

<https://doi.org/10.5559/di.33.1.03>

# TIPPING POINTS IN THE CROATIAN POLITICAL SENTIMENT: WHEN, WHY, AND DOES THE ECONOMY HAVE ANYTHING TO DO WITH IT?

Petar SORIĆ, Marija HRUŠKA  
Faculty of Economics and Business,  
University of Zagreb, Zagreb, Croatia

UDK: 330.101.541(497.5):323  
316.654(497.5):323  
328.18(497.5):33

Original scientific paper

Received: February 6, 2023

Building upon two political opinion polls, we formally test for structural breaks in the approval rates of major Croatian political parties, the Government, and the general societal direction. Departing from the mainstream studies of political sentiment, we find asymmetries between the macroeconomy and incumbent's approval rates. Namely, only major economic turmoil can alter the way citizens evaluate political parties. The found structural breaks are driven by corruption scandals involving high party officials, and by major negative economic shocks, confirming the loss aversion concept. During economic booms, political sentiment exhibits a separate trajectory, independent of the macroeconomy. We also test for threshold effects in the generating process of political sentiment, finding that it reacts significantly only to large unemployment levels. The stated conclusions are in line with the prevailing narrative that the Croatian political landscape is highly polarised, divided over ideological issues and socio-cultural norms, so voters in typical economic circumstances do not evaluate incumbents based on their economic performance, but on their successfulness in representing ideological positions.

Keywords: political sentiment, structural breaks, Government approval rate, political opinion poll, economic voting

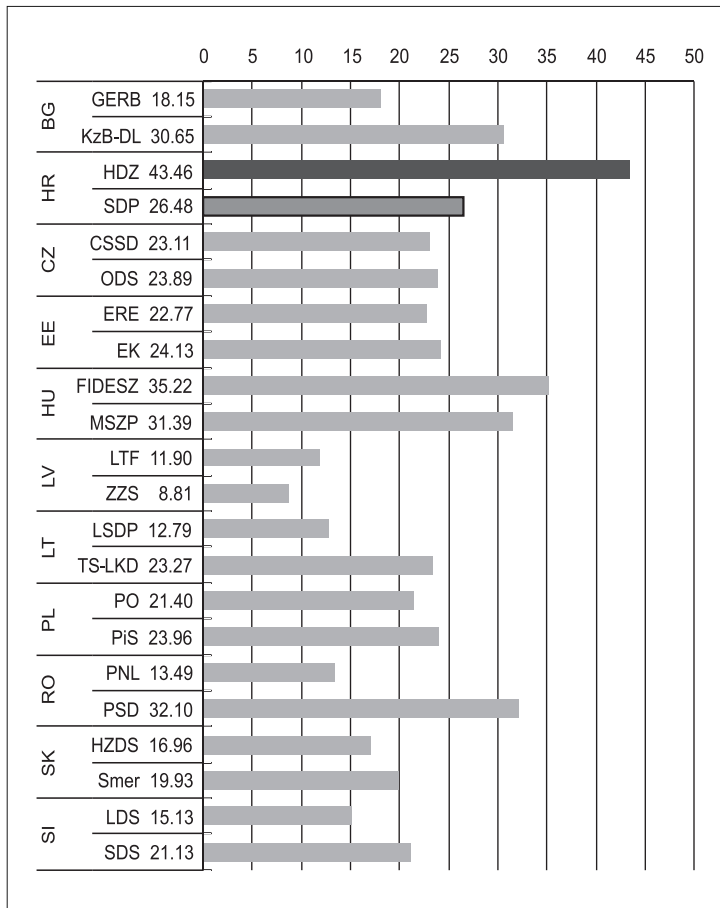


Marija Hruška, University of Zagreb, Faculty of Economics and Business, Trg J. F. Kennedyja 6, 10000 Zagreb, Croatia.  
E-mail: [mlogarusic@efzg.hr](mailto:mlogarusic@efzg.hr)

## INTRODUCTION

During more than 30 years of the post-communist era in Central and Eastern European (CEE) countries, the worst cumulative result of real GDP growth per capita (1989 to 2016) (Maddison Project Database, 2018) has labelled Croatia as a transition loser. One would certainly expect that bad macroeconomic management would be severely punished by voters. Quite the opposite, Figure 1 shows that Croatia has convincingly the most stable political setting of all New EU Member States (NMS). The cumulative share of parliamentary seats won by the two largest Croatian political parties, Croatian Democratic Union (Hrvatska Demokratska Zajednica, HDZ) and the Social-Democratic Party (Socijaldemokratska partija Hrvatske, SDP) from 1990 to 2020 is as high as 69.94%. This is undoubtedly the highest cumulative score generated by any two political parties in any of the 11 NMS. Therefore, Croatia exhibits a very rare combination of paradoxical socio-economic phenomena: poor macroeconomic results and robust support for the very same political parties that generated them.

➔ **FIGURE 1**  
Percentage shares of parliamentary seats won by the two most dominant political parties in New EU Member States (1990–2020)



This paper aims to add to the literature in several aspects. We assess the time dynamics of political sentiment and test for structural breaks using the Bai and Perron (1998, 2003) procedure. This type of test, allowing for endogenously determined multiple structural breaks, has insofar not been implemented in political sentiment studies.

Second, we follow the approach of Jones and Olken (2008) and discriminate between *up* and *down* breaks, depending on whether the sentiment indicator of interest is larger or smaller in the regime following the break than in the one prior to the break. We assess a wide set of macroeconomic and media-related variables to identify the determinants of both examined types of breaks. Our results clearly indicate that political sentiment only reacts to negative changes in inflation and real wages, pointing to loss aversion.

Finally, our threshold regression estimates reveal that political sentiment is dependent on the state of the economy in a highly nonlinear manner. Only large shocks in unemployment significantly decrease the approval of the Government and the general direction of the country.

## **ECONOMIC FOUNDATIONS OF POLITICAL SENTIMENT: CONVENTIONAL WISDOM OR AN EMPIRICAL IRREGULARITY?**

---

Ever since Key (1964), scholars have been fascinated with the effect of economic performance on electoral support for the incumbent. The issue has been econometrically formalised for the first time by Kramer (1971), who finds that a decrease in real per capita personal income effectuates in a significant decline of US congressional votes for the incumbent. Over the years, two separate literature strands have emerged. The first one deals with the concept of *economic voting* in the literal sense (e.g. Quinlan & Okolikj, 2019), observing the impact of economic conditions on voting patterns. We build upon the other, less intensive strand of literature, dealing with the interplay of economic performance and politicians' approval rates. One of the first contributions of that sort dates back to Mueller (1970), who finds that the unemployment rate significantly feeds into the US President's popularity. Subsequent studies have scrutinised the relevance of an array of economic determinants of the incumbent's approval rate, ranging from the main macroeconomic indicators such as inflation and unemployment (Jung & Oh, 2019), citizens' subjective assessment of the economy (MacKuen et al., 1992), etc. Among the more recent studies, Berlemann and Enkelmann (2014) find that about half of the US-centred studies find a significant impact of the economy (primarily the unemployment rate and inflation) on presidential approval rates.

Berlemann and Enkelmann (2014) performed a meta-analysis and concluded that previous empirical results were particularly dependent on the examined time period. In other words, the relationship between economic performance and political sentiment is time-varying. They suggest that linear estimation techniques might be inadequate. The general notion of asymmetry in economic voting is found even within the pioneer work of Mueller (1970). In essence, Mueller (1970) finds that economic busts considerably harm the US President's popularity, but booms do not improve his rating. Similar asymmetries are also revealed in several recent studies. For example, Chang and Lee (2010) utilise threshold cointegration tests to find that US presidential approval rates indeed adjust to the macroeconomy in a nonlinear manner, reacting more intensively to negative changes. In a similar vein, Berlemann et al. (2015) use a find that the US presidential approval is responsive to inflation and unemployment, but in a nonlinear manner.

Furthermore, Berlemann and Enkelmann (2014) show that macroeconomic effects on the incumbent's popularity are highly dependent on the political and institutional context. Moreover, Geys and Vermeir (2008) find that the effect of macroeconomy on the incumbent's popularity considerably diminishes once political circumstances such as war episodes (Gulf War and the Vietnam War), political scandals (e.g. Watergate), the 9/11 terrorist attack, etc. are controlled for.

On a more general level, the political context is proven to be particularly relevant in the case of CEE countries. Empirical studies on economic voting reveal several interesting patterns. Hernández and Kriesi (2015) find that the effect of global financial crisis on the vote share of the incumbents in CEE countries was twice lesser than the same effect in Old EU Member States. Voters in CEE countries seem to not hold their Governments accountable for bad economic results. Bochsler and Hänni (2019) provide a possible explanation of that phenomena by means of democratic maturity as a mediator in the relationship between economic performance and voting patterns. They find that the intensity of economic voting is inverted U-shaped. Voters in young democracies tend to cast their vote based on non-economic factors. As the democracy matures, the economy gains significance, just to lose it again in old-age democracies.

To sum up, the literature is mostly silent on the issue of structural breaks in the economy-political sentiment conundrum. To the best of our knowledge, there are no studies of this issue that formally econometrically test for structural breaks

in the assessed relationship and try to elucidate the wider societal circumstances corresponding to these breaks. We add to the literature in this respect, focusing on Croatian political sentiment as a particularly interesting example from a CEE perspective.

Our main hypothesis is that the relationship between Croatian political sentiment and the economy is asymmetric. We expect the political sentiment to react only to major negative economic shocks and corruption scandals, while positive shocks should not effectuate in increased citizens' support. In that context, we think that the perception of corruption and the polarisation level of the Croatian political landscape are two vital control variables. The former variable might be particularly important because Hernández and Kriesi (2015) find corruption perception to be one of the key mediators of the relationship between economic conditions and voting preferences in CEE countries. Engler (2016) also observes that the economy and political sentiment are far less interrelated in CEE countries than in the west. Instead of the economy, it is the perceived level of corruption that predominantly drives voting patterns. Sorić et al. (2023) also highlight that only in the circumstances of major corruption scandals or persistently bad economic results are Croatian voters likely to hold political actors accountable for their performance. We also postulate that polarisation is another relevant control variable that should mediate the relationship between economics and political sentiment. Namely, the Croatian political spectrum is divided into blocks on the left and right, competing over ideological and cultural issues such as the clash between tradition and modernity, religion, interpretations of war conflicts, etc. (Henjak, 2007; Henjak et al., 2013). In such a constellation, it is expected that political sentiment is not regularly affected by the macroeconomy. It should take a particularly large economic shock to stimulate citizens to hold the incumbents responsible for their economic effectiveness.

## **DATA AND METHODOLOGY**

---

Our dataset is based on two major political opinion polls in Croatia: Cro Demoskop and Crobarometer. The former is conducted every month by the agency Promocija Plus via Computer-Assisted Personal Interviews (CAPI) method on a representative sample of over 1000 respondents, stratified by counties, settlement type, gender, age, and education levels. Crobarometer is also conducted on a monthly basis by the Ipsos Puls agency, using a personal interview survey on up to 1000 Croatian citizens, stratified by region, settlement size, gender, and age.

From these surveys, we extract a wide scope of political sentiment variables: HDZ approval rates (HDZ\_dem and HDZ\_bar; respectively), SDP approval rates (SDP\_dem and SDP\_bar), Government approval rates (gov\_dem and gov\_bar), and Government grade (gov\_grade; scale 1-5; obtained by Cro Demoskop survey). Finally, we assess two measures of sentiment related to the approval of the general direction of the country (country\_dem and country\_bar). The variable suffixes \_dem and \_bar refer to the surveys Cro Demoskop and Crobarometar, respectively. All variables<sup>1</sup> are seasonally adjusted using the ARIMA X12 method.

We examine a wide set of potential determinants of *up* and *down* breaks. Among macroeconomic fundamentals, we examine industrial production, the Harmonised Index of Consumer Prices (HICP), real wages, and the Labour Force Survey unemployment rate. The first three variables are expressed as monthly growth rates (in %). Industrial production, HICP, and the unemployment rate are obtained from Eurostat, while real wages are obtained from the Croatian Bureau of Statistics (deflated using HICP).

We introduce several media-based indicators as control variables in the model. We build a web crawler to form a database of media articles from the web archives of six leading Croatian news portals: Večernji list, Jutarnji list, index.hr, 24 sata, Poslovni dnevnik, and Dnevnik.hr for the time span from 2004 M1 to 2020 M12.

To account for the potential effect of corruption, we construct a variable of media-based corruption perception. We utilise Structured Query Language (SQL) to search the media database by detailed predetermined combinations of keywords. We use a logical negation, i.e. we exclude the articles dealing with a decrease of corruption (see Appendix for details). The aim of this procedure is to capture the overall intensity of media reporting on corruption-related issues.

Second, we augment the examined dataset by constructing a media-based measure of ideological polarisation. This variable is also constructed using a predetermined combination of keywords related to the well-established socio-cultural notions that govern Croatian political polarisation (see Appendix).

Also, we measure the election cycle duration, i.e. the number of months that have passed since the last parliamentary elections. This concept dates to Mueller (1970), who noticed that a steady decline of US presidential popularity is an empirical regularity. Mueller (1970) explained it through the *cost of ruling*, i.e. accumulating divisive decisions over the course of time.

## Bai and Perron multiple structural breaks test

We start by estimating equation (1) for each of the nine examined political sentiment variables.

$$y_t = \beta_0 + \varepsilon_t. \quad (1)$$

Where  $y_t$  is the sentiment variable of interest,  $\beta_0$  is a constant term representing the expected value of  $y_t$  in the examined period, and  $\varepsilon_t$  is a white noise process.

We then apply the Bai and Perron (1998, 2003) structural breaks test to equation (1). Within the procedure, equation (1) can be generalised to a regression model with  $m$  breaks:

$$y_t = \beta_j + \varepsilon_t, \quad t = T_{j-1} + 1, \dots, T_j \quad (2)$$

for  $j = 1, \dots, m + 1$ ,  $T_0 = 0$  and  $T_{m+1} = T$ . Break dates ( $T_1, \dots, T_m$ ) are determined within the procedure.

For each partition ( $T_1, \dots, T_m$ ), the procedure applies the ordinary least squares method and minimises the sum of squared residuals (SSR):

$$\sum_{j=1}^{m+1} \sum_{t=T_{j-1}+1}^{T_j} (y_t - x_t' \beta_j) \quad (3)$$

to estimate the model parameters  $\beta_j \{ (T_1, \dots, T_m) \}$ . The underlying SSR are denoted as  $S_t(T_1, \dots, T_m)$ . From that, it follows that the estimated break dates are given as:

$$(T_1, \dots, T_m) = \arg \min_{(T_1, \dots, T_m)} S_t(T_1, \dots, T_m). \quad (4)$$

Bai and Perron (1998, 2003) formally test the null hypothesis of  $m$  breaks vs the alternative of  $m + 1$  breaks. The null hypothesis is rejected if the SSR obtained from the model with  $m$  changes is sufficiently larger than the overall minimal value of SSR (over all segments where an additional change is included) and the break point thus selected is the one associated with this overall minimum (Bai & Perron, 2003). Each time a significant break is found, the full estimation period is split into two subsamples, and the test is re-applied to each of them. The procedure stops either when no additional significant breaks can be found, or when the subsamples have too few observations. The latter case is defined using the trimming percentage of 15% of the total sample size. We perform the test at the conventional 5% significance level, allowing for a maximum of 5 breaks.

## Threshold regression model

We apply a threshold regression model by expanding equation (1) to a multivariate framework:

$$y_t = X'_t \beta_j + \varepsilon_t, \quad (5)$$

where  $X'_t$  comprises industrial production, HICP, real wages, corruption perception, polarisation indicator, and cycle duration. In analysing the determinants of political sentiment, we express the examined regressors in their first lags<sup>2</sup> to adjust for the timing of data collecting and publishing. Opinion polls are administered at the beginning of each month, so we use lags of macroeconomic variables to match political sentiment with the data available to the respondents at the time they answer the polls. This also mitigates the reverse causality issue.

Let there be a threshold variable  $q_t$  and  $m$  thresholds such that the threshold values are  $y_1 < y_2 < \dots < y_m$ . The observed model is in regime  $j$  if and only if  $y_1 \leq q_t < y_{j+1}$ . Using an indicator function  $I_j(q_t; y) = 1(y_1 \leq q_t < y_{j+1})$ , model (5) can be generalised to  $m + 1$  regimes:

$$y_t = \sum_{j=0}^m I_j(q_t; y) \cdot X'_t \beta_j + \varepsilon_t. \quad (6)$$

We consider all variables in  $X'_t$  as potential threshold variables  $q_t$ . The optimal  $q_t$  and its optimal threshold values are determined applying a methodology analogous to the Bai and Perron (1998, 2003) test (equations 2-4). For each threshold value of each assessed variable, the SSR is calculated. With respect to that, the estimation of the model boils down to finding the set of *optimal* thresholds and the corresponding estimates that minimise SSR across all possible sets of threshold partitions. Again, we define the trimming percentage of 15%, allowing for a maximum of 5 breaks.

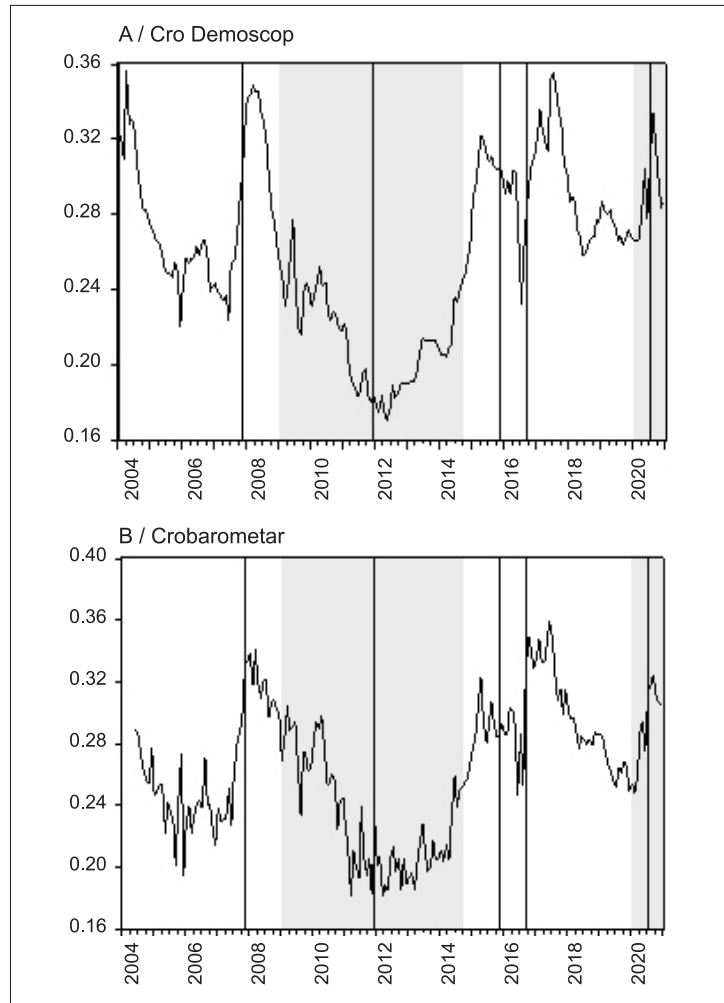
## RESULTS AND DISCUSSION

---

We depict the time dynamics of examined political sentiment variables in Figures 2– 5. In these Figures, we use vertical lines to pinpoint the dates of parliamentary elections (2007 M11, 2011 M12, 2015 M11, 2016 M09, and 2020 M07). This way we are able to grasp the potential correspondence between election cycles and political approval rates. We also use shading to highlight periods of economic crises: 2009 M01 to 2014 M09<sup>3</sup> and the Covid-19 crisis (from January 2020 onwards).



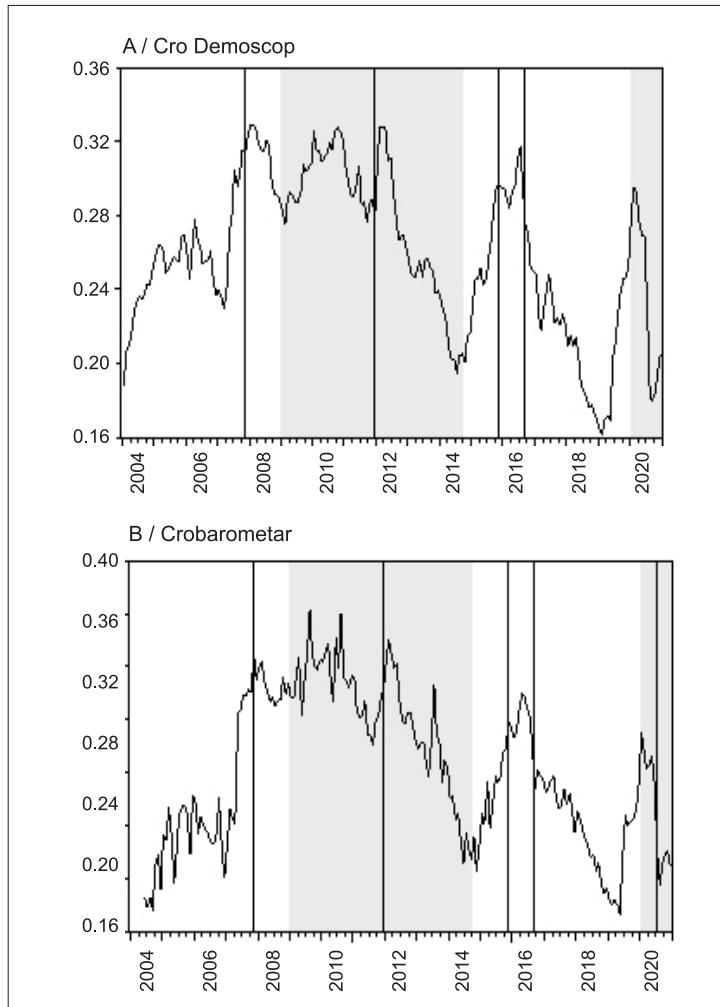
➡ FIGURE 2  
HDZ approval rate



Note: Shaded areas correspond to recessions, vertical lines correspond to parliamentary elections. Each point on the graph depicts a proportion.

A glance at Figures 2 – 5 reveals a certain degree of co-movement between the assessed political sentiments and the length of election cycle. At the beginning of each cycle, the approval rates of the two dominant parties, the Government approval rate, as well as the approval of the overall societal direction, record their local maxima. As the election cycle gets closer to its end, the level of examined political sentiment falls. There are two exceptions to this pattern. The first one dates to the unstable right-centre coalition after the 2015 M011 elections, which culminated in the fall of Government only 9 months after its formation. Also, Figure 1 reveals that the 2011–2015 election cycle is characterised by the exact opposite trend for HDZ.

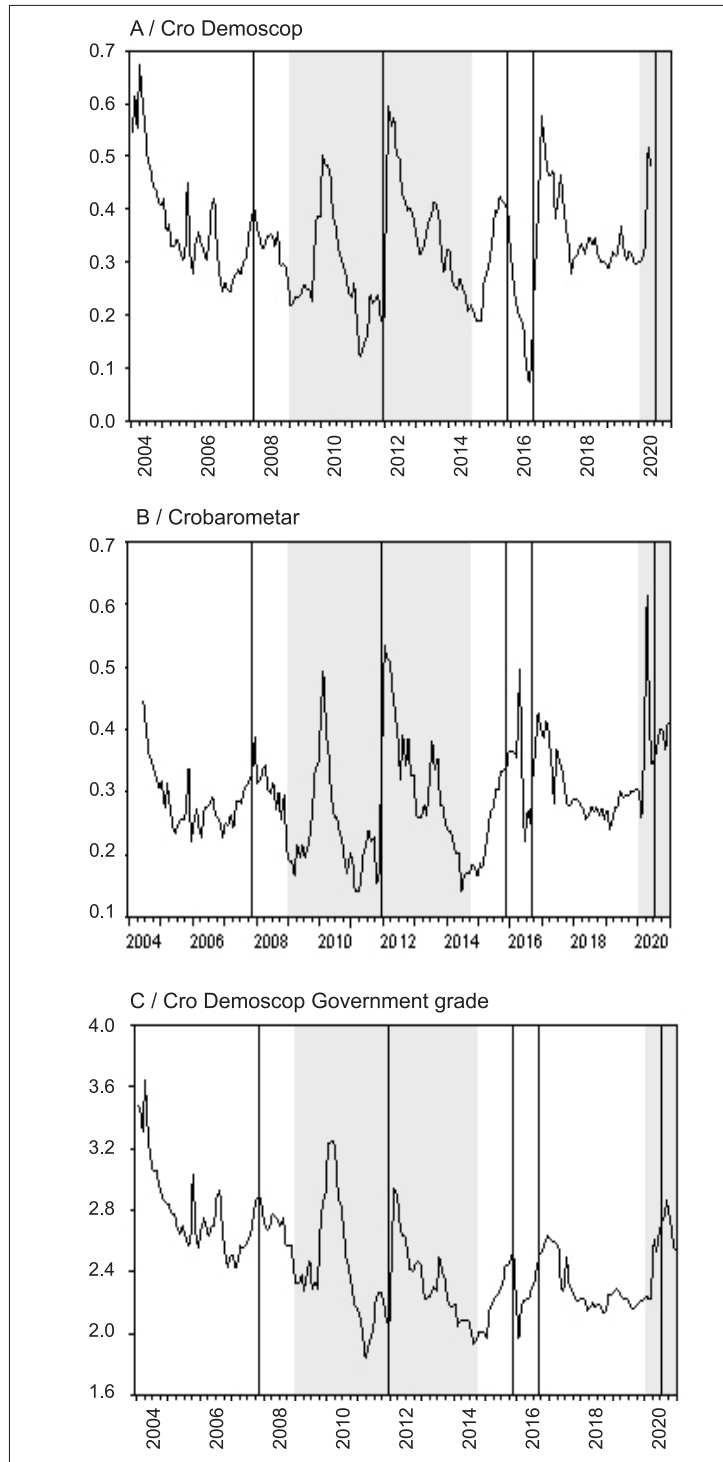
➡ FIGURE 3  
SDP approval rate



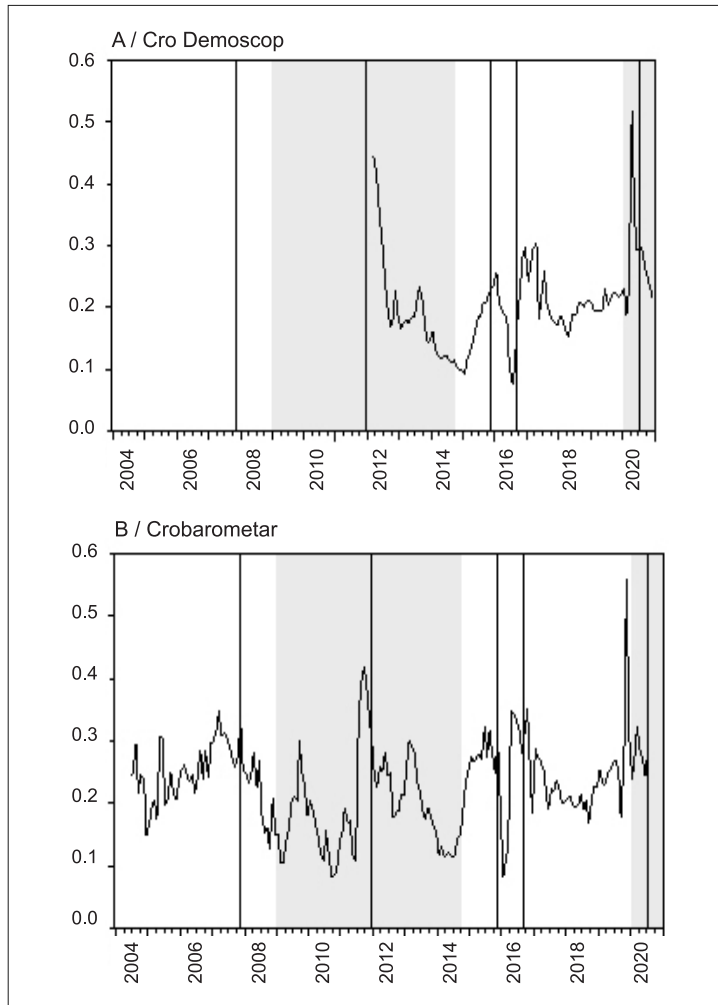
Note: See notes below Figure 2.

The interpretation of this finding is quite straightforward. In November 2011, criminal charges were pressed against HDZ for corruption and misappropriation of public funds. In an array of Croatian corruption scandals involving individual elected officials, this was the only case of criminal charges against a political party *per se*. This event triggered a historically low level of HDZ approval rate, which has then gradually increased afterwards. In the 2011 elections, HDZ lost the elections to the SDP-led coalition, which governed the country through an extremely harsh recession. Such a series of events had conditioned that the HDZ approval rate gradually started to increase because the public did not find them accountable for the deep socio-economic crisis.

➤ FIGURE 4  
Government approval rate



➡ FIGURE 5  
Approval of the  
general direction  
of the country



Note: See notes below Figure 2.

As the second step of the analysis, we apply the Bai and Perron (1998, 2003) test to identify the tipping points in the observed sentiments (Table 1).

Table 1 is to be read vertically. The full examined period (2004 M01 to 2020 M12) is segregated into sub-periods for each column (sentiment variable) that exhibited significant structural break(s). For each of the periods identified as breakpoints, we explain the politico-economic and broader societal circumstances associated with that period. This gives context to each established tipping point.

The first established break in the Cro Demoskop HDZ rating (2009 M06) corresponds to the resignation of Prime Minister Sanader (HDZ), which was followed by a series of corruption scandals connected to HDZ.

Variable	Period →				
Cro Demoskop HDZ approval rates	2004M01- -2009M06 0.28** (0.00)	2009M07- -2014M11 0.21** (0.00)	2014M12- -2017M12 0.31** (0.00)	2018M01- -2020M12 0.28** (0.00)	
Crobarometer HDZ approval rates	2004M06- -2007M07 0.24** (0.00)	2007M08- -2010M09 0.29** (0.00)	2010M10- -2014M11 0.21** (0.00)	2014M12- -2018M03 0.31** (0.00)	2018M04- -2020M12 0.28** (0.00)
Cro Demoskop SDP approval rates	2004M01- -2007M05 0.25** (0.00)	2007M06- -2012M08 0.31** (0.00)	2012M09- -2017M01 0.25** (0.00)	2017M02- -2020M12 0.22** (0.00)	
Crobarometer SDP approval rates	2004M06- -2007M04 0.19** (0.00)	2007M05- -2011M01 0.31** (0.00)	2011M02- -2013M09 0.28** (0.00)	2013M10- -2017M11 0.23** (0.00)	2017M12 -2020M12 0.19** (0.00)
Cro Demoskop government approval rates	2004M01- -2006M08 0.41** (0.00)	2006M9- -2011M08 0.30** (0.00)	2011M09- -2014M01 0.38** (0.00)	2014M02- -2016M09 0.26** (0.00)	2016M10- -2020M05 0.36** (0.00)
Crobarometer government approval rates	2004M06- -2012M12 0.29** (0.00)	2013M01- -2015M06 0.24** (0.00)	2015M07- -2020M12 0.32** (0.00)		
Cro Demoskop government grade	2004M01- -2006M08 2.89** (0.00)	2006M09- -2010M08 2.64** (0.00)	2010M09- -2020M12 2.30** (0.00)		
Cro Demoskop general direction of the country	2012M02- -2019M08 0.19** (0.00)	2019M09- -2020M12 0.26** (0.00)			
Crobarometer general direction of the country	2004M06- -2008M06 0.25** (0.00)	2008M07- -2011M06 0.16** (0.00)	2011M07- -2014M11 0.22** (0.00)	2014M12- -2020M07 0.25** (0.00)	

TABLE 1  
Structural break  
test results

Note: \*\* denotes significance at 1% level. Shaded cells correspond to down breaks. Figures in parentheses denote *p*-values.

Most of them are related to state-owned companies such as HEP, Brodosplit, Đakovština, and Croatian Railways. The extent of these scandals was such that ex-Prime Minister Sanader is serving a prison sentence for corruption at the time of writing this paper. The following break occurred in 2014 M12, bringing a rise of support for HDZ. This precisely coin-

cides with the presidential pre-elections period, where HDZ candidate Kolinda Grabar Kitarović won against the incumbent Ivo Josipović (SDP). The last identified sub-period starts in 2018 M01, a time marked by the insolvency crisis in Agrokor, one of the largest Croatian companies. In months prior to that break, the HDZ Government passed a special law and effectively took control over the company. The entire process was extensively covered by the media and negatively affected HDZ's public rating.

Regarding Crobarometer HDZ rating, the procedure identifies 2007 M08 as an *up* break. This period corresponds to a pre-election campaign with an optimistic economic outlook, when the ruling HDZ presented itself as accountable for the anti-corruption campaign and criminal charges against managers in the Croatian Privatisation Fund under the suspicion of corruption. Another tipping point, this time a *down* break, was identified in 2010 M10. This corresponds to the already described circumstances of HDZ- and Sanader-related corruption scandals. The following break is found in 2014 M12, again firmly corroborating our findings for the Cro Demoskop HDZ rating.

The final break is dated in 2018 M04, coinciding with the ratification of the Istanbul Convention under the HDZ Government. Although formally intended to combat violence against women, the Convention triggered a lot of harsh criticism from right-wing parties for the supposed destruction of the traditional family. Despite several major public protests, the ruling HDZ ratified the Convention, lost considerable support from the right wing, and initiated severe downward pressure on its approval rate.

The Cro Demoskop SDP rating has the first inflection point in 2007 M06. Intriguingly, this perfectly matches the SDP intra-party elections. In June 2007, Zoran Milanović became the new president of SDP and managed to increase the party ratings in the subsequent few years. A new break, this time in the negative direction, came in 2012 M09. This was the second wave of harsh recession in Croatia, following upon the European sovereign debt crisis. The SDP-led coalition Government opted for austerity measures, which initiated a series of mass protests. The final break in SDP rating was recorded in 2017 M02. Tomislav Saucha, SDP's Member of Parliament and the former Prime Minister's chief of staff, was charged with falsifying travel orders and pocketing 0.5 million Croatian kuna.

The Crobarometer SDP rating exhibits remarkably similar patterns. Again, the first break occurred in 2007 M05, as a result of a generational shift within the party itself. The second break was found in 2011 M02. Severe socio-economic disturbances caused by the global crisis triggered a series of mass

protests and street conflicts around the country. The subsequent break (2013 M10) again accounts for the second recessionary wave, Croatia's entrance into the European Excessive Deficit Procedure and S&P's downgrade of the Croatian credit rating. The final break in the Crobarometar SDP rating happened in 2017 M12, almost completely corresponding to the Agrokor crisis, which we had already established as an important determinant of diminishing support for HDZ. It seems, therefore, that the two political rivals react to very similar socio-economic events.

Further on, we inspect the tipping points of Government approval rates. In that respect, Cro Demoskop exhibits the first break in 2006 M09, corresponding to the first public suspicions of financial fraud related to the then HDZ Government and partially state-owned Brodosplit shipyard. This initiated a more intensive decline of the Government's public rating.

The following break in 2011 M09 does not correspond to any major societal disruption, so we are keen on relating it to the pre-election campaign (parliamentary elections were held in December 2011) and the prospect of a fresh start. The SDP-led coalition won those elections, but their economic results and the second recession dip conditioned the ongoing decrease of their approval rates. As already discussed, this time period is characterised by the exact same dynamics for all the examined sentiment variables, except the one related to HDZ. Then came the break in 2014 M02. The socio-economic circumstances of this period were already explained for the corresponding break in the Cro Barometar SDP rating in 2013 M10. The sovereign debt crisis and the related austerity measures brought an obvious downward trajectory of the Cro Demoskop Government approval rate.

The break identified in 2016 M10 again corroborates that political sentiment, and the Government mandate and the break are intertwined. Following the elections in September 2016, the Cro Demoskop Government approval rate found itself on a short-lived spike, followed by a decline trajectory as the mandate got closer to its end.

The results for the Crobarometar Government approval rate somewhat deviate from the other findings presented insofar. We identify only two breaks. The first one dates to 2013 M01, when the SDP Government passed the Fiscalisation in Cash Transactions Act as a tool to suppress tax evasion. However, fiscal cash registers were often perceived as an additional cost and a frustration source for the entrepreneurs and retailers, so the Act came with the price of a lowered public rating for the Government. The second break occurred in 2015 M07, bringing a noteworthy growth of the Government approval

rate as the Croatian economy had just rebounded after an extremely long and painful recession.

The breaks found in the Cro Demoskop Government grade mostly reflect the already explained major events in the recent Croatian politico-economic history. The first established break corresponds to 2006 M09 and the Brodosplit scandal, just as for the corresponding Government approval rate. The following break happened in 2010 M09, reflecting a long-term decrease of Government approval due to the already explicated affairs of HEP, Brodosplit, Đakovština, and Croatian Railways. It should be noted that none of the subsequent Governments managed to return their long-term approval rates to the pre-2010 levels, before these corruption scandals.

Finally, the dynamics of the Crobarometer general direction of the country rating basically summarises the insofar established socio-economic patterns in Croatia, just as its structural breaks identify the three most dominant economic and political events in recent Croatian history. The first break is identified in 2008 M07, reflecting the start of a harsh recession that slowed down the process of Croatian convergence towards core EU countries. The second break occurred in 2011 M07, corresponding to severe criminal charges against HDZ and its high representatives. The last break occurred in 2014 M12, indicating the end of an extremely long and painful economic crisis.

The Cro Demoskop general direction of the country has a considerably shorter time span than the other variables in this study, so the algorithm recognises 2019 M09 as the only tipping point. This was the month when the HDZ Government accepted the demand of the "67 is too much" initiative that an insured person should be entitled to an old-age pension upon reaching the age of 65 (instead of 67, as the Government proposed). Shortly after that, Croatia was hit by the COVID-19 crisis, causing a negative shock in almost every aspect of the economy. This shock was followed by Government measures to mitigate the crisis effects, which also reflected as a spike of Government approval in Croatia.

Summarising the above exposition of critical events that have shaped the Croatian political and economic landscape, it seems crucial to recognise several things. First, almost all considered types of political sentiment are highly dependent on the election cycle. They record optimistically high levels of approval in the sole start of the cycle, and then gradually correct downwards as the cycle reaches its end. Related to that, the approval rates of both major parties are under a great influence of intrinsic processes related to high party officials. Second, political sentiment seems not to react to minor changes



in the economic outlook. Only major disruptions such as the global financial crisis or the sovereign debt crisis indeed feed into diminished approval of both political parties and the Government.

The next step of the analysis is applying the Jones and Olken (2008) procedure, where we consider two variables specifically designed to capture the Croatian political and institutional context. First, we acknowledge the fact that Croatia is among the worst EU countries when it comes to corruption perception (Transparency International, 2020). This effect also seems to be firmly rooted in the origin of structural breaks found in Table 1. Furthermore, Croatian politics exhibits very robust and tenacious polarisation (Figure 1), so our analysis also includes the constructed polarisation indicator.

We also examine the duration of the election cycle as a potential determinant of *up* and *down* breaks. Namely, Dassonneville and Lewis-Beck (2014) examined 284 elections from 29 European countries, finding that an average incumbent loses more than 5% of votes from one election to the next. We focus on political sentiment, and not on election results, but a similar effect of diminishing popularity is quite easily observed from Figure 4.

Our application of the Jones and Olken (2008) procedure focuses on the structural breaks identified in Table 1. We impose these same breaks on each of the assessed macroeconomic and institutional factors, and calculate their average values in the periods before and after each break. That way, a total of 10 mean values before and 10 mean values after *up* breaks are obtained. In the analogous manner, 15 averages before and after *down* breaks are accumulated. We then scrutinise whether the examined macroeconomic and institutional data diverges across the established breaks via the Wilcoxon signed-rank test. The obtained results are presented in Table 2.

Literally none of the examined variables are significantly different before and after *up* breaks (see the mean difference in Table 2). However, *down* breaks reveal some interesting insights.

Inflation diminishes by 0.0820 percentage points after a significant *down* break in political sentiment. Namely, Croatia witnessed short deflation episodes during the Great Recession and the Covid-19 crisis. In such circumstances, a decline in political approval rates seems plausible. The second significant variable is election cycle. Political sentiment indeed does significantly drop as the election cycle approaches its end (see Mueller, 1970, Dassonneville & Lewis-Beck, 2014).

The stated asymmetries are completely in line with the concept of loss aversion (Tversky & Kahneman, 1991), meaning that economic agents react more intensively to negative changes than to positive ones.

Variable	Up breaks			Down breaks		
	Mean difference	<i>p</i> -value	Obs.	Mean difference	<i>p</i> -value	Obs.
HICP	-0.04	0.45	11	-0.08*	0.03	15
Industrial production	-0.01	0.97	11	-0.13	0.26	15
Unemployment	-2.22	0.08	11	-0.45	0.74	15
Real wages	-0.03	0.67	11	-0.01	0.87	15
Corruption perception	1.60	0.41	11	-1.17	0.28	15
Ideological polarisation	0.42	0.58	11	-0.52	0.23	15
Election cycle duration	-2.52	0.05	11	4.32**	0.00	15

TABLE 2  
Wilcoxon signed-rank  
test results

Note: \* (\*\*) denotes significance at 5% (1%) level.

To summarise, our initial hypothesis that Croatian political sentiment reacts to economic performance only in major disturbances seems to be valid. The asymmetry in this relationship is obvious and statistically significant. To corroborate this notion, we proceed by estimating a threshold regression model (Table 3).

First of all, it is evident that the unemployment rate is chosen as the threshold variable in literally all model specifications. This departs from the results presented in Table 2, but it should not be seen as unexpected. Namely, Croatia has long-term problems with high unemployment levels in EU comparison, and the problem has particularly escalated as a consequence of the global financial crisis and the subsequent sovereign debt crisis (Bejaković and Mrnjavac, 2018). Croatians obviously adjust their political sentiment in accordance with the recorded unemployment levels. The specifications that minimise SSR regularly correspond to models with several separate regimes.

TABLE 3  
Threshold regression  
estimation results

	Dependent variables					
	Cro Demoskop Government approval rates	Crobarometer Government approval rates	Cro Demoskop Government grade	Cro Demoskop general direction of the country	Crobarometer general direction of the country	
<i>Regime</i>	<i>un</i> <10.23	<i>un</i> <10.52	<i>un</i> <12.77	<i>un</i> <8.45	<i>un</i> <11.48	
Constant	0.33** (0.00)	0.36** (0.00)	1.94** (0.00)	-0.11 (0.41)	0.18** (0.00)	
Industrial production	-0.00 (0.47)	-0.00 (0.29)	0.00 (0.88)	-0.00 (0.78)	0.00 (0.50)	
HICP	0.02 (0.46)	-0.02 (0.48)	0.14 (0.08)	-0.09* (0.03)	0.02 (0.35)	

(continues)

(continued)	Dependent variables				
	Cro Demoskop Government approval rates	Crobarometer Government approval rates	Cro Demoskop Government grade	Cro Demoskop general direction of the country	Crobarometer general direction of the country
Unemployment	-0.00 (0.68)	-0.01 (0.24)	0.06** (0.00)	0.04** (0.01)	-0.00 (0.54)
Real wages	-0.01 (0.40)	-0.01 (0.25)	0.00 (0.90)	-0.04** (0.00)	0.00 (0.54)
Corruption perception	-0.00 (0.54)	-0.00 (0.37)	0.00 (0.79)	-0.00 (0.10)	-0.00 (0.33)
Ideological polarisation	0.00 (0.60)	-0.00 (0.32)	-8.46E-05 (0.93)	-0.001* (0.02)	3.70E-05 (0.87)
Election cycle duration	0.00 (0.37)	8.45E-05 (0.87)	0.00 (0.91)	0.00* (0.01)	0.00** (0.00)
<i>Regime</i>	<i>10.23 ≤ un &lt; 13.13</i>	<i>10.52 ≤ un &lt; 13.97</i>	<i>12.77 ≤ un &lt; 14.29</i>	<i>8.45 ≤ un &lt; 14.50</i>	<i>11.48 ≤ un &lt; 13.51</i>
Constant	0.92** (0.00)	0.72** (0.00)	-2.36 (0.08)	1.00** (0.00)	-0.05 (0.81)
Industrial production	0.01 (0.23)	0.00 (0.49)	0.01 (0.73)	0.00 (0.53)	-0.00 (0.87)
HICP	-0.00 (0.97)	0.00 (0.99)	0.22 (0.21)	-0.02 (0.72)	0.02 (0.60)
Unemployment	-0.04** (0.01)	-0.03** (0.00)	0.39** (0.00)	-0.05** (0.00)	0.03 (0.07)
Real wages	-0.00 (0.99)	0.00 (0.74)	0.05 (0.22)	0.01 (0.57)	0.01 (0.25)
Corruption perception	0.00 (0.77)	0.00 (0.49)	0.00 (0.58)	-9.39E-05 (0.83)	-0.00 (0.50)
Ideological polarisation	-0.00 (0.20)	-0.00 (0.57)	0.00 (0.48)	0.00 (0.38)	0.00 (0.72)
Election cycle duration	-0.01** (0.00)	-0.00** (0.00)	-0.02** (0.00)	-0.02** (0.00)	-0.00** (0.00)
<i>Regime</i>	<i>13.13 ≤ un &lt; 14.29</i>	<i>13.97 ≤ un</i>	<i>14.29 ≤ un</i>	<i>14.50 ≤ un &lt; 16.67</i>	<i>13.51 ≤ un &lt; 16.67</i>
Constant	-2.86** (0.00)	1.00** (0.00)	4.34** (0.00)	2.30** (0.00)	0.48** (0.00)
Industrial production	0.01 (0.24)	-0.00 (0.58)	-0.03 (0.12)	-0.01 (0.00)	-0.00 (0.80)
HICP	0.09 (0.13)	0.02 (0.55)	0.21 (0.07)	0.07** (0.00)	0.02 (0.42)
Unemployment	0.24** (0.00)	-0.04** (0.00)	-0.12** (0.00)	-0.13** (0.00)	-0.02* (0.03)
Real wages	0.02 (0.10)	0.00 (0.56)	-0.01 (0.75)	0.01 (0.30)	-0.01 (0.17)

(continues)

(continued)	Dependent variables				
	Cro Demoskop Government approval rates	Crobarometer Government approval rates	Cro Demoskop Government grade	Cro Demoskop general direction of the country	Crobarometer general direction of the country
Corruption perception	0.00 (0.37)	0.00 (0.51)	0.00 (0.72)	0.00 (0.12)	-0.00 (0.31)
Ideological polarisation	0.00 (0.49)	2.63E-05 (0.95)	-0.00 (0.44)	-9.26E-05 (0.82)	-0.00 (0.11)
Election cycle duration	-0.01** (0.00)	-0.00** (0.00)	-0.00 (0.75)	-0.01** (0.15)	0.00** (0.00)
<i>Regime</i>	14.29 ≤ un			16.67 ≤ un	16.67 ≤ un
Constant	1.04** (0.00)			0.20 (0.67)	2.82** (0.00)
Industrial production	-0.01* (0.02)			-0.00 (0.74)	0.01 (0.32)
HICP	0.12** (0.00)			0.03 (0.51)	-0.07 (0.25)
Unemployment	-0.04** (0.00)			0.00 (0.92)	-0.15** (0.00)
Real wages	-0.00 (0.73)			0.00 (0.76)	0.00 (0.90)
Corruption perception	0.00 (0.36)			-8.59E-05 (0.79)	-0.00 (0.16)
Ideological polarisation	-0.01 (0.29)			0.00 (0.70)	0.00 (0.49)
Election cycle duration	-0.00 (0.72)			-0.00** (0.00)	-0.00* (0.02)
Adj. R <sup>2</sup>	0.41	0.43	0.43	0.70	0.41

Note: \* (\*\*) denotes significance at 5% (1%) level. *p*-values are given in parentheses. Label un represents the unemployment rate. Each column represents the chosen threshold values (regime) followed by the estimated regression coefficients.

Therefore, the Croatian political sentiment does not develop in a linear fashion. This aligns with the arguments of Berlemann and Enkelmann (2014), who postulate that political sentiment cannot be adequately captured using linear estimation techniques. In addition, the results in Table 3 suggest that unemployment has an insignificant or even a positive effect on political sentiment in the low-unemployment regimes. This finding is robust across all considered sentiment variables. As the model advances to high-unemployment regimes, the effect of unemployment becomes negative and significant. These

results are again comparable to those of Berlemann and Enkelmann (2014), who establish a similar threshold effect for the US.

HICP is mostly found to be insignificant. This result is invalidated only in the extremes: the lowest unemployment regime in the Cro Demoskop *general direction of the country* model indicates that political sentiment decreases as inflation grows, and the  $14.29 \leq$  unemployment regime for the Cro Demoskop Government approval rate suggests that sentiment is positively affected by inflation.

Another rather robust finding is that all types of Croatian political sentiment diminish as the election cycle gets closer to its end. Call it the *cost of ruling* (Mueller, 1970) or the irritation of citizens by crony capitalism and clientelism in the Croatian case, but the phenomenon seems to be quite persistent.

Our corruption perception indicator was not significant in any of the considered specifications. Nevertheless, we see corruption as an important contextual variable for the Croatian case. Economic processes such as the Agrokor crisis or speculations about financial fraud in companies such as Brodosplit, HEP, Croatian Railways, etc. (see breaks in Table 2 and the corresponding interpretations) are in fact stories about corruption and its role in the Croatian political scene. Croatian economy is a state-centred one, often acting as a catalyst for corruption in state-owned enterprises and public procurement corruption (Ateljević & Budak, 2010). Similar argumentation should be valid for political polarisation. Although our polarisation proxy is significant only in a small number of specifications in Table 3, we see polarisation as an important piece of the puzzle in the relationship between the economy and political sentiment (Henjak, 2007; Henjak et al., 2013; Raos, 2019). Our inability to establish their significant effects on political sentiment can probably be attributed to the methodological issue. Both variables are latent in nature, and proxying them via media reports to obtain monthly observations is only one of the possible empirical approaches. We therefore leave the other ones (primarily the Raos (2019) polarisation measure) for further research.

## CONCLUSIONS

---

This paper adds to the literature by identifying structural breaks in the Croatian political sentiment. We find that the approval rates of two main political parties (HDZ and SDP), as well as the approval rates of the Government and the general direction of the country, exhibit trajectories that are mostly independent of the macroeconomy, with the exception of the global financial crisis. The tipping points in the assessed political sentiments mostly correspond to intrinsic factors such as

changes in the party leadership or prosecutions against high-ranked party officials. The relationship between the macro-economy and the incumbent's approval is asymmetric in the sense that only major economic turmoil can alter the way citizens evaluate political parties and public administration.

To scrutinise this effect in more detail, we pursue with the analysis of determinants between up and down breaks in political sentiment, and show strong evidence of asymmetric effects. As suggested by prospect theory, citizens are proven to react only to negative changes in inflation and real wages. Finally, a threshold regression model shows that the considered types of political sentiment depend on the unemployment rate, again in a highly nonlinear manner. Large values of unemployment significantly diminish Croatian approval of the Government and the general direction of the country. These findings largely correspond to the prevailing picture of Croatia as a politically highly polarised country, so voters do not valorise political parties based on their efficiency in delivering favourable economic results.

## NOTES

---

<sup>1</sup> Cro Demoskop and Crobarometar opinion polls are not conducted in election month(s). To circumvent this issue and resolve the problem of missing values, we use linear interpolation. This procedure is rather standard in the literature (see e.g. Geys, 2010).

<sup>2</sup> Election cycle variable is modelled in its contemporaneous value as it is a deterministic variable. We exclude the approval rates of HDZ and SDP from this analysis because these variables do not reflect the incumbents' economic efficiency in periods when the stated parties are not holding a majority of elected positions.

<sup>3</sup> Recessions are defined as negative real GDP growth rates in two consecutive quarters. Technically, Croatia witnessed a double-dip recession in the examined period. The first recession spanned from 2009 Q1 to 2011 Q2. Then came the second recessionary wave, spanning from 2011 Q4 to 2014 Q3. Despite the established break in mid-2011, we opted for observing the entire period of 2009 Q1 to 2014 Q3 as a recession since it obviously implied an unprecedented level of economic uncertainty. As we are analysing monthly data, 2009 Q1-2014 Q3 translated into 2009 M01-2014 M09.

## APPENDIX

### Keywords used for the quantification of media-based indicators

A/ Polarisation indicator	Keywords	
		Communist
		Fascist
		Nazi
		Ustasha
		Partisan
		Bleiburg
		Way of the Cross
		Jasenovac
		Tito
		UDBA
		Lustration
		War Veteran protests
		Treason
		Traitor
		State enemy
B/ Corruption perception indicator	Keywords	Logical negation
	Corrupt(ion)	Anti-corruption
	Bribe	Strategy
	Conflict	Plan
	of interest	Conference

## REFERENCES

- Ateljević, J., & Budak, J. (2010). Corruption and public procurement: Example from Croatia. *Journal of Balkan and Near Eastern Studies*, 12(4), 365–397. <https://doi.org/10.1080/19448953.2010.531202>
- Bai, J., & Perron, P. (1998). Estimating and testing linear models with multiple structural changes. *Econometrica*, 66(1), 47–78. <https://doi.org/10.2307/2998540>
- Bai, J., & Perron, P. (2003). Computation and analysis of multiple structural change models. *Journal of Applied Econometrics*, 18(1), 1–22. <https://doi.org/10.1002/jae.659>
- Bejaković, P., & Mrnjavac, Ž. (2018). The danger of long-term unemployment and measures for its reduction: The case of Croatia. *Economic Research*, 31(1), 1837–1850. <https://doi.org/10.1080/1331677X.2018.1521295>
- Berlemann, M., & Enkelmann, S. (2014). The economic determinants of U.S. presidential approval: A survey. *European Journal of Political Economy*, 36, 41–54. <https://doi.org/10.1016/j.ejpolco.2014.06.005>
- Berlemann, M., Enkelmann, S., & Kuhlenkasper, T. (2015). Unraveling the relationship between presidential approval and the economy:

A multidimensional semiparametric approach. *Journal of Applied Econometrics* 30(3), 468–486. <https://doi.org/10.1002/jae.2380>

Bochsler, D., & Hänni, M. (2019). The three stages of the anti-incumbency vote: Retrospective economic voting in young and established democracies. *European Journal of Political Research*, 58(1), 30–55. <https://doi.org/10.1111/1475-6765.12269>

Chang, C. P., & Lee, C. C. (2010). US macroeconomic conditions and asymmetric adjustment in Presidential approval. *Journal of Economic Policy Reform*, 13(3), 251–258. <https://doi.org/10.1080/17487870.2010.503087>

Dassonneville, R., & Lewis-Beck, M. S. (2014). Macroeconomics, economic crisis and electoral outcomes: A national European pool. *Acta Politica*, 49, 372–394. <https://doi.org/10.1057/ap.2014.12>

Döring, H., & Manow, P. (2020). *Parliaments and Governments database (ParlGov): Information on parties, elections and cabinets in modern democracies. Development version*. Retrieved January 25, 2021, from [http://www.parlgov.org/data/table/view\\_election/](http://www.parlgov.org/data/table/view_election/)

Engler, S. (2016). Corruption and electoral support for new political parties in Central and Eastern Europe. *West European Politics*, 39(2), 278–304. <https://doi.org/10.1080/01402382.2015.1084127>

Geys, B., & Vermeir, J. (2008). Taxation and presidential approval: Separate effects from tax burden and tax structure turbulence? *Public Choice*, 135(3–4), 301–317. <https://doi.org/10.1007/s11127-007-9264-8>

Geys, B. (2010). Wars, presidents, & popularity: The political cost(s) of war re-examined. *Public Opinion Quarterly*, 74(2), 357–374. <https://doi.org/10.1093/poq/nfq001>

Henjak, A. (2007). Values or interests: Economic determinants of voting behavior in the 2007 Croatian Parliamentary Elections. *Politička misao*, 44(5), 71–90. <https://hrcak.srce.hr/file/41772>

Henjak, A., Zakošek, N., & Čular, G. (2013). Croatia. In S. Berglund, J. Ekman, K. Deegan-Krause, & T. Knutsen (Eds.) *Handbook of political change in Eastern Europe* (pp. 443–480). Edward Elgar Publishing. <https://doi.org/10.4337/9781782545880.00020>

Hernández, E., & Kriesi, H. (2015). The electoral consequences of the financial and economic crisis in Europe. *European Journal of Political Research*, 55(2), 203–224. <https://doi.org/10.1111/1475-6765.12122>

Jones, B. F., & Olken, B. A. (2008). The anatomy of start-stop growth. *The Review of Economics and Statistics*, 90(3), 582–587. <https://doi.org/10.1162/rest.90.3.582>

Jung, J. W., & Oh, J. (2019). Determinants of presidential approval ratings: Cross-country analyses with reference to Latin America. *International Area Studies Review*, 23(3), 251–267. <https://doi.org/10.1177/2233865919888373>

Key, V. O. (1964). *Politics, parties, and pressure groups. 5th edition*. Crowell.

Kramer, G. H. (1971). Short-term fluctuations in U. S. voting behavior, 1896–1964. *The American Political Science Review*, 65(1), 131–143. <https://doi.org/10.2307/1955049>



- MacKuen, M. B., Erikson, R. S., & Stimson, J. A. (1992). Peasants or bankers: The American electorate and the U.S. economy. *American Political Science Review*, 86(3), 597–611. <https://doi.org/10.2307/1964124>
- Maddison Project Database. (2018). Jutta, B., R. Inklaar, H. de Jong, & van Zanden, J. L. (2018). *Rebasing 'Maddison': New income comparisons and the shape of long-run economic development*.
- Mueller, J. E. (1970). Presidential popularity from Truman to Johnson. *American Political Science Review*, 64(1), 18–34. <https://doi.org/10.2307/1955610>
- Quinlan, S., & Okolikj, M. (2019). Patrimonial economic voting: A cross-national analysis of asset ownership and the vote. *Journal of Elections, Public Opinion and Parties*, 32(1), 193–213. <https://doi.org/10.1080/17457289.2019.1655758>
- Raos, V. (2019). Ideology, partisanship, and change: Voter profiles of main political parties in Croatia. *Politička misao: časopis za politologiju*, 56(3-4), 7–28. <https://doi.org/10.20901/pm.56.3-4.01>
- Sorić, P., Henjak, A., & Čižmešija, M. (2023). The decoupling of Government sentiment and the macroeconomy in a highly polarized political setting. *East European Politics*, 39(3), 523–553. <https://doi.org/10.1080/21599165.2023.2164851>
- Transparency International. (2020). *Corruption Perception Index 2019*. Retrieved December 21, 2020, from <https://www.transparency.org/en/cpi/2019/index/hrv>
- Tversky, A., & Kahneman, D. (1991). Loss aversion in riskless choice: A reference-dependent model. *Quarterly Journal of Economics*, 106(4), 1039–1061. <https://doi.org/10.2307/2937956>

## Strukturni prekidi u hrvatskom političkom sentimentu: kada, zašto i ima li ekonomija išta s tim?

Petar SORIĆ, Marija HRUŠKA  
Ekonomski fakultet, Sveučilište u Zagrebu, Zagreb, Hrvatska

Rad primjenjuje dvije ankete političkoga mišljenja te formalno testira strukturne prekide u podršci glavnim hrvatskim političkim strankama, Vladi i općem društvenom smjeru. Za razliku od mainstreamskih istraživanja političkoga sentimenta, pronalazimo asimetrične efekte između makroekonomije i percepcije političara na vlasti. Utvrđeni strukturni prekidi nastaju zbog korupcijskih afera čelnih osoba političkih stranaka te zbog velikih negativnih ekonomskih šokova, čime se potvrđuje koncept averzije gubitka. Tijekom pozitivnih ekonomskih kretanja, politički sentiment ima zasebnu putanju, neovisnu o makroekonomiji. Ispitujemo i efekte praga u procesu generiranja političkoga sentimenta te pronalazimo značajnu reakciju isključivo pri visokoj razini nezaposlenosti. Navedeni zaključci u skladu su

DRUŠ. ISTRAŽ. ZAGREB  
GOD. 33 (2024), BR. 1,  
STR. 53-78

SORIĆ, P., HRUŠKA, M.:  
TIPPING POINTS...

s prevladavajućim narativom da je hrvatska politička scena izrazito polarizirana, podijeljena oko ideoloških pitanja i sociokulturnih normi, pa birači u uobičajenim ekonomskim okolnostima ne ocjenjuju vladajuće na temelju njihove ekonomske uspješnosti nego na temelju njihove uspješnosti u reprezentiranju ideoloških pozicija.

Ključne riječi: politički sentiment, strukturni prekidi, podrška Vladi, ispitivanje političkoga mišljenja, ekonomsko glasanje



Međunarodna licenca / International License:  
Imenovanje-Nekomercijalno / Attribution-NonCommercial