# FISCAL POLICY AND REGIONAL BUSINESS CYCLES IN POLAND

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K e y  w o r d s: fiscal policy, business cycle, region.

A b s t r a c t

The aim of this paper is to evaluate the adequacy of discretionary fiscal policy, implemented at the national level, on the course of regional business fluctuations in Poland. Research is conducted as follows: identification of regional business cycles, identification of national fiscal policy as restrictive or expansive, and comparison of fiscal policy adequacy and phases of regional business cycles. In order to separate a cyclical factor from the empirical data, the Christiano-Fitzgerald asymmetrical filter was exploited. The character of discretional fiscal policy was evaluated on the basis of cyclically adjusted primary balance, as well as positive or negative output gap. The empirical results show that fiscal policy is not always cyclically appropriate for all 16 Polish regions. The reason for this is divergence among Polish regions both in the matter of regional business cycle morphology, and in the aspect of phase shifts.

## POLITYKA FISKALNA A REGIONALNE CYKLE KONIUNKTURALNE W POLSCE

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S ł o w a  k l u c z o w e: polityka fiskalna, cykl koniunkturalny, region.

A b s t r a k t

Celem artykułu jest określenie adekwatności dyskrecjonalnej polityki fiskalnej realizowanej na szczeblu ogólnokrajowym do przebiegu wahań koniunkturalnych w ujęciu regionalnym w Polsce. Agenda badań jest następująca: identyfikacja regionalnych cykli koniunkturalnych, określenie

charakteru polityki fiskalnej (ekspansywna, restrykcyjna) i odniesienie jej do konkretnych faz cykli w ujęciu regionalnym. Do wyodrębnienia czynnika cyklicznego z danych empirycznych wykorzystano asymetryczny filtr Christiano-Fitzgeralda. Charakter dyskrecjonalnej polityki fiskalnej określono na podstawie rocznych zmian pierwotnego salda budżetowego wyrównanego cyklicznie oraz dodatniej lub ujemnej luki produktowej. Jak wskazują wyniki badań, charakter polityki fiskalnej nie zawsze odpowiada przebiegowi wahań koniunkturalnych w ujęciu regionalnym w Polsce. Wynika to z rozbieżności cykli regionalnych, zarówno pod kątem ich budowy morfologicznej, jak i lokalizacji punktów zwrotnych.

# Introduction

The objective of the state's macroeconomic policy is to create material and systemic fundaments for a high rate of economic growth and to achieve higher competitiveness of the economy (WŁODARCZYK 2016, p. 559–568 ). Fiscal policy is, next to monetary, one of the two basic tools of macroeconomic management of the national economy. Fiscal policy can promote macroeconomic stability by sustaining aggregate demand and private sector incomes during an economic downturn and by moderating economic activity during periods of strong growth. The stabilising function of fiscal policy operates by two ways. One of them is so-called "automatic fiscal stabilisers". These work through the impact of economic fluctuations on the government budget and do not require any short-term decisions by policy makers. Business cycle stabilisation can also result from discretionary fiscal policy-making, whereby governments actively decide to adjust spending or taxes in response to changes in economic activity.

As automatic stabilizers are inherently anti-cyclical, they are therefore excluded from the research. The objective of the research solely relates to the effectiveness of discretionary fiscal policy.

While the nationally-conducted fiscal policy is relatively well adjusted to the changes in overall economic activity in the country, the same is far from certain when its impact on particular regional economies is concerned. After studying the literature, a thesis can be formulated that particular regions in Poland have their own distinctive business cycles (see WARŻAŁA 2015, p. 157–169, 2016).

The purpose of this paper is to evaluate the adequacy of discretionary fiscal policy, implemented at the national level, on the course of regional business fluctuations in Poland. To do this, a research hypothesis was put forward, i.e. discretionary fiscal policy conducted on the national level in Poland is cyclically inadequate to the regional business fluctuations.

# Discretionary Fiscal Policy in Theory – Literature Review

At present, there is no consensus among economics schools over economy stability and instability. The assumption about the long-term stability of the economy is characteristic for such schools as classical economics, monetarism, new classical macroeconomics or real business cycle school. By assumption long-term stability, the task of the state would be mainly to increase the efficiency of the economy, which would lead to a shorter period of recovery. The assumption of economic instability is characteristic of different varieties of Keynesianism, the New Keynesian economics, complexity economics, and econophysics. With this assumption, government policy is needed to restore equilibrium in the economy and correct deviations (JAKIMOWICZ 2012, p. 13, 14).

In stabilization policy, fiscal policy plays a special role (WERNIK 2014, p. 155–159). A particular increase in interest in fiscal policy is evident after the financial crisis that began in 2007 (*Fiscal Policy after the Financial Crisis* 2013, LUBIŃSKI 2015, p. 5–26).

Fiscal policy can work in two general ways to stabilize the business cycle. One way is through automatic stabilizers. The active use of discretionary fiscal measures is often promoted as a countercyclical tool. The passive fiscal policy is related to the sensitivity of some budget expenditure and revenues to changes in economic activity, hence the cyclical deficit is independent of the current policy-makers decisions (see KRAJEWSKI 2013, p. 148–150, OWSIAK 2002, p. 239). Stabilization of the economy may also result from discretionary fiscal policies, whereby governments are actively seeking to adjust expenditures or taxes in response to changes in the level of economic activity. Changes in the structural balance are used as a measure of discretionary fiscal policy (CHALK 2002, p. 4–21, JÓZEFIAK et al. 2006, p. 89).

The structural balance is also called a cyclically adjusted budget balance (CAB). Structural deficit is a hypothetical value that speaks of the size of the budget balance in case of full utilization of all production factors, so if potential economic growth is achieved. The CAB (cyclically adjusted budget balance) approach assumes that the economy does not normally operate under full utilization of the factors of production, adopts the concepts of the mid-cycle budget (MIKLASZEWICZ 2012, p. 43).

Structural deficit is not a perfect measure of discretional fiscal policy, as it may be influenced by non-cyclical changes of an autonomous nature (WOJTYNA 2003) and the structural shocks independent of fiscal policy (CHALK 2002). Despite these reservations, it is a better indicator than the unadjusted deficit, that the European Commission adopted, that the assessment of fiscal policy should be based on the size of the structural balance of public finances (*Communication from the Commission…* 2002).

In Poland, as in other European countries, there are restrictions on active fiscal policy in the form of budgetary rules (JÓZEFIAK et al. 2006, p. 13–83, KOTLIŃSKI 2013, 2015, p. 175–190). Active fiscal policy is characterized by a long decision-making period. Delays between the period during which the fiscal stimulus should be applied, and the period in which it actually affects the economy, may lead to the procyclical impact instead of anti-cyclically.

## Regional Business Cycles – Literature Review

Most theoretical studies try to provide the theoretical underpinnings of the similarities between regional and nationwide economic fluctuations. Some researchers indicate that an entire country's business cycle is the result of cyclical changes in the various regions. On the other hand, this aggregated approach to the analysis of business cycles eliminates from the study characteristics of the different regions of the country, and thus, limit the state of knowledge on the characteristics of the course of cyclical fluctuations in regional terms. Gerald CARLINO and Keith SILL (2001) show that there is a strong divergence of cycles run in the regional and national cycle (based on cyclical changes in real income growth). There are also some indicators presented in the literature examining the convergence rate of individual region's components (CRONE 2005).

Generally, there are two streams of views on international and interregional effects of deepening economic integration in the literature. The first supports the idea that economic integration leads to symmetrical changes, which in turn leads to more synchronized business cycles in terms of both national and regional levels (MARELLI 2006, BARRIOS, LUCIO 2003). The second concept is derived from the work of Paul KRUGMAN (1991), who believes that economic integration causes an increase of regional concentration of industrial activity, which in turn will lead to sectoral or even regional shocks, increasing the likelihood of asymmetric shocks and divergent business cycles (KRUGMAN 1991, 1993).

The regions are characterized by asymmetry of cyclical fluctuations when changing their economic activity in relation to other regions. This phenomenon has its cause in two sources (FATAS 1997):

– regional-level diversification of production resulting from the specialization of the region in particular type of production and so-called industry-specific shocks, associated with different mobility levels of production factors;

– diversified economic policy in the regions.

Studies presented in the literature show that the common economic policy in the lack of business cycle convergence is not beneficial to all members of the economic area. This is due to the presence in national or regional scale "asymmetric shocks" (CORREIA, GOUVEIA 2013, p. 102). The conclusions of the studies are the basis of two opposing theoretical concepts.

The first of these is the specialization concept by Paul Krugman, who has proven in his research that economic integration in the regional context leads to a greater degree of development polarization rather than to its unification. This is the result of externalities taking in the single currency area, economies of scale of dynamic production (in relation to the environment), as well as the development of metropolitan areas. The main conclusion that comes from Krugman's model is that the result of the introduction of the single currency area may be to increase the degree of convergence of business cycles on the state level while increasing the range of divergence at the regional level (KRUGMAN 1991).

According to the second concept, proposed by Jeffrey Frankel and Andrew Rose, as a result of the elimination of economic barriers among countries and regions within single currency area, the trade intensification is rising. In the authors' view, the immediate effect of this process is an increase in the synchronization of cyclical fluctuations. Another factor contributing to the synchronization of business cycle fluctuations (according to the authors) is the implementation of a common economic policy on an integrating area. Difference in the approach to the effects of the optimum currency area created contradictions in the formulation of the idea that positive results in this concept reveals ex-post; i.e., as a result of conduct of the single monetary policy and the single currency (FRANKEL, ROSE 1996, p. 1–33). Similar conclusions resulted from Salvador BARRIOS and Juan LUCIO'S paper (2003, p. 3–5). They provide evidence on the positive impact of economic integration on regional business cycle correlation. Their study is based on the special case of two neighbouring economies: Spain and Portugal.

What is more about this, Michael Artis takes a hypothesis that expectations concerned with the development of an increasingly coherent business cycle, connected with European integration are disappointed. By examining cyclical affiliations among Euro countries, US and Japan, he concludes that apart from ongoing European integration processes, the globalization processes also may affect the national or regional business shocks. Moreover, the asymmetry shocks may be due to differences in the structure of labour markets, financial markets and product markets (ARTIS 2003, p. 2). In his earlier paper (2000), he argues that taking into account exclusively the optimal currency area (OCA) criteria is somewhat lukewarm. As additional criteria of business coherence he puts forward the trade integration, trade intensity as well as demand shock correlations (ARTIS 2000, p. 5).

## Methodology of the Research

The objectives of the study are the morphological features of regional business cycles in Poland, represented by 16 administratively separate local government units, i.e. voivodships. The time of the analysis embraces a dynamics series

of regional gross domestic product in a quarterly intervals starting from $1^{st}$ quarter of 2000 to the $4^{th}$ of 2015. The period selection is dictated by the availability of comparable statistical data. The period of 16 years also enables to identify a number of complete business cycles, as well as to evaluate differences in their morphological structure. The business cycles model adopted in this study were the growth cycles (DROZDOWICZ-BIEĆ 2012).

The first stage of business cycle fluctuations analysis is the elimination of seasonal fluctuations from raw time series. In order to level seasonality, the TRAMO/SEATS method was used, which is recommended by Eurostat (GRUDKOWSKA, PAŚNICKA 2007). For the purpose of separating a cyclical factor from the previously de-seasonalised empirical data with the use of the TRAMO/SEATS method, the Christiano-Fitzgerald asymmetrical filter was used, which enables the procurement of cycle evaluation at the beginning and at the end of a time series (ADAMOWICZ et al. 2008).

The second stage was identifying the kind of fiscal policy in the context of business cycle phase. The character of discretional fiscal policy was evaluated on the base of cyclically adjusted primary balance as well as positive or negative output gap estimated by using Hodrick-Prescott (HP) filter method (*Cyclical Adjustment…* 2017, KRAJEWSKI 2013, FEDELINO et al. 2009, BOROWIEC 2009).

In the third stage the type of fiscal policy conducted by central government was compared with the regional business cycle course. For marking the turning points the Bry-Boschan procedure will be exploited (ADAMOWICZ et al. 2012, DROZDOWICZ-BIEĆ 2012). As the reference cycle the polish GDP fluctuations were taken.

Data concerning Poland's regional GDP derived from Central Statistical office in Poland. The cyclically adjusted primary balance value came from European Commission database (*Cyclical Adjustment…* 2017).

## Business Cycle Activity and Character of Fiscal Policy – Research's Results

By examining the cyclical component of national GDP, which is an indicator of general business activity, we defined 11 turning points. They make five full cycles measured between troughs (T-T). The first one (2000Q1 – 2002Q4) is connected with a burst of the speculative bubble of Internet-based companies on foreign markets. It was 11-quarters long, the upward phase was 5-quarters long and the downward one – 6 quarters. The second cycle is known as "the accession boom" was 10-quarters long and lasted since 2002Q4 till 2005Q2. That was asymmetric cycle – the boom was 6 quarters long and the contraction lasted 4 quarters. The third business cycle lasted 13 quarters. Its upward phase ended up in the 4-th quarter of 2006, with the US subprime crisis, that led to a global recession. The contraction was 7 quarters long, and finished in

2008Q3. After that slight and short increase in GDP value, the second stage of world economic crisis took place. It was caused by fiscal problems of some euro-zone economies. The downturn phase came on 2010Q1, after 6 quarters of recovery. The last identified upward phase lasted 6 quarters and was connected with growing output our main export partner, i.e. Germany, as well as the weakening of the domestic currency. Also decline in crude oil prices were in favour of slight recovery.

Relating to fiscal policy in business fluctuations, two types of budgetary policies can be mentioned. The first one is anticyclical fiscal policy. This occurs when a positive change of cyclically adjusted primary balance (reduction of structural deficit) (i.e. restrictive policy) goes with the upward phase in business cycle or negative change of cyclically adjusted primary balance (the growth of structural deficit) (i.e. expansive policy) take place in contraction. In contrast – procyclical fiscal policy occurs when a negative change of cyclically adjusted primary balance (i.e. expansive policy) accompany the boom phase or positive change of cyclically adjusted primary balance (reduction of structural deficit) deepen the recession.

In the considered period, the discretionary fiscal policy was anticyclical in 7 years and procyclical in 9 years relative to the nationwide cycle, which is a reference cycle.
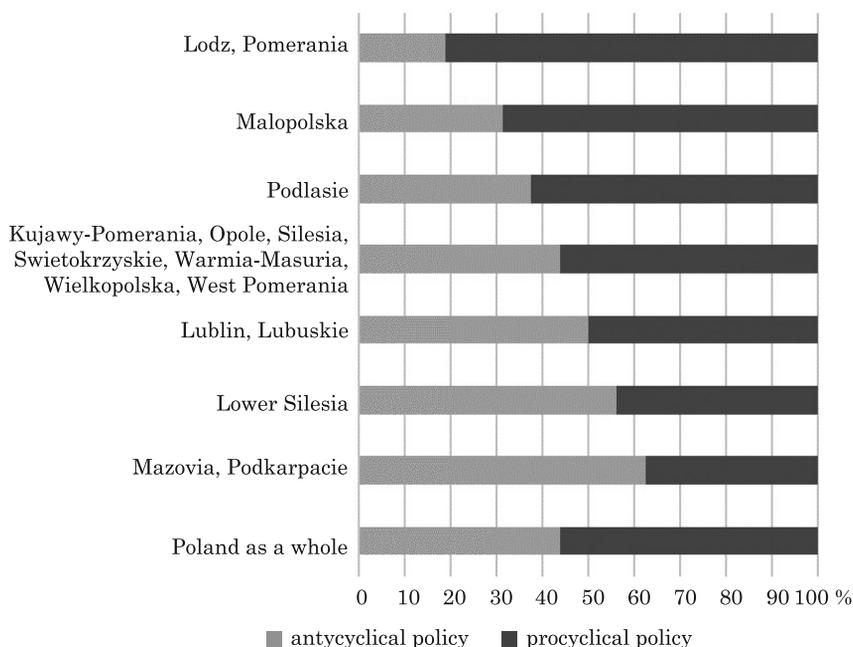


Fig. 1. Adequacy of discretionary fiscal policy to regional GDP fluctuations
Source: own elaborations.

In the case of 7 provinces (Kujawy-Pomerania, Opole, Silesia, Swietokrzyskie, Warmia-Masuria, Wielkopolska, West Pomerania), the number of years with the anti-cyclical and procyclical policy was the same as in the case of the nationwide cycle.

Discretionary fiscal policy in the case of 5 voivodships was more fitting than in relation to the cycle of Poland as a whole. Discretionary fiscal policy was the most adequacy in the case of Mazovia region and Podkarpacie (anti-cyclical policy in 10 years), Lower Silesia (anti-cyclical policy in 9 years), Lublin and Lubuskie regions (the policy turned out to be anti-cyclical 8 years and procyclical 8 years).

Discretional fiscal policy has been least efficient to the Lodz and Pomeranian voivodeships (pro-cyclical policy in 13 observations, anti-cyclical in 3 only). Also in the case of Malopolska and Podlasie voivodships, the fiscal policy (lead at the national level) less frequently counteracted the regional cyclical fluctuations than at national level. This means that nationally-based discretionary fiscal policies have more often led to increased regional GDP fluctuations than they have countered. This is a challenge for local authorities to balance central fiscal fluctuations by local taxes or, in case of crisis, regional business support.

## Conclusions

Polish regions are characterized by diversity of business cycles fluctuations. State action aimed at mitigating the cyclical fluctuations at the national level, often (but not always) contribute to the deepening of the existing macroeconomic fluctuations at regional level. The reason for this is the divergence among Polish regions both in the matter of regional business cycle morphology, and in the aspect of phase shifts.

During the period considered, discretionary budgetary policy was in 7 years anti-cyclical and in 9 pro-cyclical in relation to the national cycle (adopted as a reference cycle). The same degree of matching is in the case of 7 of 16 Polish regions. The same number of years with the type of policy does not mean that it was always the same years.

In relation to the 5 provinces discretionary fiscal policy was a better fit than in relation to the reference cycle.

Regarding the 4 voivodships, discretionary budgetary policy was less adequate than in relation to the nationwide cycle. Therefore, it was more often procyclical than anti-cyclical.

Accordingly, it is desirable to continue the investigation to determine the strength of the impact of fiscal policy on regional business cycles, as well as the implementation of tools to conduct countercyclical policies at regional level. One of them can be more diversified taxation system, adjusted to regional business fluctuations. But this finding should be tested in a more developed framework.

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Appendix 1

Turning points analysis with respect to the reference series (Poland GDP)

| Time series | Trough | Peak | Trough | Peak | Trough | Peak | Trough | Peak | Trough | Peak | Trough | Number of extra cycles |
| POLAND | Q1-2000 | Q2-2001 | Q4-2002 | Q2-2004 | Q2-2005 | Q4-2006 | Q3-2008 | Q1-2010 | Q1-2011 | Q3-2012 | Q1-2014 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lower Silesia | +2 | +3 | +1 | 0 | 0 | −1 | −1 | 0 | – | – | −4 | −1 |
| Kujawy-Pomerania | −3 | −1 | 0 | −1 | 0 | −1 | 0 | 0 | +1 | +2 | 0 | −1 |
| Lublin | +1 | 0 | 0 | −1 | 0 | +4 | +2 | +1 | +1 | +2 | 0 | 0 |
| Lubuskie | −1 | −1 | −2 | −1 | 0 | +4 | +2 | +1 | +1 | −1 | −2 | −1 |
| Lodz | 0 | 0 | 0 | 0 | +1 | +1 | −1 | −3 | −1 | 0 | – | −1 |
| Malopolska | 0 | 0 | −1 | +1 | +3 | +1 | −1 | +2 | +4 | +3 | +1 | −1 |
| Mazovia | +4 | +3 | +1 | – | – | −2 | +4 | – | – | −2 | −3 | −2 |
| Opole | −4 | −4 | +1 | −1 | +1 | +2 | +2 | – | – | −1 | −2 | −2 |
| Podkarpacie | 0 | 0 | −2 | −3 | −2 | −3 | +5 | – | – | −1 | 0 | 0 |
| Podlasie | −4 | −1 | +1 | 0 | +1 | +1 | −1 | −3 | −2 | +2 | 0 | −1 |
| Pomerania | +1 | +1 | +1 | 0 | +1 | 0 | −2 | −3 | −3 | −2 | −3 | 0 |
| Silesia | +1 | +2 | +1 | −1 | 0 | +3 | +3 | +3 | +6 | – | – | −1 |
| Swietokrzyskie | +1 | +1 | −1 | −2 | −1 | +5 | +3 | – | – | −2 | −3 | −2 |
| Warmia-Masuria | +1 | 0 | −2 | −2 | 0 | −1 | −2 | −3 | −3 | +2 | 0 | 0 |
| Wielkopolska | −1 | −1 | −1 | −1 | 0 | 0 | −2 | −4 | −3 | 0 | 0 | −1 |
| West Pomerania | +1 | +1 | +1 | +1 | +3 | +4 | +2 | +1 | +1 | 0 | −1 | 0 |

Note: + (−) denotes a lag (lead) with respect to the reference series
Source: own elaborations.

Antycyclical and procyclical fiscal policy in regional business fluctuation

| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POLAND | P | A | P | P | P | A | P | P | A | P | P | A | A | P | A | A |
| Lower Silesia | A | A | A | P | P | A | P | A | A | P | P | P | P | A | A | A |
| Kujawy-Pomerania | P | A | P | P | P | A | P | P | A | P | P | A | A | P | A | A |
| Lublin | P | A | P | P | P | A | P | A | A | P | P | A | A | P | A | A |
| Lubuskie | P | A | A | P | P | A | P | A | A | P | P | A | P | P | A | A |
| Lodz | P | A | P | P | P | P | P | P | P | P | P | A | A | P | P | P |
| Malopolska | P | A | P | P | P | P | P | P | A | P | A | P | A | P | A | A |
| Mazovia | A | P | P | P | A | A | A | P | A | A | A | A | P | P | A | A |
| Opole | A | A | P | P | P | P | P | P | A | P | A | A | P | P | A | A |
| Podkarpacie | P | A | A | P | P | A | A | P | A | A | A | A | P | P | A | A |
| Podlasie | P | A | P | P | P | A | P | P | P | P | P | A | A | P | A | A |
| Pomerania | P | P | P | P | P | P | P | P | P | P | P | A | P | P | A | A |
| Silesia | P | P | P | P | P | A | P | A | A | P | A | P | P | A | A | A |
| Swietokrzyskie | P | P | P | P | P | A | P | A | A | P | A | A | P | P | A | A |
| Warmia-Masuria | P | A | A | P | P | A | P | P | P | P | P | A | A | P | A | A |
| Wielkopolska | P | A | P | P | P | A | P | P | P | A | P | A | A | P | A | A |
| West Pomerania | P | P | P | P | A | P | P | A | A | P | P | A | A | P | A | A |

Note: A – anticyclical policy, P – procyclical policy
Source: own elaborations.