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Disproportionality Analysis of Sainte-Laguë Method Using Gallagher Index in Banggai Regency Legislative Election 2024

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Article

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Abstract

Penelitian ini bertujuan untuk mengukur dan menganalisis tingkat ketidakseimbangan antara suara yang diperoleh partai politik dan jumlah kursi yang mereka terima dalam Pemilihan Legislatif 2024 di Kabupaten Banggai. Penelitian ini juga bertujuan untuk mengevaluasi efektivitas Metode Sainte-Lague dalam mencapai representasi proporsional dan mengidentifikasi faktor-faktor yang berkontribusi terhadap tingkat ketidakseimbangan yang ditemukan dalam pemilihan legislatif di Kabupaten Banggai. Penelitian ini menggunakan pendekatan kuantitatif untuk menganalisis data hasil pemilihan umum legislatif 2024 di Kabupaten Banggai. Analisis kuantitatif akan dilakukan menggunakan Indeks Least Squares (LSq) atau Indeks Gallagher untuk menentukan tingkat ketidakseimbangan antara persentase suara yang diperoleh partai politik dan persentase kursi yang mereka peroleh di Dewan Perwakilan Rakyat Daerah (DPRD). Hasil penelitian ini menunjukkan bahwa Indeks Gallagher pada tingkat distrik pemilihan menunjukkan ketidakseimbangan yang signifikan. Namun, ketika dihitung untuk keseluruhan kursi di Dewan Perwakilan Rakyat Daerah (DPRD), indeks ini relatif kecil. Di daerah pemilihan Kabupaten Banggai, hasil Indeks Gallagher menunjukkan rata-rata di atas 8 atau dalam rentang 5-10. Hal ini menunjukkan bahwa interpretasi Indeks LSq/Gallagher terhadap sistem pemilu di Kabupaten Banggai menunjukkan ketidakseimbangan moderat. Ada perbedaan yang signifikan antara persentase suara dan jumlah kursi yang diperoleh, di mana beberapa partai mendapatkan lebih banyak atau lebih sedikit kursi dibandingkan dengan persentase suara yang mereka peroleh, hal ini dapat menyebabkan ketidakpuasan di kalangan pemilih.

Abstract

This study aims to measure and analyze the level of disproportionality between the votes obtained by political parties and the number of seats they receive in the 2024 legislative election in Banggai Regency. It also seeks to assess the effectiveness of the Sainte-Lague method in achieving proportional representation and identify factors contributing to the level of disproportionality found in the legislative election in Banggai Regency. This research uses a quantitative approach to analyze the election results data from the 2024 legislative election in Banggai Regency. The quantitative analysis will be conducted using the Least Squares Index (LSq) or Gallagher Index to determine the level of

disproportionality between the percentage of votes obtained by political parties and the percentage of seats they receive in the legislative council. The findings in this study show the the Gallagher Index at the electoral district level show significant disproportionality. However, when calculated for the overall seats in the Regional House of Representatives (DPRD), this index is relatively small. In the electoral district of Banggai Regency, the Gallagher Index results indicate an average above 8 or within the range of 5-10. This suggest that the LSq/Gallagher Index interpretation of the electoral system in Banggai Regency demonstrates moderate disproportionality. There is a significant difference between the percentage of votes and seats, some parties receive more or fewer seats compared to the percentage of votes they obtain, which can lead to dissatisfaction among voters

INTRODUCTION

The legislative election is one of the main pillars of democratic practice¹, where citizens cast their votes to elect representatives to the legislative body². The legislative elections³ at the district level, including in Banggai Regency, are a crucial moment in determining the direction of policies and development for the region⁴. Banggai Regency, as one of the regencies in Central Sulawesi Province, has unique and diverse local political dynamics⁵ that reflect the needs and aspirations of its pluralistic society⁶. According to data from the Banggai Regency General Election Commission (KPU), there are 271,439 registered voters⁷. A total of 5 electoral districts (dapil) will compete for 34 legislative seats. The Sainte-Lague method⁸, one of the seat allocation methods designed to achieve proportionality⁹, has been used in various electoral systems, including in Indonesia. This Method is known for its

¹ Ines Levin and Gabriel Katz, "Modeling Electoral Coordination: Voters, Parties and Legislative Lists in Uruguay," *Journal of Politics in Latin America* 3, no. 2 (January 2011): 3–41, <https://doi.org/10.1177/1866802x1100300201>.

² Eko Suyono, Oman Rusmana, and Agung Praptapa, "The Extent to Which Participants in the Indonesian Legislative Elections Obey the Rules," *SHS Web of Conferences* 86 (January 2020): 01008, <https://doi.org/10.1051/shsconf/20208601008>.

³ Rafyansyah et al., *Pengantar Ilmu Politik*, ed. N. Rismawati, vol. 1 (CV WIDINA MEDIA UTAMA, 2022).

⁴ Natalia Lapina, "CAN THE «VERTICAL» GIVE WAY TO THE «HORIZONTAL»?," *Scientific and Analytical Herald of IE RAS* 30, no. 6 (December 2022): 165–74, <https://doi.org/10.15211/vestnikieran62022165174>.

⁵ Fajar Setyaning Dwi Putra et al., "MARKETING POLITIK (Teori Dan Konsep)," 2022.

⁶ Rahmad Solling Hamid et al., "The Role of Social Media in the Political Involvement of Millennials," *Spanish Journal of Marketing - ESIC* 26, no. 1 (2022): 61–79, <https://doi.org/10.1108/SJME-08-2021-0151>.

⁷ Asnawi Zikri, "KPU Tetapkan DPT Banggai," 2024, 22–23.

⁸ Arif Pratama, Arif Arizal, and Syariful Alim, "Sound Calculation Simulation System for Distribution of Chair Parliament Using Hare Quota and Sainte Lague Methods," *JEECS (Journal of Electrical Engineering and Computer Sciences)* 4, no. 2 (December 2019): 703–10, <https://doi.org/10.54732/jeeecs.v4i2.114>.

⁹ Yohanes Baptista Chrismayoga, "Penerapan Proporsional Terbuka Dan Metode Sainte-Lague Pada Pemilu 2019 : Studi Kasus Dapil I DPRD Provinsi Jawa Tengah," *Syntax Literate ; Jurnal Ilmiah Indonesia* 8, no. 4 (April 2023): 2660–70, <https://doi.org/10.36418/syntax-literate.v8i4.11656>.

principle of prioritizing fairness and equality¹⁰ by placing less emphasis on the votes of large parties¹¹, thus giving smaller parties a better¹² chance of gaining representation¹³ in the legislative body¹⁴. This method is regulated under Law Number 7 of 2017 on General Elections (election Law)¹⁵. However, despite its design aimed at proportionality¹⁶, the practical application of legislative elections often result in a certain level of disproportionality between the number of votes a party¹⁷ receives and the number of seats they obtain in legislative body. Disproportionality can create dissatisfaction among voter and political parties and may potentially reduce the effectiveness of political representation¹⁸. The Gallagher Index measures the relative disproportionality of an electoral system between the votes received and the seats in the legislative body. This index measures the difference between the percentage of votes each party¹⁹ receives and the percentage of seats each party obtains in the legislative body²⁰. The use of the Least Squares Index (Lsq) or Gallagher Index²¹ in this study aims to measure the level of disproportionality in the result of the 2024 legislative elections in Banggai. this analysis is expected to provide an overview of how effective the Sainte-Lague method is in creating

¹⁰ Mouliza Kristhopher Donna Sweinstani, "Formula Konversi Suara Sainte Lague Dan Dampaknya Pada Sistem Kepartaian: Evaluasi Pemilu Serentak 2019," *Jurnal Penelitian Politik* 16, no. 2 (January 2020): 111, <https://doi.org/10.14203/jpp.v16i2.812>.

¹¹ Setyaning Dwi Putra et al., "MARKETING POLITIK (Teori Dan Konsep)."

¹² Ade Putra Ode Amane et al., "PEMBANGUNAN POLITIK," 2022, n.d.

¹³ F Tawaang et al., "Membaca Ulang Konsep Modernisasi Politik, Pembangunan Politik, Dan Demokrasi," ... : *Jurnal Prodi Ilmu ...* 4, no. 2 (2023): 721–50.

¹⁴ Barry Burden and Corwin Smidt, "Evaluating Legislative Districts Using Measures of Partisan Bias and Simulations," *SAGE Open* 10, no. 4 (December 2020), <https://doi.org/10.1177/2158244020981054>.

¹⁵ Ahmad Izzudin, Ratna Herawati, and Lita Tyesta, "Implikasi Putusan Dewan Kehormatan Penyelenggara Pemilu Berdasarkan Undang-Undang Nomor 7 Tahun 2017 Tentang Pemilihan Umum Terhadap Proses Pemilu," *Diponegoro Law Journal* 8, no. 1 (2019): 36–58.

¹⁶ Ademar Borges de Sousa Filho, "The Use of Votes Conferred to Ineligible Candidates in the Proportional System: A Proposal for Interpretation According to the Constitution of the Sole Paragraph of Art. 16-A, Law n. 9.504/97," *Revista Opiniao Juridica* 19, no. 31 (May 2021): 196–223, <https://doi.org/10.12662/2447-6641OJ.V19I31.P196-223.2021>.

¹⁷ Danis Tri Saputra Wahidin et al., "Partai Politik Dan Perilaku Pemilih Di Indonesia (Studi Pada Pemilu Legislatif 2009, 2014, Dan 2019)," *Journal of Government and Civil Society* 4, no. 1 (April 2020): 131, <https://doi.org/10.31000/jgcs.v4i1.2376>.

¹⁸ Sadik Haxhiu and Avni H. Alidemaj, "Representative Democracy-Its Meaning and Basic Principles," *AUDJ* 17, no. 2 (August 2021): 76–91.

¹⁹ Taufikkurrahman Taufikkurrahman, "Fungsi Partai Politik Pada Kekuasaan Eksekutif Dan Legislatif Berdasar Pada Sistem Pemerintahan Di Indonesia," *Jurnal Civics: Media Kajian Kewarganegaraan* 16, no. 2 (October 2019): 145–53, <https://doi.org/10.21831/jc.v16i2.20788>.

²⁰ M Rizqi Azmi and Riko Riyanda, "Tinjauan Sistem Proporsional Terbuka Dalam Pemilu Legislatif 2019 Terhadap Dinamika Demokrasi Di Indonesia," *UIR Law Review* 4, no. 2 (October 2020): 9–22, [https://doi.org/10.25299/uirrev.2020.vol4\(2\).5858](https://doi.org/10.25299/uirrev.2020.vol4(2).5858).

²¹ Michael Gallagher and Paul Mitchell, "The Politics of Electoral Systems," *The Politics of Electoral Systems*, February 2006, 1–688, <https://doi.org/10.1093/0199257566.001.0001>.

proportionality²² in Banggai Regency, as well as to identify the factors that contribute to the observed disproportionality.

METHOD

This Study employs a quantitative approach to analyze the result of the 2024 legislative election in Banggai Regency. The quantitative analysis will be conducted by applying the Least Squares Index (LSq) or Gallagher Index²³ to measure the level of disproportionality²⁴ between the percentage of votes obtained by political parties and the percentage of seats they secure in the legislative council. The data collected includes vote data, consisting of the percentage of total votes each political party received in the legislative elections, and seat data, including the number of seats each political party won in the Banggai Regency legislative council as a result of the 2024 legislative elections. The data analysis step include: 1. Data conversion by converting the number of votes and seats into percentages of the total to facilitate comparison. 2. Difference and squaring calculation by calculating the difference between the percentage of votes (V) and percentage of seats (S) for each party, and then squaring the difference. 3. Application of the LSq / Gallagher Index formula by using the formula: $LSq = \sqrt{\frac{1}{2} \sum (Vi - Si)^2}$ to calculate the overall disproportionality between index of the election results.

RESULT AND DISCUSSION

The 2024 Legislative Elections held in Banggai regency were contested by 18 national parties, four of which are new parties. The Banggai Regency General Election Commission (KPU) has designated four electoral districts, each with seat allocations adjusted according to the number of registered voters. A total of 35 seats were allocated, the same as in the previous election. The number of valid votes is a key indicator in determining voter participation and the legitimacy of election results. In this election, out of a total of 271,439 registered voters, 215,707 valid votes were counted. This means that the voter turnout reached 78%, a figure that indicates active citizen engagement in the democratic process. The number of valid votes reflects the validity of the votes cast, after excluding invalid votes, which may have resulted from technical errors or voter misunderstanding.

The following are the election results based on the seat allocations for each political party in the 2024 legislative elections in Banggai Regency.

²² Kenneth Benoit, "Which Electoral Formula Is the Most Proportional? A New Look with New Evidence," *Political Analysis* 8, no. 4 (July 2000): 381–88, <https://doi.org/10.1093/OXFORDJOURNALS.PAN.A029822>.

²³ Sweinstani, "Formula Konversi Suara Sainte Lague Dan Dampaknya Pada Sistem Kepartaian: Evaluasi Pemilu Serentak 2019."

²⁴ *Gallagher Index Made Easy*, 2016.

Table 1. Sainte-Lague Vote Conversion in Electoral District 1

Party Name	Valid Votes	Divided 1	Divided 3	Divided 5	Divided 7	Divided 9	Number of Seats
Golkar	15.428	15.428	5.142	3.085	2.204	1.714	2
Gerindra	9.614	9.164	3.054	1.922	1.373	1.068	2
PDIP	6.375	6.375	2.125	1.275	910	708	1
PAN	3.556	3.556	1.185	711	508	395	1
Nasdem	3.385	3.385	1.128	677	483	376	1
PKB	3.075	3.075	1.025	615	439	341	1
Hanura	3.168	3.168	1.056	633	452	352	1
PKS	1.976	1.976	658	395	282	219	-
Total							9

Source: Reference (2024)

Table 2. Sainte-Lague Vote Conversion in Electoral District 2

Party Name	Valid Votes	Divided 1	Divided 3	Divided 5	Divided 7	Divided 9	Number of Seats
Golkar	23.370	23.370	7.790	4.674	3.338	2.596	5
Gerindra	9.971	9.971	3.323	1.994	1.424	1.107	2
PDIP	6.613	6.613	2.204	1.322	944	734	1
Nasdem	6.216	6.216	2.072	1.243	888	690	1
PKB	5.238	5.238	1.746	1.047	748	582	1
PKS	1.722	1.722	574	344	246	191	-
Hanura	1.057	1.057	352	211	151	117	-
PAN	511	511	170	102	73	56	-
Total							10

Source: Reference (2024)

Table 3. Sainte-Lague Vote Conversion in Electoral District 3

Party Name	Valid Votes	Divided 1	Divided 3	Divided 5	Divided 7	Divided 9	Number of Seats
Nasdem	6.277	6.277	2.092	1.255	896	697	1
Gerindra	5.657	5.657	1.885	1.131	808	628	1
Golkar	5.446	5.446	1.815	1.089	778	605	1
PDIP	2.675	2.675	891	535	382	297	1
PKB	1.518	1.518	506	303	216	168	-
PKN	2.164	2.164	721	432	309	204	-
Hanura	459	459	153	91	65	51	-
PAN	302	302	100	60	43	33	-
Total							4

Source: Reference (2024)

Table 4. Sainte-Lague Vote Conversion in Electoral District 4

Party Name	Valid Votes	Divided 1	Divided 3	Divided 5	Divided 7	Divided 9	Number of Seats
Golkar	16.019	16.019	5.339	3.203	2.288	1.779	4
PDIP	11.430	11.430	3.810	2.286	1.632	1.270	2
Gerindra	11.282	11.282	3.760	2.256	1.611	1.235	2
Nasdem	6.276	6.276	2.092	1.255	896	697	1
PKB	4.583	4.583	1.527	916	654	509	1
PAN	3.711	3.711	1.237	742	530	412	1
PKS	3.558	3.558	1.186	711	508	395	1
Hanura	2.285	2.285	761	457	326	253	-
Total							12

Source: Reference (2024)

From the data above, it is evident that the Golkar Party dominated by securing 32% of the total valid votes. This dominance can be interpreted as Golkar’s success in attracting voter support through an effective campaign strategy that resonates with the needs and aspirations of the people of Banggai Regency. The election results in Banggai Regency also provide important insight into the political dynamics of the region. The high number of valid votes reflects active citizen participation, while the distribution of votes among parties and legislative candidates to formulate their strategies moving forward. By understanding their strengths and weaknesses, they can more effectively respond to the needs of their constituents and contribute to the development of a stronger democracy.

Analysis of the Calculation Result

Percentage of Votes and Seat Allocation for Political Parties in the Electoral District 1

No	Nama Partai	Persentase Suara	Jumlah Kursi	Persentase kursi	Indeks Gallagher (LSq)
1	GOLKAR	28,01 %	2	22,22 %	33,5241
2	GERINDRA	17,45 %	2	22,22 %	22,7529
3	PDIP	11,57 %	1	11,11 %	0,2116
4	PAN	6,45 %	1	11,11%	21,7156
5	NASDEM	6,14 %	1	11,11%	24,7009
6	HANURA	5,75 %	1	11,11%	28,7296
7	PKB	5,58 %	1	11,11%	30,5809
Total selisih dikuadratkan					162,2156
Jumlah / 2					81,1078
Hasil Gallagher Index					9,05

Source: Reference (2024)

Percentage of Votes and Seat Allocation for Political Parties in the Electoral District 2

No	Nama Partai	Persentase Suara	Jumlah Kursi	Persentase kursi	Indeks Gallagher (LSq)
1	GOLKAR	37,79%	5	50 %	149,0841
2	GERINDRA	16,12 %	2	20 %	15,0544
3	PDIP	10,69 %	1	10 %	0,4761
4	NASDEM	10,05 %	1	10 %	0,0025
5	PKB	8,47 %	1	10 %	2,3409
Total selisih dikuadratkan					166,958
Jumlah / 2					83,479
Hasil Gallagher Index					9,13

Source: Reference (2024)

Percentage of Votes and Seat Allocation for Political Parties in the Electoral District 3

No	Nama Partai	Persentase Suara	Jumlah Kursi	Persentase kursi	Indeks Gallagher (LSq)
1	NASDEM	23,47%	1	25 %	2,3409
2	GERINDRA	21,16 %	1	25 %	14,7456
3	GOLKAR	20,37 %	1	25 %	21,4369
4	PDIP	10,05 %	1	25 %	223,5025
Total selisih dikuadratkan					262,0259
Jumlah / 2					131,01295
Hasil Gallagher Index					11,44

Source: Reference (2024)

Percentage of Votes and Seat Allocation for Political Parties in the Electoral District 4

No	Nama Partai	Persentase Suara	Jumlah Kursi	Persentase kursi	Indeks Gallagher (LSq)
1	GOLKAR	22,22%	4	33,33 %	123,4321
2	PDIP	15,86 %	2	16,66 %	0,64
3	GERINDRA	15,65 %	2	16,66 %	1,0201
4	NASDEM	8,70 %	1	8,33 %	0,1369
5	PKB	6,35 %	1	8,33 %	3,9204
6	PAN	5,14 %	1	8,33 %	10,1761
7	PKS	4,93 %	1	8,33 %	11,56
Total selisih dikuadratkan					150,8856
Jumlah / 2					75,4428
Hasil Gallagher Index					8,68

Source: Reference (2024)

Based on the analysis of the data above, there is a situation where the Gallagher Index at the electoral district (Dapil) level shows significant disproportionality. In The electoral districts of Banggai Regency, the Gallagher Index results show an average above 8 or within the range of 5-10, indicating that the percentage of votes and seats. Some parties gained more of fewer seats compared to the percentage of votes they received, which could lead to dissatisfaction among voters.

Based on the result of the legislative election in Banggai Regency, the author identifies several factors that may contribute to disproportionality in the Sainte-Lague method, including:

- 1. Scale and Data Aggregation** At the electoral district level, the Gallagher Index is calculated based on the distribution of votes and seats in the district. Disproportionality arises because the seats are not evenly distributed, and one party may dominate in the district. For example, in electoral district 2 of Banggai Regency, the Gallagher Index is quite high at 9.13, indicating moderate disproportionality. Only five parties secured seats from a total of 10 available seats. According to the data, Golkar Party had a dominant share of the vote compared to other parties, winning five seats, or 50% of the total seats in that district.
- 2. Electoral District Size** Smaller electoral district tend to produce less proportional results compared to larger district. In smaller district, the limited number of seats can result in a distribution that does not accurately reflect the vote share. This occurred in electoral district 3 of Banggai Regency, where the seat quota was only four. The seat distribution became highly disproportional, as some parties failed to secure any seats despite receiving a significant share of the votes, resulting in a Gallagher Index of 11.44, indicating very high disproportionality compared to other district.
- 3. Calculating and Rounding Decision** The Sainte Lague method uses odd divisors (1,3,5 and so on) to divide the number of votes each party receives and allocates seats. Disproportionality can occur depending on how these numbers are rounded during the seat allocation process. If two parties have nearly the same number of votes, rounding in the calculation may result in one party receiving more seats than the other.

CONCLUSION

Disproportionality in the electoral system has a significant impact on political representation and public trust. Unfair representation, marginalization of smaller parties, and domination by larger parties can diminish political diversity and dynamics. Voter dissatisfaction, declining voter turnout, erosion of trust in democratic institutions, and political polarization are some of the negative effects on public trust. To maintain the health of democracy, it is important for policymakers to consider electoral system reforms that can enhance proportionality and more accurately reflect the will of the voters.

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