FACULTY OF INTERNATIONAL AND POLITICAL STUDIES
University of Lodz

Summary of Professional Accomplishments

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Contents

1   Name

— Michał Pierzgalski[1] (1983)

2   Diplomas, degrees conferred in specific areas of science or arts, including the name of the institution which conferred the degree, year of degree conferment, the title of the PhD dissertation

2011   **PhD degree** (University of Lodz, Faculty of International and Political Studies) in the field of humanities (discipline: **political science**). PhD thesis titled "Metody badania systemów wyborczych i ich zastosowanie: na przykładzie wybranych państw Azji Wschodniej" written under the supervision of Prof. Alicja Stępień-Kuczyńska; reviewers: Prof. Eugeniusz Ponczek, Prof. Arkadiusz Żukowski;

2013   **Master's degree** in **economics** (University of Lodz, Faculty of Economics and Sociology); title of the master's thesis: "Kapitał społeczny a poparcie wyborcze dla PSL, PO i PIS w wyborach do Sejmu 2007 i 2011" (supervisor: Prof. Jan Jacek Sztaudynger);

2005   **Master's degree** in **international relations** (University of Lodz, Faculty of International and Political Studies); title of the master's thesis: "Partie i system partyjny Japonii w latach 1955-2005" (supervisor: Prof. Alicja Stępień-Kuczyńska).

3   Information on employment in research institutes or faculties/departments or schools of arts

- Employment as **an assistant professor** (research and teaching position) since 2011-09-30; permanent contract; in the Department of Political Systems (Faculty of International and Political Studies), **University of Lodz**.

- Co-investigator in the project (no. 2018/29/B/HS6/00719) funded by National Science Centre (Poland), in 2019-2021 (**contract of mandate**); Faculty of

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[1]My research profile on the UŁ website: https://www.uni.lodz.pl/pracownicy/michal-pierzgalski

Psychology, **University of Warsaw.**

4   Description of the achievements, set out in art. 219 para 1 point 2 of the Act

4.1   Title

The cycle/series of scientific articles related thematically[2], pursuant to art. 219 para 1. point 2b of the Act entitled:

> **Title**
>
> *Effects of Electoral Rules: The Impact of the Electoral System on Political Behavior and Outcomes of Democratic Elections.*

The above title defines a general research problem that has been addressed in the papers that are part of the series of articles.

4.2   List of author's publications constituting a scientific achievement, along with a description of their contribution. The achievement consists of a series of seven publications from 2015 to 2023.

The publications comprising the dissertation cycle that forms the basis for applying for the degree of habilitated doctor represent a contribution to the body of scientific knowledge in the sub-discipline of "**electoral studies**"; in particular, the cycle includes articles on the so-called *mechanical* and *psychological* (see e.g. Clark and Golder (2006)) impact of electoral rules on political behavior (i.e. broadly: voting behavior of voters, candidates, parties, as well as behavior of governing and parliamentary political parties) and on election results (see Figure 1).

The presentation of research results in respected domestic journals (e.g. "Studia Socjologiczne"), as well as prestigious international periodicals (such as "Comparative Political Studies", "European Journal of Political Research" or "Electoral

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[2]The series **DOES NOT** include publications with publishers that charge any fees from authors for publishing manuscripts.

Studies") with rigorous peer review procedures[3], demonstrates that the published findings represent a meaningful contribution to the advancement of political science.

Table 1: A series of **seven thematically related scientific articles**, in accordance with Article 219(1)(2b) of the Act.

No.	Articles and my contribution	Bibliometric data (as of July 22, 2023)
1.	Górecki, M. A., & **Pierzgalski**, M. (2023). Electoral Systems, Partisan Politics, and Income Redistribution: A Critical Quasi-Experiment. *Comparative Political Studies, 0(0), pp. 1-36.* **Replication data**, including R code and Appendix (pp. 1-32) are publicly available via Harvard Dataverse: https://doi.org/10.7910/DVN/YWBT2M **My contribution**: **corresponding author**; participation in study design (research questions, hypotheses, method selection); participation in statistical data analysis: in particular, preparation of database, implementation of synthetic control method/synthetic control unit (*bayesian* variant) using R programming language, sensitivity analysis (*sensitivity analysis*) such as MCMC convergence analysis or Gelman-Rubin convergence test, visualization of results; participation in interpretation and discussion of results; participation in manuscript preparation: in particular, preparation of manuscript sections concerning method, sections with sensitivity analysis; manuscript editing; preparation of appendices with detailed results; preparation of materials for study replication and their publication in Harvard Dataverse repository; participation in manuscript editing. This study was funded by the **National Science Centre, Poland** (Grant No. UMO-2019/33/B/HS5/02710). **Principal investigator**: Michał Pierzgalski, University of Lodz, Poland.	**Impact factor**: 5.0 (Scopus) SCImago Journal Rank: 3.77 Polish Ministry of Science points: 200

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[3]Each article in the series was reviewed by 2-4 anonymous reviewers.

Table 1: A series of **seven thematically related scientific articles**, in accordance with Article 219(1)(2b) of the Act. (Continued)

2.	Górecki, M. A., & **Pierzgalski**, M. (2022). Legislated candidate quotas and women's descriptive representation in preferential voting systems. *European Journal of Political Research. Wiley, 61(1), 154-174.*	**Impact factor**: 5.3 (Scopus) SCImago Journal Rank: 3.59 Polish Ministry of Science points: 140

Replication data, including R code and Appendix (pp. 1-6) are publicly available at: https://ejpr.onlinelibrary.wiley.com/doi/full/10.1111/1475-6765.12443

My contribution: participation in research design (research questions, hypotheses, method selection); participation in statistical data analysis: in particular, data management, implementation of *synthetic control* method using R programming language, sensitivity analysis (*sensitivity analysis*) such as placebo tests, visualization of results; participation in interpretation and discussion of results; participation in manuscript preparation: in particular, preparation of manuscript sections concerning method, sections with sensitivity analysis; manuscript editing; preparation of appendices with detailed results; preparation of materials for study replication and uploading them to Harvard Dataverse public repository; participation in manuscript editing.

3.	**Pierzgalski**, M., Górecki, M. A., & Stępień, P. (2020). Ballot paper design and vote spoiling at Polish local elections of 2014: Establishing a causal link. *East European Politics and Societies. Sage, 34(3), 611-636.*	**Impact factor**: 0.7 (Scopus) SCImago Journal Rank: 0.35 Polish Ministry of Science points: 100

Replication data, including R code and Appendix (pp. 1-3) available at:: https://doi.org/10.7910/DVN/KAE90L

My contribution: **corresponding author**; study design (research questions, hypotheses, method selection); literature review, participation in data collection and analysis of collected statistical data (in particular, implementation of the method (*synthetic control*) using R programming language, sensitivity analysis); participation in interpretation and discussion of results; leading role in manuscript preparation; preparation of sections with sensitivity analysis; editing of the entire manuscript; preparation of appendices; preparation of materials for study replication.

Table 1: A series of **seven thematically related scientific articles**, in accordance with Article 219(1)(2b) of the Act. (Continued)

4.	**Pierzgalski**, M. (2018). Balancing disproportionality and parliament fragmentation: A simulation study of the mechanical effects of district magnitude on electoral outcomes. *Electoral Studies. Elsevier, 54, 205-217.* **Replication data**, including R code and Appendix (pp. 1-13) available at Harvard Dataverse: https://doi.org/10.7910/DVN/FYH5WG **My contribution**: **corresponding author**, 100%	**Impact factor**: 2.3 (Scopus) SCImago Journal Rank: 1.61 Punctacja MEiN: 100p.
5.	**Pierzgalski**, M., & Stępień, P. (2017). A Peculiar Interpretation of the Constitutional Principle of "One Person, One Vote" in Poland: Voter (In)equality in the Elections to 1,200 Local Legislatures. *East European Politics and Societies. Sage, 31(4), 704-738.* **My contribution**: **corresponding author**; study design (research questions, hypotheses, method selection); literature review, participation in data collection and analysis of collected statistical data; participation in interpretation and discussion of results; leading role in manuscript preparation; editing of the entire manuscript.	**Impact factor**: 0.7 (Scopus) SCImago Journal Rank: 0.35 Polish Ministry of Science points: 100
6.	**Pierzgalski**, M., Stępień, P. (2017). Nierówność wyborców w wyborach gminnych 2014. „Studia Socjologiczne", nr 1, IFiS PAN, 103-136. **My contribution**: **corresponding author**; study design (research questions, hypotheses, method selection); literature review, participation in data collection and analysis of collected statistical data; participation in interpretation and discussion of results; leading role in manuscript preparation; editing of the entire manuscript.	(Scopus) SCImago Journal Rank: 0.15 Polish Ministry of Science points: 70
7.	**Pierzgalski**, M. (2015). Gerrymandering, czyli manipulowanie strukturą granic okręgów wyborczych. *Studia Socjologiczne, IFiS PAN, 218(3), 7-39.* **My contribution**: **corresponding author**, 100%	(Scopus) SCImago Journal Rank: 0.15 Polish Ministry of Science points: 70p.

Table 1: A series of **seven thematically related scientific articles**, in accordance with Article 219(1)(2b) of the Act. (Continued)

Numerical summary:

- In each of the co-authored articles contained in the series, my contribution ranges from 50% to 80%, and in 4 out of 5 co-authored articles I am the **corresponding author**;
- Total IF of the series (2023, Clarivate, Web of Science): **14**;
- Total SJR of the series (2023, Scopus): 9.97;
- Total Polish Ministry of Science points (as per journal list dated December 18, 2019, and also July 17, 2023): **780p**.

Figure 1: The diagram presents a simplified illustration of the relationships between variables within the field of electoral research that have been analyzed as part of the article series; electoral rules (electoral system) and political behavior.
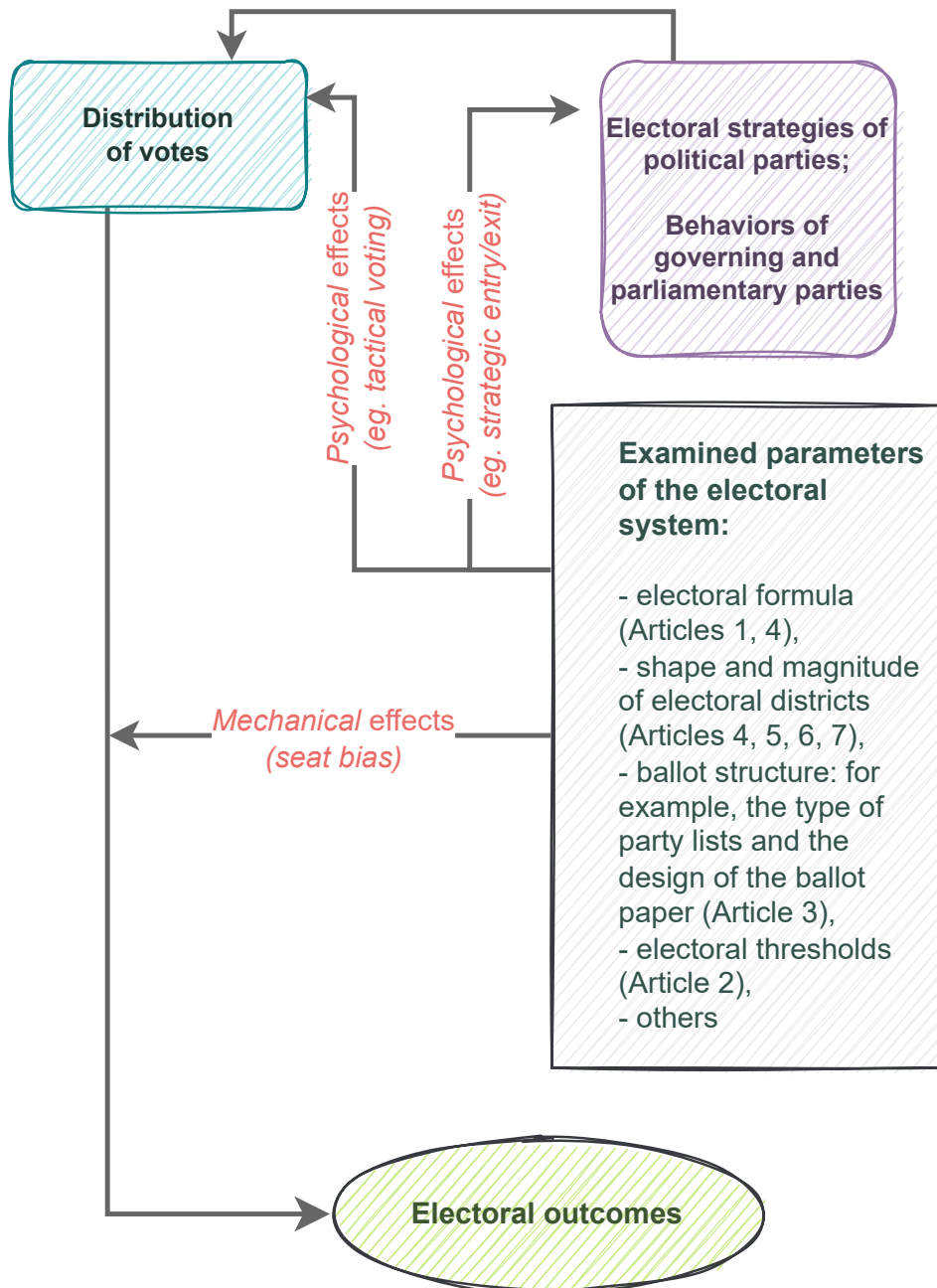
4.3 Description of the achievement; concise discussion of the scientific objective of the aforementioned work and the achieved results.

Introduction

Electoral studies, including the analysis of so-called *mechanical* and *psychological/behavioral* effects of electoral systems (see e.g. Clark and Golder (2006)), is an important sub-discipline of political science that is developing dynamically both in theoretical and methodological aspects. The specificity of research problems in the field of electoral studies enables empirical research using qualitative and quantitative methods. In particular, currently, there is an observed development of advanced methods of causal inference using non-experimental data[4]. These are tools such as the synthetic control method[5], which I used in the research presented in the series of articles.

An electoral system (voting system, or just electoral rules) can, *sensu largo*, be defined as "a set of legal norms regulating the organization and conduct of elections, as well as the principles for determining their results" (Żukowski, 2010, p. 7). In particular, an electoral system is a complex set of interactions between variables such as:

1. seat allocation method (electoral formula, e.g., Jefferson-d'Hondt method);

2. geometry and magnitude of electoral districts;

3. voters' prerogatives during voting, conditioned by variables such as the type of electoral lists (open or closed) or ballot paper design;

4. formal thresholds of representation (e.g., 5% threshold in elections to the Polish Sejm).

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[4]It is worth mentioning here that one of the pioneers of causal inference theory and the so-called counterfactual analysis was the Polish scientist Jerzy Spława-Neyman, co-founder of the theory of statistical inference, who developed the foundations of the so-called potential outcome model (also known as the Neyman-Rubin model). The so-called potential outcome framework was first proposed by Jerzy Neyman in his 1923 paper. (see eg. Rubin (1990))

[5]A relatively accessible, popular description of the synthetic control approach can be found e.g. in: Changhyun Kim, Synthetic Control Method for causal inference - Basics with simple mathematics. https://medium.com/@chyun55555/synthetic-control-method-for-causal-inference-basics-with-simple-mathematics-c61fc42fd472 (accessed 17.07.2023)

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The research findings presented in the articles comprising this series develop the sub-discipline of political science electoral studies with regard to interrelated thematic areas, which I concisely discuss in Sections 4.3.1-4.3.5.

4.3.1 Electoral districts, political behavior and electoral outcomes: evidence from Polish municipal elections under the Act of 5 January 2011 Electoral Code (abbreviated as "Electoral Code 2011") [papers no. 5, 6 and 7 (see Table 1)]

1. **Research problems/questions**: How do the *shape* and *size* of electoral districts affect election results in Poland (after the electoral law reform in 2011)? Research on the impact of electoral districts on election results encompasses two important issues: 1) the **shape** of electoral districts and the threat of ***gerrymandering***, i.e. the susceptibility of electoral districts to manipulation of their geometry; 2) the district **magnitude** and the problem of the "value" of votes (the so-called ***malapportionment***).

2. **Methods**: exploratory/descriptive analysis of statistical data (including the use of data visualization tools to demonstrate the mechanics of gerrymandering); quantitative indicator analysis (methods for assessing deviations from proportionality, e.g. the Loosemore-Hanby index); analysis of dependencies using the logistic regression model (studying the correlates of malapportionment); qualitative content analysis of legal documents (election law acts in Poland); case study;

3. **Brief description of articles in the series addressing a given research problem**.

Gerrymandering. The earliest of the articles included in the series, Pierzgalski (2015), concerns the problem of manipulating the geometry of electoral districts. The shape of a district can be modified (even within the limits of the law) to favor a given party or candidate. This phenomenon known as *gerrymandering* can pose a significant threat to the quality of the electoral process in the absence of appropriate safeguards against this practice (the two basic gerrymandering tech-

niques are called 'packing' and 'cracking'; read more e.g. in Pierzgalski (2015)). Single-member districts (SMDs) are particularly vulnerable to *gerrymandering*, and under the legal regime of the 2011 Electoral Code, a significant portion of electoral districts at the municipal election level in Poland are SMDs. In the discussed article, I attempted to introduce the problem of *gerrymandering* to the reader in Poland in more detail[6]. Also, I seek to find out whether the electoral rules in Poland, updated in 2011, provide sufficient protection against the practice of manipulating electoral district boundaries for electoral purposes[7]. Overall, *gerrymandering* can negatively affect the quality of democracy in a country; various methods of manipulating the shape of electoral districts can be used by politicians to influence election outcomes; as a result, the election outcome may not reflect the will of voters.

The Value of a Vote: malapportionment (or the discrepancy between the shares of legislative seats and the shares of population held by geographical units.

In the articles Pierzgalski and Stępień (2017a) and Pierzgalski and Stępień (2017b), which is a continuation and expansion of the former, we analyze the problem of significant *malapportionment* in Polish local elections (the period after the introduction of the 2011 Electoral Code).

Among the four basic electoral principles, apart from universal, secret, and direct suffrage, there is the principle of **equal suffrage**. The existence of a clear violation of the "one person, one vote" rule (some districts have been assigned too many seats, others too few) is referred to as ***malapportionment***. Thus, malapportionment contributes to the violation of one of the basic principles of democratic elections, i.e. the principle of equality; the value of people's votes should be similar across constituencies.

Malapportionment (a.k.a. "material inequality of voters") may seriously harm

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[6]It is worth mentioning here the work by Arkadiusz Żukowski (Żukowski, 1999, pp. 127–158); this is probably the first Polish political science study that discussed in detail the issue of distortion of election results, including the role of electoral geography. In addition, the issue of manipulating boundaries and sizes of electoral districts is also discussed, for example, in Haman (2003); the aforementioned book by J. Haman is of particular significance to me, as it sparked my interest in the issues of elections and electoral systems already during my master's studies. The problem of gerrymandering in Poland also appears eg. in the works of J. Flis and D. Stolicki (e.g. Flis and Stolicki (2015)) and M. Kamiński (e.g. Kamiński et al. (2015))

[7]I write (with Paweł Stępień) about various regulations regarding the procedure of drawing electoral district boundaries in the US in Pierzgalski and Stępień (2016) (a review article outside the series).

the electoral process. As J. Haman (Haman, 2003, p. 179) rightly points out, "While the purpose of the proportional distribution of seats between parties is rather - in general - to guarantee all significant minority groups adequate parliamentary representation - which does not ultimately have to mean representation exactly proportional to the number of votes won, in the case of seat distribution between districts, adhering to the principle of equal suffrage [...] requires the best possible reflection."

I became interested in the issue of *malapportionment* during my doctoral studies (published as a monograph: Pierzgalski (2012)). I examined the level of deviation from proportionality in the allocation of seats across electoral districts in Japan. In Japan, high *malapportionment* significantly favored the ruling Liberal Democratic Party (LDP) for many years, thus strengthening the system of a "predominant" party according to Giovanni Sartori's well-known typology. Therefore, the works discussed in this section represent a return to the topic I explored during my doctoral research, but this time focusing on the case of Poland.

In the articles Pierzgalski and Stępień (2017a) and Pierzgalski and Stępień (2017b), we show that "the adoption of new redistricting plans for the 2014 elections to local legislatures in Poland resulted in significant violations of the 'one person, one vote' principle". These papers present the results of the first comparative study on the within-country variation in **the value of people's votes**, using data from the 2014 Polish local elections to municipal or commune councils, i.e. local legislatures.

Voter inequality is typically examined at the national or state level, and studies that consider intra-country disparities in *malapportionment* using data from local elections have been overlooked by researchers. To place our research in a broader context, we compared the levels of *malapportionment* in Poland with international standards regarding acceptable deviations from the so-called "ideal" district population (such as those outlined in the Code of Good Practice in Electoral Matters issued by the Venice Commission) and empirical findings on levels of voter inequality in other countries. We argue that significant disparities in the "value" of votes in municipal elections in Poland result from the provisions of the Electoral Code of 2011. Regarding elections to municipal councils (excluding the so-called cities with county rights), the legally permissible deviation from the ideal district population ranges from +50% to -50%. Even considering the standards of redistricting in local elections, the interpretation of the "one person, one vote" principle in Polish

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municipal elections is quite peculiar.

The most important drawback of the Polish election law, regardless of the type or level of election, is the lack of a specific operational definition of the constitutional principle of voter equality. There are no legal provisions or court judgements that specify the legally permitted deviation from the "ideal" district (voting) population. As a consequence, allowable deviations are implicitly determined by the apportionment algorithm used in Poland to divide seats among districts. As for SMDs, a redistricting plan with ±50 per cent deviations from the ideal population is legal and thus cannot be invalidated, even if it does not effectively protect the representation of various local communities of interest. Moreover, we show that the Polish election law implies that the legally permitted deviation from the "ideal" is a decreasing function of district magnitude (Pierzgalski and Stępień, 2017b, see pp. 13-15). Roughly speaking, the legally permitted deviation is high if the number of seats to apportion in a district is fewer than five. As we know, in the vast majority of districts used in commune/municipal elections in Poland, there is only one seat to win.

As our analysis revealed, in approximately 25% of electoral districts, the absolute deviations from the "ideal" district population exceed ±20%. However, concerning multi-member districts and elections to municipal councils with county rights, electoral inequality in the 2014 elections was generally at relatively low levels. This is partially due to the interplay between district size and the permissible deviation for an n-seat district. Only in about 25% of multi-member districts is the deviation from the ideal eligible voting population greater than 0.05 or 5%.

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In conclusion, the article Pierzgalski (2015) contains the first extensive discussion in Polish political science literature on the issue of *gerrymandering*; moreover, in this paper, I try to demonstrate whether Polish electoral law regulations after the 2011 reform sufficiently prevent manipulation of the shape of electoral district boundaries. I argue that ***gerrymandering*** can pose a threat to the quality of electoral competition in Poland, because the provisions of the 2011 Electoral Code do not introduce the necessary safeguards that would sufficiently impede manipulation of the structure of electoral districts boundaries; this applies in particular

to majority elections in single-member districts. However, proving malpractices like *gerrymandering* is highly challenging, requiring demonstrating intent.

Moreover, in the articles Pierzgalski and Stępień (2017a) and Pierzgalski and Stępień (2017b) an empirical analysis of the problem of material inequality of voters (*the value of a vote*) in Poland was presented for the first time. When it comes to the **malapportionment** phenomenon, we have demonstrated that the levels of voter inequality calculated for single-member electoral districts in local elections in 2014 significantly violated the principle of "one person, one vote" in a large part of electoral districts. By examining the 2014 election case, we provided evidence that the 2011 Electoral Code does not prevent high levels of *malapportionment* in local elections, because it allows for significant disparities in the "value" of votes, despite the fact that the Constitution of the Republic of Poland requires equality of voters.[8].

4.3.2   District magnitude, electoral disproportionality and parliament fragmentation [article no. 4; Pierzgalski (2018)]

1. **Research problems/questions**: How does the magnitude of the electoral district affect electoral disproportionality and the level of fragmentation of parliament? In particular, the analysis addresses the following issues: 1) The "mechanical" (mathematical) **effect of district magnitude on electoral disproportionality and parliament fragmentation** in proportional representation systems. 2) Determining the optimal district magnitude range (electoral "sweet spot") that could strike a balance (trade-off) between electoral disproportionality and excessive party system fragmentation. 3) The problem of inadequacy of analyses concerning the *mechanical* effects of electoral systems that use empirical electoral data, resulting from the inability to isolate the *mechanical* effect from the *psychological* one – essentially, the *psychological* effect is the anticipation by voters and political actors of the *mechanical* effect.; e.g. the so-called tactical voting or strategic exit/entry of parties; a possible solution to this methodological problem is eg. the use of Monte Carlo computer simulations.

2. **Method**: Monte Carlo computer simulations, which allow for analyzing the mechanical district magnitude effect in isolation from psychological effects. In order to conduct the research, I designed and programmed in R a small

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[8]With the exception of elections to the Senate of the Republic of Poland.

application – a simulator of the mechanical effects of electoral systems. The simulator can be accessed (with a graphical interface) at the link (accessed 11.07.2023): https://polisci.shinyapps.io/disproportionality˙of˙apportionment˙methods/).

3. **Brief description of articles in the series addressing a given research problem**.

Perhaps the most important inspiration for addressing the research problems described above was the article Carey and Hix (2011) published in the *American Journal of Political Science*. In the article Pierzgalski (2018), I used computer simulations to examine the effect of district magnitude on electoral disproportionality and parliament fragmentation in proportional representation (PR) elections[9]. In the simulations, I tried to isolate the so-called pure "mechanical" effects of electoral rules; in political science, the mechanical effects of voting systems are usually studied using empirical data from real elections, which, however, makes it impossible to effectively separate the mechanical and psychological consequences of electoral rules; this is an important issue that can distort the conclusions from the analysis.

By studying the effects of electoral rules using computer simulations, researchers are able to isolate the "purely" mechanical effects of voting systems; psychological effects are represented by assumptions about the number of parties competing for seats and the shape of the theoretical probability distribution used to simulate election results. Overall, psychological effects are represented in the model by the theoretical probability distribution used to simulate PR election results, as well as assumptions about the number of competing parties in each constituency. Using a theoretical distribution derived from actual election results ensures that the simulated elections reflect realistic possibilities—outcomes that could occur in real-world elections even if they have not yet. The simulation results can therefore be interpreted as 'purely' mechanical effects.

In this paper, I critically reexamine Carey and Hix (2011) findings on the 'electoral sweet spot'. They argue that constituencies with low magnitude (4-8 seats) achieve a 'good' balance between representativeness (promoted by low electoral disproportionality) and government accountability (promoted – as they assume – by

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[9]The original inspiration to build the simulator was an interesting paper presented at the IPSA Congress 2016 in Poznań by J. Flis and D. Stolicki.

low fragmentation in parliament).

Even accepting Carey and Hix's debatable operationalization of the representation-accountability trade-off, my simulation study suggests that their claim that low-magnitude districts are optimal is false. The findings indicate that both the apportionment algorithm and the number of competing political parties substantially impact disproportionality; these moderating variables have a strong effect, and—accepting Carey and Hix's approach for determining the "sweet spot"—it would be necessary to establish a specific optimal point for different configurations of the apportionment formula and the number of parties running for parliament. I point out that "as DM increases, disproportionality falls quickly to low values and then changes of deviations from proportionality are little. However, this process does not happen as quickly as Carey and Hix claim. The reason for this is that Carey and Hix's analysis is confounded by the psychological effects. Low DM appears more proportional than it actually is because people vote strategically. Thus, when we examine election results at low-DM that tend to produce substantial deviations from proportionality, disproportionality is understated because some people are not voting for the party they prefer the most. This underestimation is greater for methods such as d'Hondt or Imperiali" (Pierzgalski, 2018).

Also, I retest the hypothesis proposed by Benoit (2000) that switching the apportionment method should be at least as crucial as district magnitude in determining disproportionality. Referring to Benoit's (2000) hypothesis, my simulation results suggest that changing the apportionment method is expected to be less important than district magnitude in determining deviation from proportionality. However, as I have mentioned, such a direct comparison is not fully justified. Importantly, this does not mean the apportionment method's impact is negligible.

From an applied perspective, the findings I presented in the article based on the simulation method provide insights that could help configure electoral systems to achieve a certain balance between electoral disproportionality and the level of party system fragmentation. Both of these indicators should be at a moderate level in order to, on the one hand, ensure a high level of legislature representativeness, and on the other hand, keep parliament fragmentation at such a level that will increase the chances for the existence of a stable, effective and also accountable government.

To conclude this section, I want to quote a fragment of the review from one

of the four reviewers of the first version of my article, which convinced me that
the research method I applied can be considered an effective tool for analyzing the
"mechanical" effects of electoral rules: "... I would further argue that simulation has
major advantages over observational data analysis in pursuing interaction effects.
Unlike observational data, simulations allow one to explore all realistically possible
results, a wider range of possible outcomes than have occurred in actual elections.
Invoking interaction effects rapidly exhaust degrees of freedom, especially if the cases
of interest are relatively low-probability events. The simulation puts no limits on the
number of cases that can be generated. I believe interaction effects to be prevalent
and important in the social sciences and that simulation offers to best way to explore
them. In sum, I am enthusiastic." [Anonymous reviewer].

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In conclusion, my simulation study provides evidence that the claim that the
low-magnitude electoral districts are optimal is contestable. Also, the simulation
results suggest that Carey and Hix's analysis is confounded by the psychological
effects; due to strategic voting, low-magnitude districts appear to promote greater
proportionality than they actually do.

4.3.3   The impact of ballot paper design on voter behavior (invalid ballots)

1. **Research problems/questions**: **Ballot paper design and voter behavior**. Could the so-called "booklet" ballot format have caused an increase in the invalid ballot rate in the 2014 Polish local elections? Quasi-experimental test of the hypothesis that the so-called "booklet" ballot paper resulted in a significant increase in the percentage of invalid votes;

2. **Method**: A variant of the synthetic control method introduced by Xu (Xu, 2017); the generalized synthetic control method, an imputation-based causal inference method for panel data;

3. **Brief description of articles in the series addressing a given research problem**.

Since 2018, my research has primarily encompassed broadly understood **psy-**

chological/behavioral effects of electoral rules; voters and politicians, realizing the *mechanical* consequences of a given electoral system, can change their political behavior in order to adapt to these mechanisms. For example, by voting tactically or deciding to run/withdraw from participating in elections. The interest in the behavioral dimension of the electoral system's impact required a change in the methodological approach; the research methods I used earlier in studying the effects of electoral rules turned out to be insufficient. As a result, I became interested in causal inference methods using non-experimental (observational) data; this is a set of research methods that are currently undergoing rapid development in the social sciences[10]; e.g. the so-called counterfactual analysis using variants of the *synthetic control* method, or the regression discontinuity design. Then, I also started a research collaboration with Maciej A. Górecki from the Faculty of Psychology at the University of Warsaw, whom I met at a conference organized by the European Political Science Association (EPSA) in Milan (2017). The result of my scientific collaboration with M.A. Górecki (UW) and Paweł Stępień (UŁ) is the article Pierzgalski et al. (2020); in this article, together with my co-authors, I carried out the first methodologically rigorous test of the so-called "booklet effect" on the invalid ballot rate in the 2014 local election.

I was prompted to undertake research on the problem of the increased invalid ballot rate in the 2014 election by numerous journalistic discussions about the consequences of introducing the so-called "booklet" ballot paper in local government elections, which was supposed to be the cause of a significant increase in the share of invalid ballots. Large proportions of spoilt ballots may lead to a distortion of election results. While invalid votes are sometimes meaningful political acts, reflecting political protest, spoilt ballot papers may also be a consequence of voter error, which can be attributed to the poor design of a ballot paper. In this study, we focus on the widely publicized case of the Polish local elections of 2014. These elections saw unprecedentedly large proportions of spoilt votes, and ballot paper format was often mentioned as a potential culprit. However, simple quantitative analyses do not determine whether there is indeed a causal relationship between the ballot paper format and the percentage of invalid votes. In Pierzgalski et al. (2020) we apply the generalized *synthetic control* method and show that the implementation of an atyp-

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[10]It is worth mentioning that in 2021 Joshua Angrist from MIT and Guido Imbens from Stanford University received the Nobel Prize in Economics "for their methodological contributions to the analysis of causal relationships".

ical and overly complicated ballot paper design can result in a significant increase in the percentage of invalid votes. We thus demonstrate that the ballot paper design matters.

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In conclusion, we argue that what we deliver in Pierzgalski et al. (2020) is the first methodologically refined test of the aforementioned hypothesis. We apply the generalized synthetic control comparative method, proposed by Yiquing Xu (Xu (2017)), and show that the implementation of a complex or ambiguous ballot design can result in a substantial increase in the rate of spoilt votes. Specifically, the results of this study corroborate the existence of a cause-and-effect relationship between ballot paper format and the fraction of invalid votes in the 2014 municipal elections in Poland.

4.3.4   The effect of gender quotas on party lists in OLPR systems on the descriptive representation of women.

1. **Research problems/questions**: How do the legislated candidate quotas affect the descriptive parliamentary representation of women under the open-list proportional representation voting system (OLPR);

2. **Method**: the generalized synthetic control method; an imputation-based causal inference method for panel data (Xu, 2017);

3. **Brief description of articles in the series addressing a given research problem**.

Preferential voting rules allow voters to vote for a particular candidate, rather than just for a party. Our findings show they produce varying effects on legal gender quotas in women's parliamentary representation. The social and political context of a particular state exerts a strong influence on these effects. Recent decades have seen a worldwide diffusion of electoral gender quotas, an institution designed to enhance women's political representation. This has sparked scholars' interest in the actual effects of quotas, including their impact on female descriptive (numeric) representation in national legislatures. As with many other issues within the domain of comparative politics, however, establishing causality with respect to the effect of

quota laws is intrinsically difficult. In this article, we attempt to overcome these difficulties.

Until recently, scholars evaluating the impact of quotas had tools no more sophisticated than those used by pundits and journalists. Prospects for more rigorous research (eg. using an experimental design) were bleak, and findings in scholarly literature were uncertain, if not speculative. Fortunately, recent developments in statistical methodology have opened new avenues for those studying quota effects using the "quasi-experimental" design. We used one such relatively novel statistical tool, the generalised synthetic control method. We apply this method to study the impact of legislated candidate quotas on the descriptive parliamentary representation of women in three European countries: Belgium, Greece and Poland. Since these countries elect their national parliaments using variants of the open-list proportional representation system with preferential voting for candidates (OLPR), we compare the levels of descriptive representation of women in them to the so-called "synthetic control unit", which is essentially a weighted combination of 16 European countries that use similar electoral systems, but do not have statutory quotas for candidates. **Our results showing the effects of quotas differ significantly between the three investigated cases**. The apparent effect for Belgium is strong, while much weaker effects are observed for the two other states. Relying on the extant literature, we qualitatively interpret these results, putting forward a number of conjectures as to how contextual factors can contribute to the strength and persistence of quota effects.

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In conclusion, our innovative research using the counterfactual analysis approach and the *synthetic control* method shows that the impact of legislated candidate quotas is essentially limited, albeit it may be magnified under favourable contextual conditions, such as those which occurred in Belgium. Our findings matter because the deficit in women's political representation has troubled many democratic societies. On average, only one in every four members of national parliaments around the globe are women. Some countries thus rely on legislated quotas that force political parties to offer more women the opportunity to contest elections.

4.3.5 Seat allocation method and income redistribution level; a quasi-experimental test of Iversen and Soskice's theory Iversen and Soskice (2006) [article no. 1 Górecki and Pierzgalski (2023)]

1. **Research problems/questions**: The impact of electoral rules on public policies: How do the electoral rules influence income redistribution policies? Quasi-experimental test of Iversen and Soskice's theory (Iversen and Soskice, 2006);

2. **Method**: Bayesian panel causal inference implementing dynamic multilevel linear factor models (DM-LFMs), a Bayesian alternative to the synthetic control method for comparative case studies.

3. **Brief description of articles in the series addressing a given research problem**.

In my most recent article (as of August 1, 2023) Górecki and Pierzgalski (2023), which I wrote together with M.A. Górecki, we present the results of an analysis of the impact of electoral system reforms on the propensity of democratic governments to engage in income redistribution. The discussed text is the outcome of research conducted as part of a project I am leading, funded by the National Science Centre (Opus 17)[11]. Alongside Pierzgalski (2018), it is perhaps the most significant work in my academic career thus far; the research results shown in it took several years, and the manuscript itself evolved under the influence of helpful reviews of its earlier versions; the final version of the manuscript was published in one of the world's most highly regarded political science journals, *Comparative Political Studies*, which can be seen as confirmation of the significant contribution of the obtained results to the development of the discipline. The primary inspiration for undertaking research on the impact of electoral rules on the dynamics of national income redistribution was Iversen and Soskice's work Iversen and Soskice (2006).

Iversen and Soskice (2006) notion that electoral rules affect democracies' propensity for income redistribution is one of the political economy's most discussed concepts. Yet, it comes with a number of caveats. Most importantly, it is not clear whether electoral rules indeed affect states' propensity for redistribution or vice versa and thus whether or not Iversen and Soskice's findings are endogenous and

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spurious. In this article, we focus on the critical case of New Zealand's electoral reform of the 1990s and offer a comprehensive test of Iversen and Soskice's concept. We apply the *Bayesian* alternative to the *synthetic control* method recently published by Pang et al. (2022) and compare, among others, redistribution policy indicators for New Zealand, where the electoral system was changed in the 1990s, with a synthetic control unit being a re-weighting scheme of control units: i.e. six other majority democracies where the electoral system has not changed to proportional.

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In conclusion, our counterfactual study yields strong support for the propositions put forward by Iversen and Soskice (2006); not only do we observe the theorized effect of electoral rules on redistribution, but we also see other relationships pointed out by Iversen and Soskice. In particular, we find evidence greatly weakening Höhmann and Tober (2018) reservations as to the effect of electoral rules on the frequency of governments being under the control of right-wing (center-right) parties. At the same time, we find no evidence for the redistributive effects having their source in either elites' opportunistic behavior (Persson et al., 2007) or differences in voter mobilization (Paulsen, 2022).

5   Presentation of significant scientific or artistic activity carried out at more than one university, scientific or cultural institution, especially at foreign institutions

After obtaining my PhD degree, I collaborated with scholars from various research units (eg. University of Warsaw, Nicolaus Copernicus University in Toruń, and the Norwegian University of Science & Technology); as a result of joint research, I authored or coauthored the publications listed in the "Wykaz osiągnięć naukowych albo artystycznych, stanowiących znaczny wkład w rozwój określonej dyscypliny". Overall, since 2011 (**post-doctoral period**) I have published 16 scientific articles in respected Polish and international journals; including 10 articles in journals indexed in *Scopus*; in addition, 6 works are articles in journals indexed in the renowned *Web of Science*, *Clarivate* database. In 2012, I also published a monograph issued by the University of Lodz Publishing House, which is an improved and expanded version

of my doctoral dissertation. Also, I published a chapter in a monograph issued by *Central European University Press*.

Specifically, my research results have been published e.g. in such periodicals as "Electoral Studies", the world's most important journal in the subdiscipline of electoral research, as well as in journals such as "European Journal of Political Research" and "Comparative Political Studies", which are considered one of the most important and most competitive political science journals in the world. Additionally, I also published two articles in "East European Politics and Societies", which is one of the most valued international journals dedicated to the subject of Central and Eastern Europe. Finally, I am also the author of articles in respected Polish journals such as "Studia Socjologiczne" and "Przegląd Socjologii Jakościowej". In addition, together with Michał Kobierecki I published a text in the most recognizable journal in the field of sports economics, i.e. "Journal of Sports Economics".

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1. In the years 2019-2021, I was employed (contract of mandate) as a **co-investigator in a project funded by the National Science Centre (PL)** (project no. 2018/29/B/HS6/00719, principal investigator: Maciej A. Górecki) and hosted by the **Faculty of Psychology, University of Warsaw**. The results of the cooperation within this project are research findings that have been published in one of the best international political science journals:

- Górecki, M. A., **Pierzgalski**, M. (2022). Legislated candidate quotas and women's descriptive representation in preferential voting systems. "European Journal of Political Research".

Additionally, two more texts are currently in preparation for publication.

2. **International collaboration** in the preparation of the following collective work (co-author of a chapter):

- Ramet, S. P., Ringdal, K., & Dośpiał-Borysiak, K. (Eds.). (2019). Civic and Uncivic Values in Poland: Value transformation, education, and culture. Central European University Press; collaboration with researchers from the following scientific institutions: 1) **The Norwegian University of Science & Technology**, NTNU; 2) Wayne State University; 3) Santa Clara University.

6 Presentation of teaching and organizational achievements as well as achievements in the popularization of science or art

Teaching

- Since 2018, I have been the **scientific supervisor** in the PRELUDIUM 14 project (NCN) led by my former student, now an employee of the Faculty of International and Political Studies at the University of Lodz and a member of my research team, Dr. Paweł Stępień;

- I was the **assistant supervisor** for two doctoral dissertations: Dr. Paweł Stępień's, and Dr. Agnieszka Pyrgiel's (supervised by Prof. Alicja Stępień-Kuczyńska); both dissertations of my supervisees were very highly rated by the reviewers; Dr. Stępień's dissertation was additionally honored;

- In 2017, I participated as an **expert in the Winter Methodological School for PhD students and graduates** (Toruń 2017), organized by the Section of Research Methods, Techniques and Tools of the Polish Political Science Association and the Department of Political Theory of the Faculty of Political Science and International Studies of the Nicolaus Copernicus University in Toruń;

- **In the years 2011-2023, I supervised 40 undergraduate students to obtain their professional bachelor's degrees.**

The most important courses or parts thereof, conducted in-person and remotely via platforms like MS Teams, prepared and **taught by me in Polish or English** for students of the Faculty of International and Political Studies at the University of Lodz in the years (since 2015):

- Electoral market research and strategies for running election campaigns

- Electoral behavior research

- *European political systems and elections*

- *Introduction to electoral system*

- Methods of public opinion research and electoral market research

- Statistics

- Statistics and demography

- *Statistics*

- *Statistics and demography*

- Voting systems and other forms of collective decision-making

- Introduction to social science methodology

- Elections and political participation

- Elections and electoral processes

- Local elections

- Patterns of electoral behavior

Popularization

As part of **external cooperation with the Gazeta.pl portal**; authorship of a series of popular science articles on the effects of electoral systems; series published in 2018-2019 (authors: Maciej Onasz, Michał Pierzgalski and Paweł Stępień);

Article titles published as part of the series:

- Local government elections 2018. It doesn't matter who, but how the votes are counted. Why?

- Local government elections 2018. How to register to vote? And when to do it?

- Local elections. Do PiS and PO have a "unification bonus"? It's not that simple.

- Local government elections 2018. Who are we electing and how? 3 or 4 ballot papers to fill out.

- How elections are manipulated and what is gerrymandering, which you have probably never heard of? [Title by gazeta.pl editors]

- How to vote for your ballot to be valid. Smudged box? A proper "X" is okay [Title by Gazeta.pl editors]

- 2019 European Parliament election. How to cast a valid vote? You need to remember these rules.

- Because of the delayed Brexit, one Polish seat will be "suspended". How to avoid the "Alabama paradox"?

In addition, I am a co-author of a popular science article published on the official blog of The European Consortium For Political Research (ECPR).

Górecki, M. A., Pierzgalski, M. (2022). Are legal gender quotas an antidote to the deficit in women's political representation?, "The Loop, ECPR's Political Science Blog", https://theloop.ecpr.eu/are-legal-gender-quotas-an-antidote-to-the-deficit-in-womens-political-representation/

▪ Organizational achievements

1. **Conference secretary**: Jubilee conference of the Faculty of International and Political Studies, September 26-27, 2022: "Progress or Regress? What will the world be like after the new Cold War?"

2. **Conference secretary**: Congress of Departments and Divisions of Political Systems, May 15-16, 2018, Uniejów.

3. Since the 2020/2021 academic year, I have been an **elected member of the Council of the Faculty of International and Political Studies** at the University of Lodz (representative of assistant professors), as well as an **elected member of the Electoral College of the University of Lodz**.

7 Apart from information set out in 1-6 above, the applicant may include other information about his/her professional career, which he/she deems important

- In 2022 I received the **Rector's Award of the University of Lodz for significant contribution to the evaluation of the quality of scientific activity** in the discipline of political science and administration in the years 2017-2021; the award in the discipline of political science and administration was received by 6 people. This award was granted to UŁ research staff who in the years 2017-2021 led a project included in the process of evaluating the quality of scientific activity and fulfilled the assigned or greater number of

publication slots in the System for Evaluating Scientific Achievements, but also achieved a total number of points equal to or greater than the reference value for category A in the given discipline.

- My application to the National Science Centre entitled "The elusive behavioral effect of electoral reforms? The impact of changes in the electoral system on voter and political elite behavior – a quasi-experimental approach and new evidence from local elections in Poland" **took first place in the HS5 panel ranking in the Opus 17 competition**;

- In 2018 I received the **Rector's Award of the University of Lodz, 1st degree** for a series of 5 publications entitled "The impact of the electoral system on election results".

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I have presented the above achievements as evidence of making a significant contribution to the development of the scientific discipline I represent. A detailed list of publications and other achievements is included in the "Wykaz osiągnięć naukowych albo artystycznych, stanowiących znaczny wkład w rozwój określonej dyscypliny" attached to the application.

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