007. The starting point of this crisis; was caused by the Subprime Mortgage (high risk and high-interest loan) scandal in the USA. The 2008 global economic crisis affected developing and developed countries and caused recession and unemployment (Savaş, 2012).

The 2008 global economic crisis started in the housing market in the USA, but the reflection of this crisis on Turkey was on the industrial sector rather than the housing market. Because the private sector had a large amount of foreign currency debt, it was caught in this crisis (Susam and Bakkal, 2008). While the economic crisis caused a decrease in the capacity utilization rate and GDP, it also increased the uncertainty. Increasing uncertainty has caused investment decisions to be postponed, or the capital to shift to the finance sector (Demircan, 2018). Other macroeconomic balances have also deteriorated, but the 2008 global crisis did not shake the Turkish economy to the expected depth compared to the crises in previous years (Kaba, 2019).

While Turkey was already dealing with problems in economic dynamics in 2018, the Pastor Brunson crisis exacerbated these problems and ignited the economic crisis of 2018. While the Turkish Lira depreciated largely, inflation was stuck in double digits. With the increase in interest rates, growth has lost its momentum, high inflation, economic contraction, and increasing unemployment have become inevitable. With the Pastor Brunson crisis, the current exchange rate suddenly increased. In many sectors, especially in construction, bottlenecks have been experienced, and bankruptcies have followed. The Central Bank's foreign exchange reserves also decreased significantly in 2018. While the net foreign exchange reserve was 77.9 billion dollars in January 2018, it decreased to 33.9 billion dollars as of January 2020. The 2018 economic crisis, with its current conditions, is classified as a long and sticky economic crisis in the literature.

The effects of the economic contraction due to Covid-19 will also be clearly seen in the coming years.

² Republic of Turkey Ministry of Treasury and Finance, www.treasury.gov.tr

5. DATA

In our analysis, three different data sets were used to determine Turkey's average cycle. These are;

- Quarterly GDP (Gross Domestic Product) data between 1987Q1 and 2021Q2
- Monthly IPI (Industrial Production Index) data between 1986M1 and 2021M6
- Monthly GDP data between 1987M1 and 2021M6

Since the GDP variable is thought to reflect the overall economic performance, this series is widely used in business cycle studies. However, since GDP is published at quarterly frequencies, it was found appropriate to analyze the timing of the movements of economic activity with series measured at monthly frequencies. Therefore, to determine the average cycle, also monthly IPI data were analyzed. In addition, the GDP data was converted into monthly series and used as a third series to determine the average cycle by using the monthly IPI series as a regressor variable. Chow-Lin, one of the most common methods, was used in temporal disaggregation.

Although the main purpose of our study is to determine the cycle duration, what we need is to obtain the cycle component for the Business Cycle Monitor of Turkey. For this reason, first of all, the trend-cycle components of the series should be obtained. We used the TRAMO-SEATS procedure to adjust the seasonality of GDP and IPI to get a smoother estimation of the cycle. Because when defining the business cycle, noisy estimation is not efficient. The Bry-Boschan algorithm was used to determine the peak-trough points and the average cycle by using the trend-cycle component of the series.

All computations regarding performed analyses were carried out in an R environment (R Core Team, 2020) by using BCDating (Einian, 2019) and RJDemetra (Quartier-la-Tente et al., 2021) packages. BCDating package uses the Harding and Pagan algorithm that creates a quarterly dating from a univariate time series. The peak-trough points of the series were determined by using the BBQ function included in this package. The *mincycle* (Minimum length of a cycle) and *minphase* (Minimum length of a phase) arguments in the function can take different values. In this study, as recommended in the Bry-Boschan procedure, the *mincycle* argument is set to 15 for monthly series and 5 for quarterly series, and the *minphase* argument to 2 for monthly series and 5 for quarterly series. We also used RJDemetra package in order to obtain seasonally adjusted series. This package is an interface for JDemetra+, the seasonal adjustment software officially recommended to the members of the European Statistical System (ESS) and the European System of Central Banks.

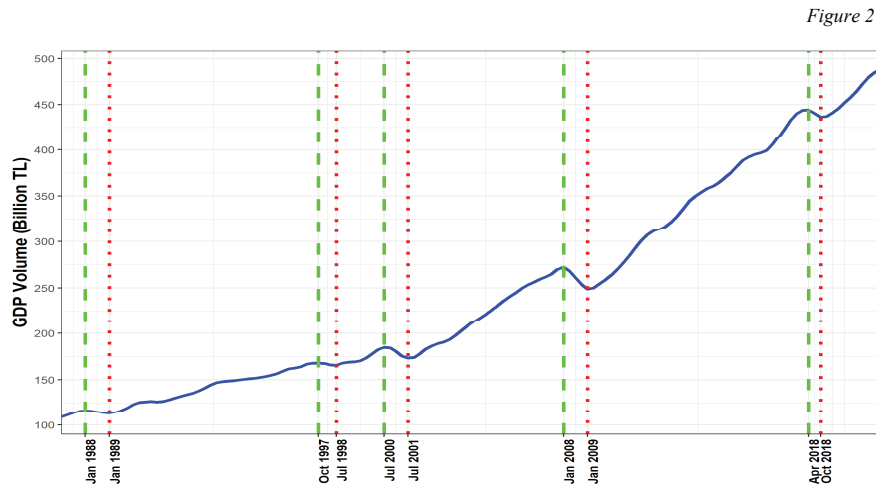
6. RESULTS

The results were examined separately for each data and were evaluated especially in terms of the cycle durations of the data, the length of the expansion and contraction phases, and how much the determined low points reflect the known crisis periods in Turkey.

6.1. Quarterly GDP

The peaks and troughs determined by the trend-cycle component of quarterly GDP are shown in Figure 1, and the results of the cycles are shown in Table 1.

Peak and Trough dates based on quarterly GDP



The red dotted lines in figure 1 show the trough points, and the green dotted lines show the peaks. As seen in the figure, four complete business cycles were observed in terms of the periods covered by the data used. The first recession point is observed in the first quarter of 1989. In 1988, the expected growth in sectors was not achieved, and the liberalization of imports of all goods, except for exceptional goods, appealed to industrialists. With the increase in the exchange rate, stagflation was experienced in Turkey in 1989. While the crisis was not yet fully overcome, the Berlin Wall collapsed, the Iraq crisis, and the USSR's disintegration took place. These events have caused radical transformations in economic policies globally and in Turkey. In 1998, was determined as the second crisis point, the Asian-Russian crisis occurred, and Turkey was also affected by this crisis. After the monetary crisis in the third quarter of 2001, the Turkish economy entered a long period of expansion. Turkey was also under the influence of the global economic crisis that emerged in the last months of 2008. Lastly, the lowest point was the foreign exchange and debt crisis, effective in the last quarter of 2018. In this period, TL depreciated significantly.

Business cycle chronology based on the quarterly GDP

Table 1

Phase	Start	End	Duration
Expansion	-	1988Q1	-
Recession	1988Q1	1989Q1	4
Expansion	1989Q1	1997Q4	35
Recession	1997Q4	1998Q3	3
Expansion	1998Q3	2000Q3	8
Recession	2000Q3	2001Q3	4
Expansion	2001Q3	2008Q1	26
Recession	2008Q1	2009Q1	4
Expansion	2009Q1	2018Q2	37
Recession	2018Q2	2018Q4	2
Expansion	2018Q4	-	-

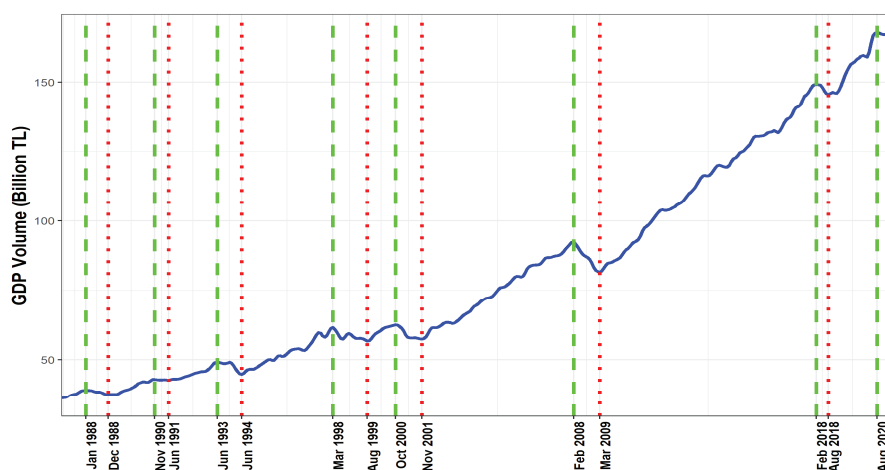
According to Table 1, while the average expansion is 26.5 quarters, the average recession is 3.4 quarters. These results mean the average expansion period is about eight times longer than the average recession period. It is an expected result for a developing country's economy (Rand and Tarp, 2002). Also, the low average recession period indicates that Turkey has quickly come out of the crisis. According to these findings, cycles vary between 11 and 41 quarters. The average cycle length in terms of peaks is 30.25 quarters, while it is 29.75 quarters in terms of troughs. According to both peaks and troughs, we can state that the cycle is 7.5 years.

6.2. Monthly GDP

The peaks and troughs determined by the trend-cycle component of monthly GDP are shown in Figure 2, and the results of the cycles are shown in Table 2.

Peak and Trough dates based on monthly GDP

Figure 3



Monthly GDP results show that six complete business cycles were observed in troughs. In addition to the results obtained from the quarterly GDP data, crises were also detected in 1991 and 1994. Contrary to the quarterly GDP data, the periods known as the crisis period for Turkey could be determined with the monthly GDP data. The first crisis of the Turkish economy shaped by external effects was the Gulf Crisis in 1990. The Gulf War, shaped by the United Nations' interventions in Iraq and Kuwait, is one of the crucial events of this crisis. Turkey felt the Gulf crisis that started in the late 1990s for seven months. Turkey experienced its most profound crisis in 1994. This economic crisis started in the middle of 1993 for about a year. Before 1994, public sector primary expenditures had a more significant deficit than public revenues. The public sector spent more than it earned. As a result of financing public debts with the Central Bank, Turkey experienced hyperinflation for the first time. With partial but insufficient improvements, Turkey was able to get out of the crisis.

Business cycle chronology based on the monthly GDP

Table 2

Phase	Start	End	Duration
Expansion	-	1988M1	-
Recession	1988M1	1988M12	11
Expansion	1988M12	1990M11	23
Recession	1990M11	1991M6	7
Expansion	1991M6	1993M6	24
Recession	1993M6	1994M6	12
Expansion	1994M6	1998M3	45
Recession	1998M3	1999M8	17
Expansion	1999M8	2000M10	14
Recession	2000M10	2001M11	13
Expansion	2001M11	2008M2	75
Recession	2008M2	2009M3	13
Expansion	2009M3	2018M2	107
Recession	2018M2	2018M8	6
Expansion	2018M8	2020M8	24
Recession	2020M8	-	-

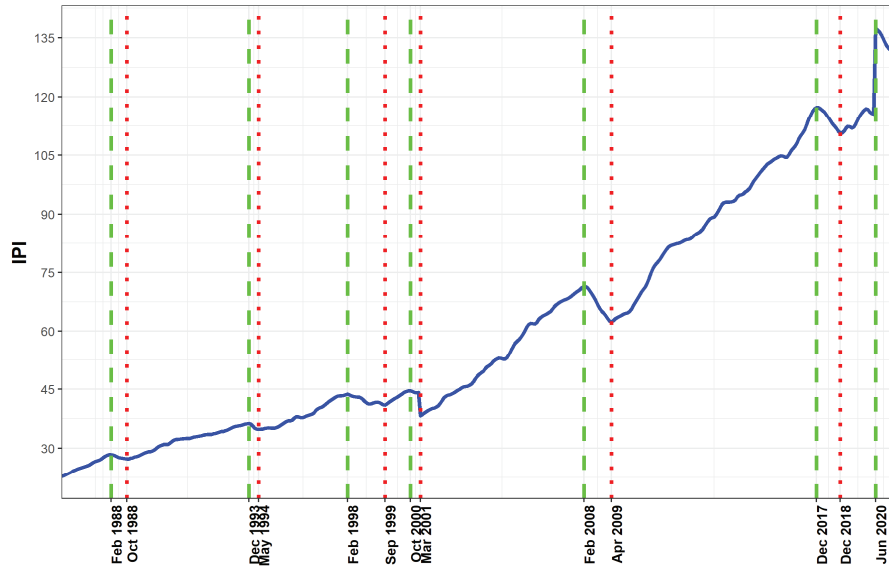
We found that the average expansion time is 44.6 months, and the average recession time is 11.3 months. The average expansion period is approximately four times longer than the average recession period. According to these findings, cycles vary between 30 and 120 months. The average cycle length obtained from both the peak and the trough was calculated as close to each other. The average cycle length for peaks is 55.85 months, while 59.33 months for troughs. We can say that the average duration of the cycle is about five years.

6.3. Monthly IPI

The peaks and troughs determined by the trend-cycle component of monthly IPI are shown in Figure 3, and the results of the cycles are shown in Table 3.

Peak and Trough dates based on monthly IPI

Figure 4



The results of monthly IPI data show that there are five complete business cycles were observed in terms of troughs. Unlike the monthly GDP results, the crisis in 1991 was not detected with this data. It is thought to be due to the scope of the data. Because the IPI series represents only a specific part of the economy, but GDP covers the entire economy. Therefore, the crisis may have affected sectors other than industry more deeply. In addition, the outflow of foreign capital in Turkey during the Gulf Crisis in 1991 caused a significant decrease in tourism revenues.

Business cycle chronology based on the monthly IPI

Table 3

Phase	Start	End	Duration
Expansion	-	1988M2	-
Recession	1988M2	1988M10	8
Expansion	1988M10	1993M12	62
Recession	1993M12	1994M5	5
Expansion	1994M5	1998M2	45
Recession	1998M2	1999M9	19
Expansion	1999M9	2000M10	13
Recession	2000M10	2001M3	5

Phase	Start	End	Duration
Expansion	2001M3	2008M2	83
Recession	2008M2	2009M4	14
Expansion	2009M4	2017M12	104
Recession	2017M12	2018M12	12
Expansion	2018M12	2020M6	18
Recession	2020M6	-	-

According to our findings, the average expansion time is 54.2 months, and the average recession time is 10.5 months. The average expansion period is approximately five times longer than the average recession period. Similar to the results obtained from the monthly GDP data, the range of cycles varies between the monthly IPI data varies between 32 and 118 months. The average cycle length in terms of peaks is 64.66 months, while 72.4 months in troughs. As a result, we can say that the average duration of the cycle is about 5.5 years.

7. DISCUSSION OF RESULTS

Average Business Cycle Duration

Table 4

Data	Full Cycles	Expansions	Recessions	Number of Cycles
Quarterly GDP	30 quarters	26.5 quarters	3.4 quarters	4
Monthly GDP	57.46 months	44.6 months	11.3 months	6
Monthly IPI	68.18 months	54.2 months	10.5 months	5

As can be seen from Table 4, different cycle lengths were obtained due to the analyses made with different data. Therefore, we need to assess which cycle length should be used. It is possible to make this evaluation from two different perspectives. The first perspective is the frequency of the series. Quarter-frequency data make it difficult to follow the timing of the movements of economic activity.

On the other hand, high-frequency (monthly) series are more advantageous in terms of the changes they exhibit, as they allow the detection of cycles to be revealed more clearly (Artis, 2002). The second perspective is how many cycles reflect the changes in the Turkish economy. According to our results, monthly GDP data is thought to reflect better the crisis periods that Turkey has experienced. Also, the monthly IPI series represents only a specific part of the economy, but GDP covers the entire economy. As a result of these evaluations, we found it appropriate to prefer the monthly GDP results, and we can say that the cycle length of Turkey is five years.

8. CONCLUSION

In this study, the contraction and expansion periods in the Turkish economy were examined with the Bry-Boschan algorithm, and the average cycle duration was tried to be determined. Quarterly GDP, monthly GDP, and monthly IPI data were used in this study, and different results were obtained regarding average cycle durations. The results obtained with three series used to determine the cycle duration for Turkey vary according to the frequency of the series and how much they reflect the changes in the economy. As a result of the evaluations, the 5-year cycle time obtained with the monthly GDP series was appropriate, considering that the Turkish economy better revealed the crises experienced in the past. It has been observed that this result is compatible with the related studies in the literature and the cycle characteristics of developing countries. It is thought that this study will make an essential contribution to the literature since the studies conducted in the national field are in the past, the data used covers a long period and is up-to-date.

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