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# **Measuring the Compliance, Proportionality, and Broadness of a Seat Allocation Method**

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### Abstract

This is a study of the previous, present, and proposed methods in the allocation of seats in the Philippine party list system. We used three parameters in measuring and comparing these methods with the **Largest Remainder – Proportional Representation Method (LR-PRM)** - one of the two most common methods used by countries (like Germany, Ukraine, Namibia, etc.) with a party list proportional representation system.

We shall be using three (3) parameters in our analysis, namely, (1) the **index of compliance**, (2) the **index of proportionality**, and (3) the **index of broadness**.

The **index of compliance** measures the degree in which a seat allocation method is able to fill up the 20% constitutional requirement for the Party-list. The **index of proportionality** measures the degree in which a party share of votes is translated to its actual share of seats. The **index of broadness** measures the range of party list organizations that can be included in the winning circle.

We used the results of the party list elections in **2001, 2004, 2007, 2010, and 2013** as our **party list data sets**. We have two **data sets** in **2001**. The first one denoted as **2001 (162 PLs) party list data set** is the result before the 117 party list organizations were disqualified. The second one denoted as the **2001(45 PLs) party list data set** excludes the votes of the 117 disqualified party list organizations. These two data sets provide us possible variations in the index of broadness given the number of participating PL organizations.

For the purposes of this study, we define a **strong party list organization** as one that obtained **at least two percent of the total number of party list votes** cast. Otherwise, the party list organization is regarded as **weak**.

Our study reveals the following:

1. The **2-4-6 Rule** as used in the 1998, 2001, 2004 Party-list elections, and the **PANGANIBAN Formula** (2007 PL elections) are not compliant with the constitutional requirement of 20% for the share of the number of members in the House of Representatives. This non-compliance is inherent in the design of these methods.
2. The **CARPIO Formula** (used in the 2010 and 2013 PL elections), the currently-proposed **HB4549 formula**, and the **LR-PRM** are always compliant. Hence, each has **100% index of compliance**.
3. On the average the **CARPIO Formula** has **93% index of proportionality**. **HB4549** has an average of **86% index of proportionality**, which is nearly equal to the index of proportionality of the **2-4-6 Rule** and that of the **PANGANIBAN Formula**. Comparatively, **LR-PRM** has an average of **98% index of proportionality**. Hence, the **LR-PRM** best meets the test of proportionality.
4. We have two **indices of broadness**. The **index of broadness of the first type** measures the share of the number of weak party list organizations vis-à-vis the total number of winning party list organizations. The **index of broadness of the second type** measures the **share of seats** controlled by the weak party list organizations.
5. The **index of broadness (both of the first and second types)** of the **2-4-6 Rule** and the **PANGANIBAN Formula** are always **0%** since PL organizations who fail to meet the 2% vote threshold are automatically excluded from any seat allocation. **CARPIO**, **LR-PRM**, and **HB4549** have an average index of broadness of the first type by **179%**, **173%**, and **158%**, respectively. This means that the **CARPIO**, **LR-PRM**, and **HB4549** make possible the inclusion of a greater number of weak Party list organizations.
6. **LR-PRM** has an average **index of broadness of the second type** at **44.1%**, while that of **CARPIO** is at **43.7%**. **HB 4549** has **39.2% index of broadness of the second type**. Roughly, this means that weaker parties are able to get 4 seats out of every 10 seats actually allocated.
7. Due to the **3-seat cap** and the **design of CARPIO** and **HB4549**, party list seats are shaved from the strong party list organizations. However, these shaved seats are allocated to the other strong party list organizations and not to the weak party list organizations. In all the party list data sets with the exception of **2001(45 PLs)**

seats are shaved from the weak party list organizations and are given to the strong party list organizations.

We conclude and recommend the following:

1. The **CARPIO Formula** should be replaced by a seat allocation method that is consistent with the principle of proportional representation while allowing weaker party list organizations to be in the winning circle.
2. The formal vote threshold of  $1/(\text{total number of party list seats}) \times 100\%$  of **HB4549** shall be downgraded to **0%**, *that is*, all accredited party list organizations have a chance to receive a seat.
3. **HB4549** shall be revised to include the strong party list organizations in the second stage of seat allocation if it is to be consistent with the principle of proportional representation.
4. The 3-seat cap has to be removed for being inconsistent with the principle of proportionality.

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## EXECUTIVE SUMMARY

1. We consider a party list organization with at least two percent (2%) of the total number of party list votes cast to be **strong**. Hence, a **weak party list organization** has less than two percent (2%) of the total number of party list votes.
2. The winners of the party list elections in **1998, 2001, 2004** were always the **strong party list organizations** since the **2-4-6% Rule** was the seat allocation method used by **COMELEC**.
3. Initially the winners in the 2007 party list election were **strong** with the **Panganiban Formula**, but with the **April 2009** Supreme Court decision, it was replaced by the **CARPIO Formula** and the **weak party list organizations** started to win party list seats.
4. **House Bill 4549 (HB4549)** proposes to amend R.A. 7941, the Party List Law with a new seat allocation method among others.
5. We shall take a closer look at this **HB4549 formula** including the existing **CARPIO** to determine whether the proposed method is better than the existing one.
6. We shall be using three (3) parameters in our analysis. These are (1) the **index of compliance**, (2) the **index of proportionality**, and (3) the **index of broadness**.

We are using the **five party list data sets: 2001(45 PLs), 2004, 2007, 2010, and 2013**. Most of the times, we are also including the **2001(162 PLs) party list data sets**.

7. **Chart 1** shows the actual number of seats allocated and the number of unfilled seats. The **2-4-6 Rule** and the **Panganiban Formula** are clearly non-compliant to the **20%** constitutional requirement for the number of party list members in the House of Representatives.
8. **Chart 3** shows the computed index of compliance from the **2001, 2004, 2007, 2010** and **2013** party list elections. We included the **Largest Remainder – Proportional Representation Method (LR-PRM)**, which is one of the two most commonly used seat allocation method in countries with a party list proportional representation system.
9. We are using the **Gallagher index of proportionality** in comparing the seat allocation method of **CARPIO, HB4549, and LR-PRM**.
10. Of the three methods under consideration, **HB4549** has the lowest average index of proportionality at **86%**. It is followed by **CARPIO** with **93%**. **LR-PRM** has the highest average index at **98%**. See **Chart 4**.
11. We also compare the number of **denied seats** and **overhang seats** with respect to the total number of party list seats allocated per party list data set, which we derive from each party list organizations.
12. We define the ratio given below as the intensity of contradiction of each allocation method to the principle of proportional representation. See **Chart 5** for the result of our computation.

$$\frac{\text{no. of denied seats} + \text{no. of overhang seats}}{\text{total no. of seats allocated}} \times 100\%$$

13. In the **2010 data set**, **HB4549** has a 60% intensity of contradiction. This means that **HB4549** allocation resulted in 6 denied or overhang seats for every 10 fair seats given. Note that **CARPIO** has 0% intensity of contradiction in the **2010** and **2013 data sets** since no party list organization was able to obtain the number of party list votes that is equivalent to 4 or more seats.
14. We measure the ability of a seat allocation method to allow weak party list organizations into the winning circle.
  - a. We measure the ratio of the number of weak parties with respect to the total number of winning party list organizations. This is the index of broadness of the first type.

- b. We also measure the ratio of the number of seats given to the weak party list organizations with respect to the number of seats given to the strong party list organizations. This is the index of broadness of the second type.
15. **Chart 6** indicates that **LR-PRM with no 3-seat cap** has the higher **index of broadness of the first type** compared to **CARPIO** in the **2001(152 PLs), 2004, and 2007 data sets**. Also, **LR-PRM** has the **higher index of broadness of the first type** compared to **HB4549** in the **2001(162 PLs), 2007, 2010, and 2013 data sets**. This means that **LR-PRM** allows more number of weak party list organizations to the winning circle than the other seat allocation methods. This renders the **3-seat cap** as a useless tool in allowing more number of weak party list organizations into the winning circle.
16. In fact, that there are data sets where **CARPIO** and **HB4549** shaved the seats of the weak party list organizations and allocated these shaved seats to the strong parties.
17. We define a **shaved seat by a seat allocation method** as the seat that is given by the principle of proportional representation through the **LR-PRM** but is not awarded using the said method. We define a **bonus seat by a seat allocation method** as the seat that is not suppose to be given with the **LR-PRM** but is awarded by the said method.
18. **Chart 7** shows that more number of party list seats is awarded by **LR-PRM** to the weak party list organizations than **HB4549** in the **2001(162 PLs), 2007, 2010 and 2013 data sets**. **LR-PRM** is awarding more number of seats to the weak party list organizations than **CARPIO** in the **2004 and 2007 data sets** and they were tied in **2001(162 PLs)** and **2010 data sets**.
19. In **Chart 8** we show the number of shaved seats and bonus seats due **CARPIO** in each of the **six data sets**. The shaved seats by **CARPIO** in the **2001(162 PLs)** and **2010(PLs)** were not given to the weak parties since it awarded the same number of bonus seats to the other strong parties.

Since the number of bonus seats is larger than the number of shaved seats in the **2004, 2007 and 2013 data sets**, it follows that **CARPIO** is shaving the seats from the **weak party list organizations**. The number of shaved seats from the **weak parties** is equal to the difference between the **number of bonus seats** and the **number of shaved seats** from the **strong parties**.

It is only in the **2001(45 PLs) data set** where **CARPIO** is allocating the shaved seats to the weak party list organizations.

20. **Chart 9** shows that **HB4549** is shaving the seats from the **weak party list organizations** and is awarding these **shaved seats** to the **strong parties** in the **2001(162 PLs), 2007, 2010, and 2013 data sets**.
21. **CHART 10** shows that the number of shaved seats awarded to the **weak party list organizations** is negative in all of the party list data sets except in **2001 (45 PLs) party list data set** where **117 party list organizations** were disqualified. This means that the shaved seats from some strong party list organizations are distributed to the other strong party list organizations and some seats that are awarded by **LR-PRM** to some **weak party list organizations** are shaved by **CARPIO** and are given to the **strong party list organizations**.

### CONCLUSION AND RECOMMENDATION

- 1) The **CARPIO Formula** is employing the **3-seat cap policy** but instead of awarding the shaved seats to the weak party list organizations, which is the original intent of this policy in R.A. 7941, **CARPIO** is giving these shaved seats to the other strong party list organizations.
- 2) The design of the **CARPIO Formula** is defective since it is shaving the seats that are supposed to be given to the **weak party list organizations** under the **principle of proportional representation** and it is awarding these shaved seats to **strong party list organizations**.
- 3) Hence, we propose that the **CARPIO Formula** shall be replaced by a seat allocation formula that is consistent with the **principle of proportional representation** while accommodating a sufficient number of weak party list organizations in the winning circle.
- 4) The formula proposed by **HB4549** is also defective since it is employing the **3-seat cap** but is shaving seats of the weak party list organizations that are supposed to be given to them under the principle of proportional representation and is awarding these shaved seats to the strong party list organizations just like the **CARPIO Formula**.
- 5) We are recommending the following to the formula of **HB4549** so that it will be consistent with the principle of proportional representations while accommodating a sufficient number of weak parties to the winning circle.
  - a. The 3-seat cap shall be removed as a provision of the bill so that the formula will not be inconsistent with the principle of proportional representation.
  - b. The formal vote threshold of  $1/(\text{total no. of party list seats}) \times 100\%$  shall be downgraded to **0%** since **HB4549** allows non-qualified party list organizations to be given a seat in the second stage of seat allocation.

- c. The second stage of seat allocation shall be revised to include those party list organizations that were given seats in the first stage. The manner of allocating the remaining number of seats is through the largest remainder method.
- 6) If the maximum limit to the number of party seats that are controlled by a party list organizations is still desirable by the legislators, then I propose that the **3-seat cap** shall be raised to a value that is consistent with **Section 17** and **Section 18** of **Article VI (The Legislative Department)** such that the members of the **House of Representatives' Electoral Tribunal (HRET)** and the **Committee on Appointments (CA)** are chosen on the **basis of proportional representation** from the political parties and the party list organizations. In the present Congress, a seat in the **HRET** is equivalent to forty-nine (**49**) members of the House of Representatives and a seat in the **CA** is equivalent to twenty-five (**25**) members of the House of Representatives.

By imposing a ceiling of less than **49** to the number of seats that can be controlled by a party list organization, the party list organizations under the party list system are **automatically disqualified** from competing for a seat in the **HRET** and the **CA**. Hence, the **seat cap policy** for the party list system is inconsistent with the **1987 Constitution**.

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## Introduction

The **1987 Constitution** provides two ways of electing the members to the House of Representatives. First, is the election of members in each of the single-member legislative districts throughout the country. The number of representatives elected in this manner is equal to 80% of the total members of the lower House. Second, is the election of members through the party list system. The number of representatives from the party list system is equal to the quotient when the number of members from the single-member legislative districts is divided by four (4).

**Republic Act 7941** or the Party List Law declares that the party list system is a system of proportional representation, i.e., the share of seats obtained by a party list organization must be equal to its share of the party list votes. The party list system guarantees the representation of the under-represented and the marginalized sectors in the Philippine society in the House of Representatives. Congress in 1993-1995 included in the Party List Law a provision that limits the number of seats for each winning party list organization to 3 which the legislators believed is a deterrent for large parties to dominate the party list system.

Since the 1998 party list elections, the Commission on Election (COMELEC) used three different methods in the allocation of party list seats. First was the **2-4-6 Rule** in 1998, 2001, and 2004. Second was the **PANGANIBAN Formula** in 2007, but was replaced by the third method or the **CARPIO Formula** cited in a Supreme Court decision on April 21, 2009.

The **2-4-6 Rule** allocates zero, one, two, or three seats to each party list organization that obtains the following percentage shares of the total number of party list votes cast:

- 1) 3 seats if it has six percent (6%) or more, or
- 2) 2 seats if it has four percent (4%) or more but less than 6%, or
- 3) 1 seat if it has two percent (2%) or more but less than 4%, or
- 4) 0 seat if it has less than two percent (2%)

The **PANGANIBAN Formula** assigns 3 seats to the leading party, which is the party list organization with the most number of party list votes.

The other party list organizations shall receive three seats, two seats, one seat, or no seat depending on the percentage share of votes obtained by a party list organization in relation to the share of votes of the leading party. Thus, in the PANGANIBAN Formula, a party list organization with less than two percent (2%) of the total number of party list votes shall

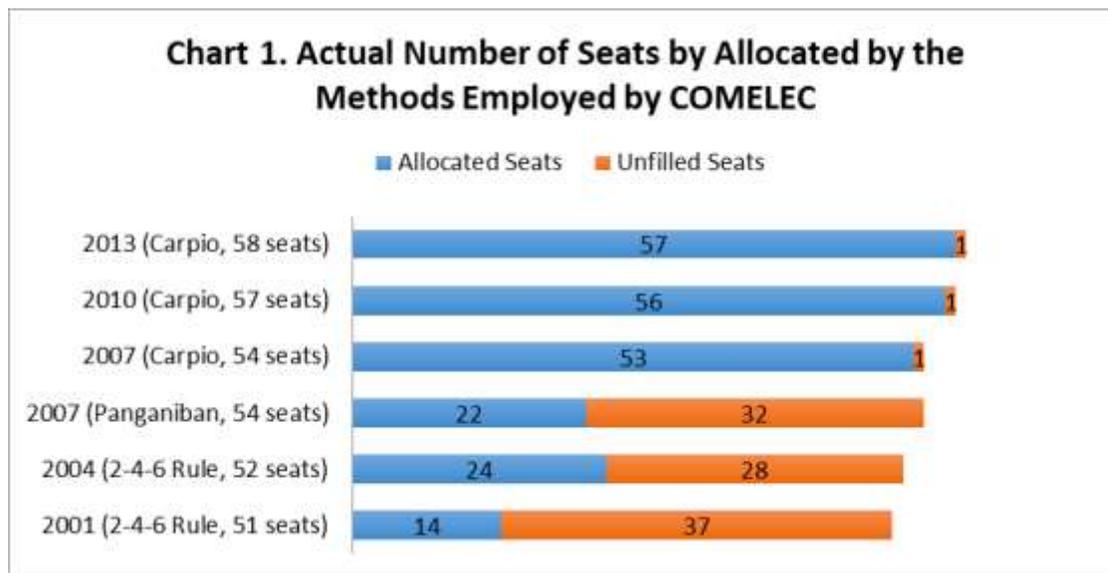
receive no seat. A party list organization that has at least two percent (2%) of the total number of party list votes cast shall receive the following number of seats.

- 1) **Three (3) seats**, if it has the same number of votes as the leading party
- 2) **Two (2) seats**, if it has at least fifty percent (50%) of the leading party but less than that of the leading party
- 3) **One (1) seat**, if it has less than 50% of the leading party

On the other hand, the **CARPIO Formula** provides three stages of seat allocation:

- 1) In the **first stage**, each of the party list organizations with at least two percent (2%) of the total number of party list votes shall receive a **guaranteed one (1) seat**.
- 2) The remaining number of seats after the first stage is multiplied to the percentage share of votes obtained by each of the party list organizations that received a seat in the first stage. The product is not always an integer. The **integer part of the product** is the number of additional seats that will be given to the party list organizations that received a seat in the first stage. This is the **second stage** of seat allocation. The number of additional seats that will be given in this stage cannot exceed two seats.
- 3) If there are unfilled seats after the second stage, party list organizations that did not receive a seat in the second stage (including those that received a seat in the first stage but did not receive a seat in the second stage) are ranked linearly from the highest percentage share of votes down to the lowest. Thus, in the third stage of seat allocation, one seat is allocated to each of the party list organizations in the linear list starting from the top until all the remaining number of seats are distributed.

The **CARPIO Formula** was used by the COMELEC in the 2010 and the 2013 party list elections. (See **Chart 1**) The **CARPIO Formula** is designed so that all the available seats are allocated. The unfilled seats in 2010 and 2013 are judicial in nature, which the Supreme Court can only decide.



In amending **R.A. 7941**, House Bill Number 4549 (**HB4549**) provides a new formula in the allocation of seats to the winning party list organizations. It provides a formal vote threshold, which is equivalent to

$$\left( \frac{1}{\text{total number of party list seats}} \right) \times 100\%.$$

A party list organization with a percentage share of votes equal to or greater than the formal vote threshold is qualified to receive a share of the total number of party list seats.

**HB4549** has two stages of seat allocation.

- 1) In the **first stage**, the seats are allocated to the qualified party list organizations. The number of seats that a qualified party list organization shall receive is equal to the integer part of the product between its percentage share of the party list votes and the total number of party list seats.
- 2) In the second stage, **HB4549** allows those party list organizations that do not qualify in the first stage to receive a seat. These party list organizations are ranked linearly from the highest number of votes to the lowest. If there are remaining seats after the first stage, these are distributed to the ranked list by allocating one seat to the highest ranked party and one to each of the next higher ranked parties until all the remaining seats are distributed.

We shall examine these different formulas that were used and proposed for the Philippine party list system using the data we obtained in the party list elections of **2001, 2004, 2007, 2010** and **2013**.

We shall have two data sets in 2001. The first one, which we shall call **2001 (162 PLs)**, has 162 party list organizations. The second one shall be called **2001(45 PLs)**. This consists of 45 party list organizations only since the Supreme Court disqualified 117 party list organizations.

We shall be using three parameters in examining these different methods. The three parameters are (1) **index of compliance**, (2) **index of proportionality**, and (3) **index of broadness**.

In the computation of the **index of compliance**, we shall be using the **2001(45 PLs)** data set only. We shall be using the **2001(162 PLs)** and **2001(45 PLs)** data sets in the computation for the **index of proportionality** and **index of broadness**.

As we examine these different methods in the light of the 3 parameters we shall be comparing these methods to the **Largest Remainder – Proportional Representation Method (LR-PRM)**. The **LR-PRM** is considered as one of the two most common seat allocation in countries that have the **party list proportional representation system**. The other common seat allocation is known as the **Highest Average Method**.

The **LR-PRM** can be used with any or no formal vote threshold. It is implemented as follows:

- 1) Divide the party list organizations into two groups. The **Qualifiers**, which receive a percentage share of the party list votes that is equal to or greater than the **formal vote threshold**, and the **Non-Qualifiers**, which acquire a percentage share of party list votes less than the formal vote threshold.
- 2) Determine the **LR Quota** by dividing the total number of party list votes of the **Qualifiers** by the total number of party list seats. The **LR Quota** is the **quotient** of the division.
- 3) Divide the number of party list votes of each of the **Qualifiers** by the **LR Quota** obtained in (2). The **quotient** of the division becomes the initial number of seats that will be assigned to the corresponding party list organization. This is the first stage of seat allocation in the **LR-PRM**. The **remainder** of the division shall be used in the second stage.
- 4) Rank all the **Qualifiers** linearly from the highest to the lowest based on the rank of their **corresponding remainders** in the division.

- 5) If there are undistributed seats after the first stage, then these remaining seats are distributed to the **ranked list of Qualifiers** by allocating one seat to the highest ranked qualifier, and one seat to the next ranked qualifier, and so on until all the remaining number of seats are completely distributed.
- 6) The **Non-Qualifiers** shall receive no seat.

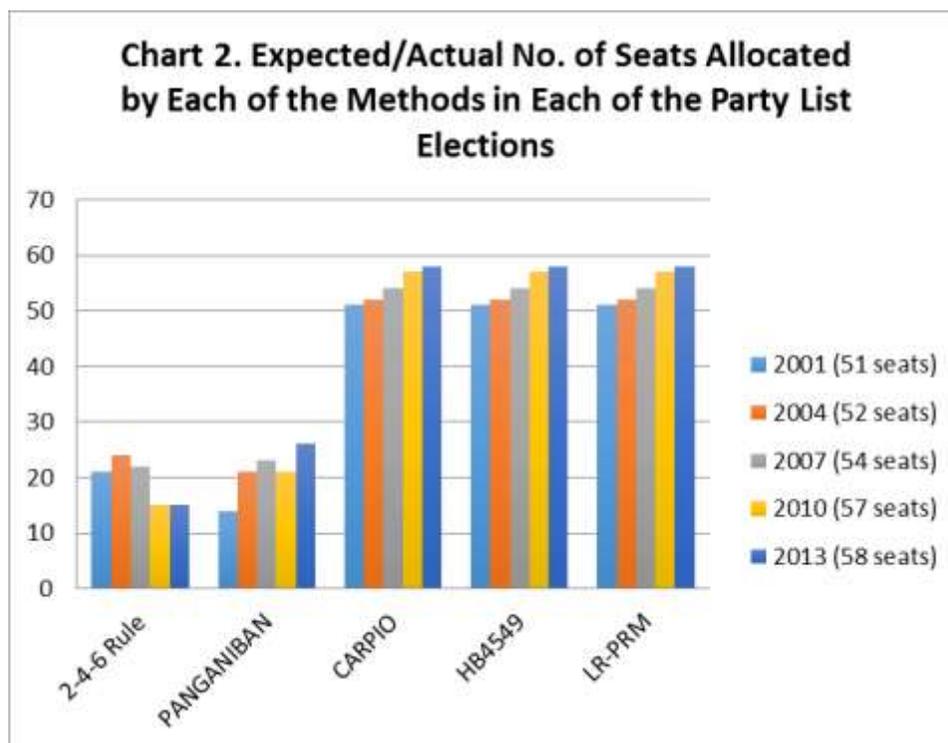
These methods (**2-4-6 Rule**, **PANGANIBAN Formula**, **CARPIO Formula**, **HB4549 Formula** and the **LR-PRM**) shall be examined in the light of the three parameters, namely: (1) **compliance**, (2) **proportionality**, and (3) **broadness**.

### **On the Compliance to the 1987 Constitution**

The 1987 Philippine constitution mandates that twenty percent (20%) of the total members of the House of Representatives must come from the party list system. Hence, the **index of compliance** measures the degree in which a seat allocation method has filled up the 20% requirement.

An index of compliance that is equal to **100%** means that all the seats are filled up.

If the index of compliance of a method is less than 100%, then the method is non-compliant to the 1987 constitution.



The formula for the index of compliance denoted by **Index(C)** is given by

$$\text{Index}(C) = \frac{\text{number of seats allocated}}{\text{available number of seats}} \times 100\%$$

**Chart 2** shows the actual/expected number of seats allocated by the different methods: **2-4-6 Rule**, **PANGANIBAN Formula**, **CARPIO Formula**, **HB4549 Formula**, and the **LR-PRM**.

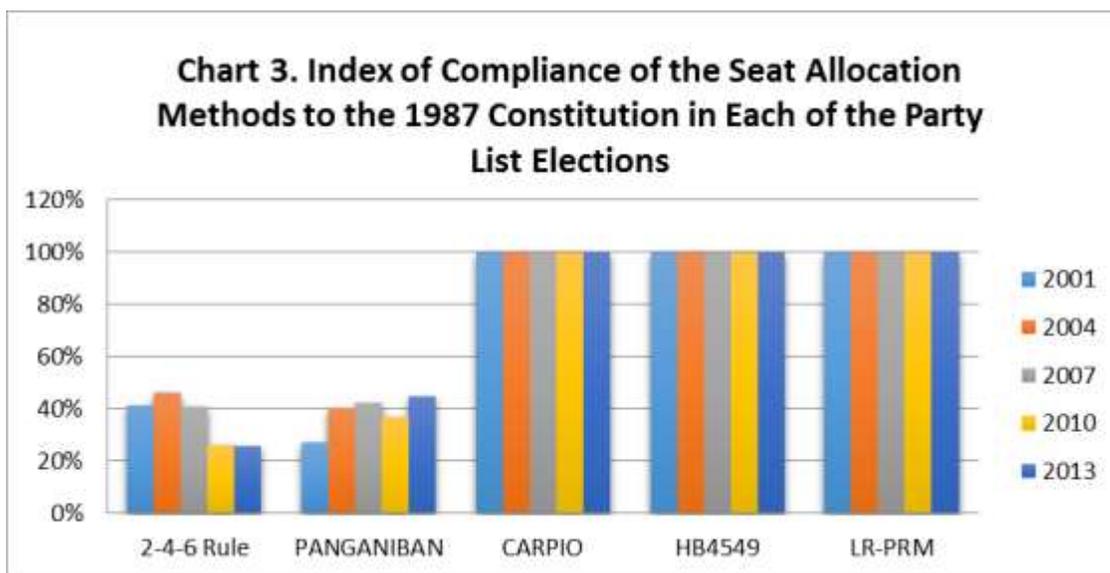
Clearly, the **2-4-6 Rule** and the **PANGANIBAN Formula** are non-compliant to the 1987 Constitution.

The **2-4-6 Rule** is **always non-compliant** since one seat in the method is equivalent to two percent (2%) of the total number of party list votes cast and the number of party list seats in the party list elections after 1998 is always greater than 50 seats.

The **PANGANIBAN Formula** is **always non-compliant** since 1 seat for the leading party is equivalent to two percent (2%) of the total number of party list votes, the leading party can have at most 3 seats, and a party list organization is entitled to a seat if it has at least two percent of the total number of party list votes cast such that its number of seats is proportional to the number of seats of the leading party.

The **CARPIO Formula**, **HB4549 Formula**, and the **LR-PRM** are **always 100%-compliant** to the 1987 Constitution on any party list election since all of them have extra rounds of seat allocation to distribute all the remaining number of seats.

See **Chart 3** for the **index of compliance** of the different methods from the **2001** to the **2013** party-list data sets.



However, none of these methods can be used for allocating the available seats for the party list system if the 20% compliance is a basic requirement.

### On the Measurement of Proportionality

Proportional representation is based on the principle that a party with **N** percent of the total number of party list votes must be given **N** percent of the total number of party list seats.

However, if equality is not possible then the absolute difference between the percent share of votes and the percent share of seats must be less than the percent share of votes that is equivalent to 1 seat.

A seat allocation method that denies a party list organization of a seat, which rightfully belongs to the organization under the principle of proportional representation, disenfranchises the voters who voted for that seat to the said party list organization.

On the other hand, if a seat allocation method allocates more seats to a party list organization than it should receive then that method denies those overhang seats from the rightful recipients.

Hence the measurement of proportionality in the distribution of party list seats by a certain allocation method is based on the difference between the share of votes and the corresponding share of seats of each of the party list organizations in the party list election.

Before the **index of proportionality** is computed the following steps must be done:

- 1) Find the total number of party list votes by adding all the votes received by the party list organizations.
- 2) Determine the percent share of votes of each party list organization by adding its number of votes received by the total number of party list votes obtained in (1).
- 3) Segregate the party list organizations that receive the number of votes larger than or equal to the formal vote threshold. These are the qualified parties.
- 4) Compute the total number of party list votes of all the qualified parties.
- 5) Find the percent share of votes of each qualified party list organization by dividing its number of votes received by the total number of qualified party list votes obtained in Step (4). The percent share of votes of each party list organization that does not qualify for a seat is 0%.
- 6) Apply the seat allocation method to determine the number of seats to be allocated to the party list organizations.
- 7) Compute the percent share of party list seats of each party list organizations.
- 8) Find the difference between the percent share of votes ( $\%v$ ) and the corresponding percent share of seats ( $\%s$ ) of each party list organization.

We shall be using the index of proportionality proposed by **Michael Gallagher** in *Proportionality, Disproportionality, and Electoral System, Political Analysis, Vol. 8, pp. 381 – 388.*

The **index of proportionality** or **Gallagher index** or **the least squares index** is computed as follows:

- 1) Compute  $(\%s - \%v)^2$ .
- 2) Find the sum of all the quantities computed in (1) and multiply the sum by 0.5.
- 3) Extract the square root of the result in (2). This is our index of proportionality.

If a seat allocation method denies a seat that belongs to a party list organization under the principle of proportional representation or assigns an additional seat to a party list organization even if it cannot be so under the principle of proportional representation, then the seat allocation method contradicts the principle of proportional representation.

The intensity of contradiction of the method to the said principle is computed as follows:

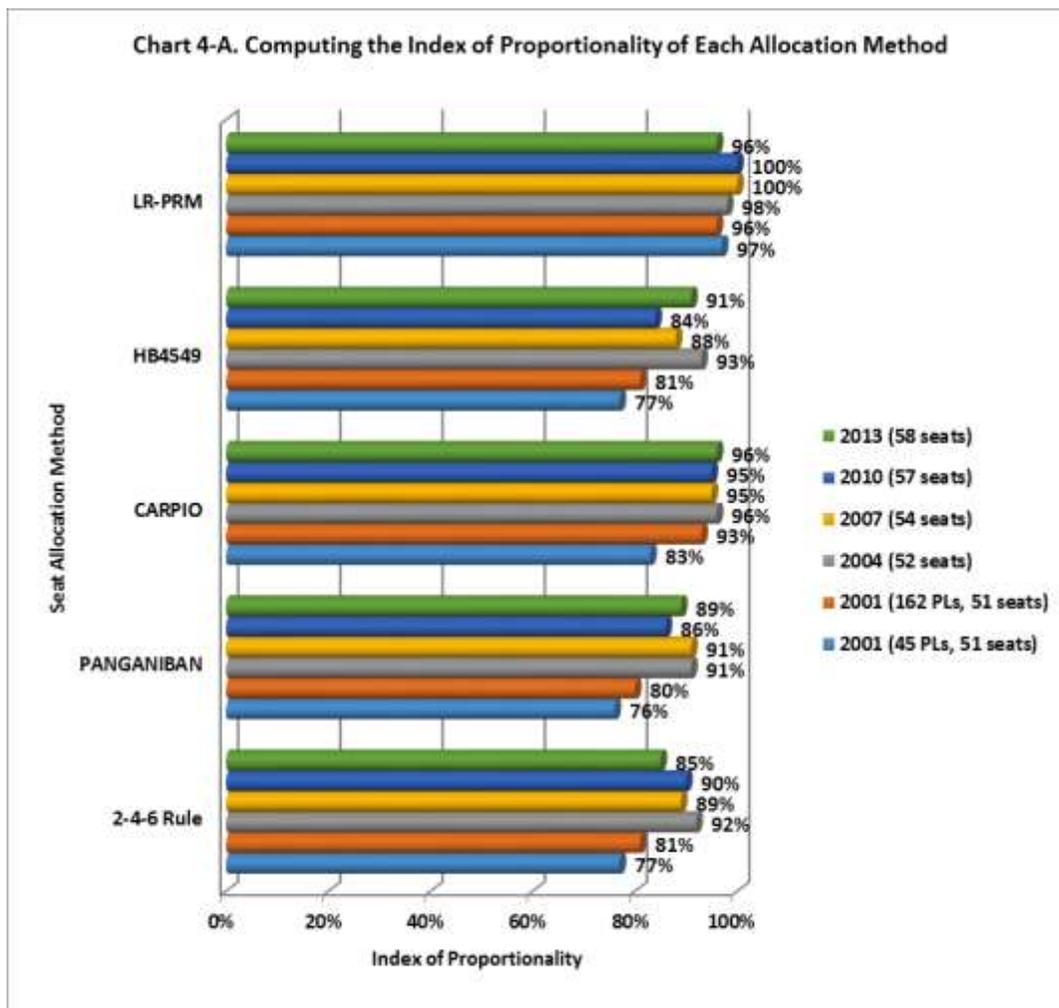
- 1) Compute the absolute value of  $(\%v - \%s)$  of each party list organizations.
- 2) Find the integer value of the product between the absolute value obtained in (1) and the total number of party list available.
- 3) Sum of the all the integer values obtained in (2).
- 4) Divide the sum obtained in (3) by the total number of party list seats available and multiply the result by 100%. The product is called the intensity of the contradiction of the seat allocation method to the principle of proportional representation.

In the **2-4-6 Rule** and the **PANGANIBAN Formula**, the party list organizations with at least two percent (2%) of the total number of party list votes are qualified to receive a seat.

In the **HB4549 Formula**, the party list organizations with

$$\left( \frac{1}{\text{total number of party list seats}} \right) \times 100\%$$

of the total number of party list votes cast are also qualified to receive a seat.

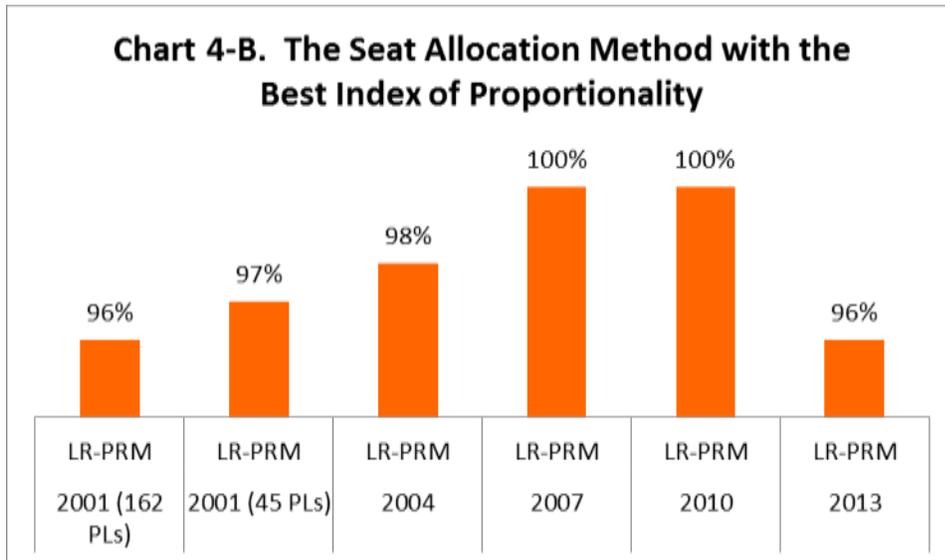


We consider the **CARPIO Formula** to have a **0% formal vote threshold** but distributed a guaranteed seat to the party list organizations with at least 2% of the total number of party list.

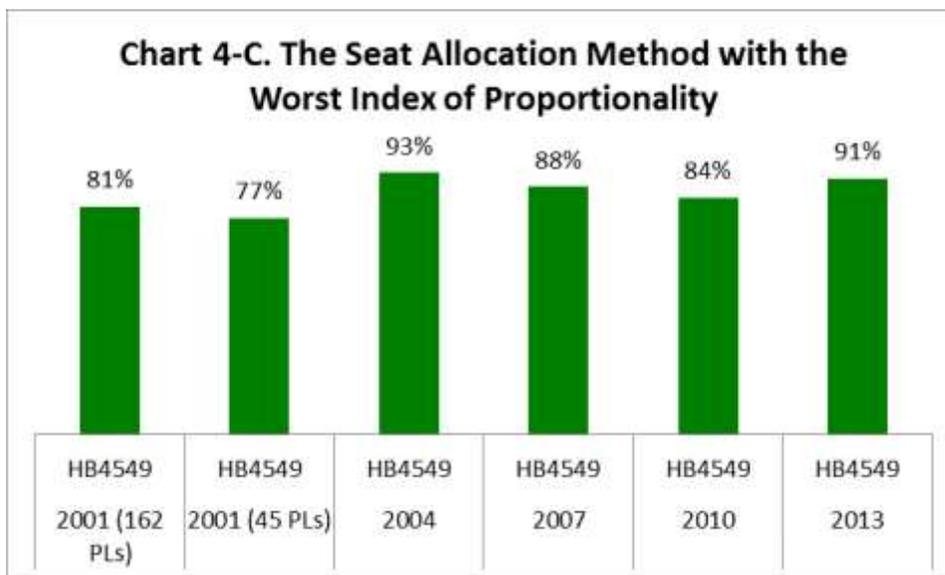
The **Largest Remainder-Proportional Representation Method** also has **0% formal vote threshold**.

In the rest of the paper, we shall only examine and compare those methods: the **CARPIO**, the **HB4549**, and the **LR-PRM**, that are **100%-compliant** to the **1987 Constitution**.

As expected the **LR-PRM** is the most proportional method of all the seat allocation methods. See **Chart 4-A** and **Chart 4-B**.

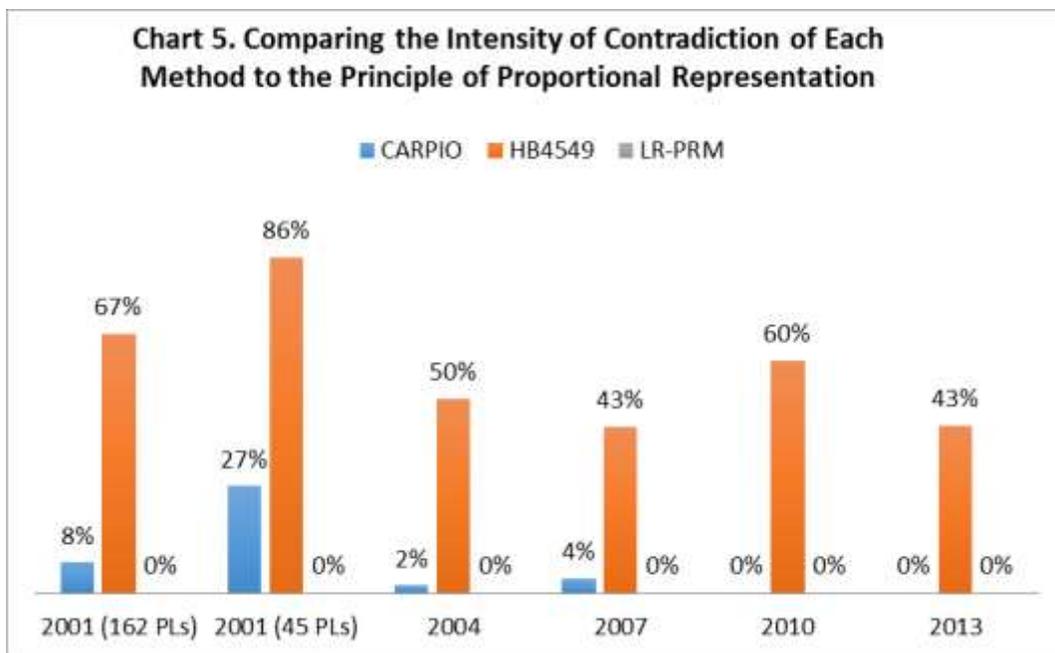


**HB4549 Formula** has the worst **index of proportionality** of the **3 seat allocation methods** with **100% index of compliance**. See **Chart 4-A** and **Chart 4-C** below.



The **index of proportionality** measures the overall proportionality of the seat allocation method. To determine a seat allocation method's effect on the individual party list organizations we measure the **intensity of contradiction** of the method on each individual party.

A **0% intensity of contradiction** means that the method did not deny a seat or did not assign an overhang seat to any of the party list organization. Since the **LR-PRM** is designed to be proportional even at the individual it registers **0% intensity of contradiction** to all the party list elections. See **Chart 5**.



In the **2010** and **2013** party list data sets, the **CARPIO Formula** has a **0% intensity of contradiction**. This is because no party list organizations had the shares of votes that could receive **4 or more seats**.

Chart 6. Intensity of Contradiction of the  
Carpio Formula in the 2001 Party List Data Set  
with 51 seats Available

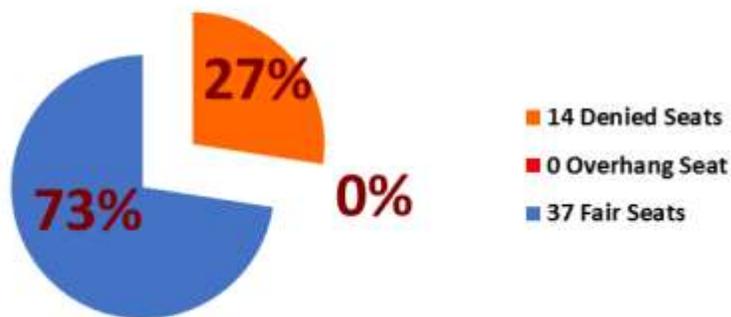
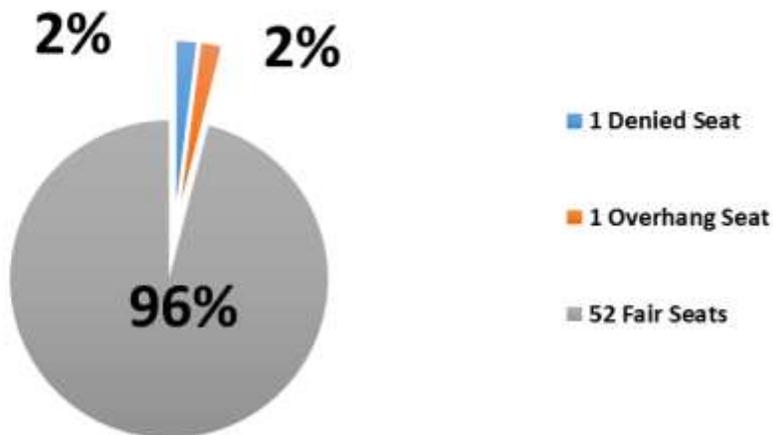


Chart 7. Intensity of Contradiction of the Carpio  
Formula in the 2007 Party List Data Set with 54 seats  
Available



In the 2001(45 PLs) party list data set, the CARPIO Formula registered a 27% intensity of contradiction to the principle of proportional representation. This can be attributed to the 3-seat cap. See Chart 6.

However, the **CARPIO Formula** can also register a **positive** intensity of contradiction due to assigning an overhang seat to a party list organization. See **Chart 7**.

The proposed formula of **HB4549** has the highest intensity of contradiction among the three seat allocation methods with **100%-index of compliance**.

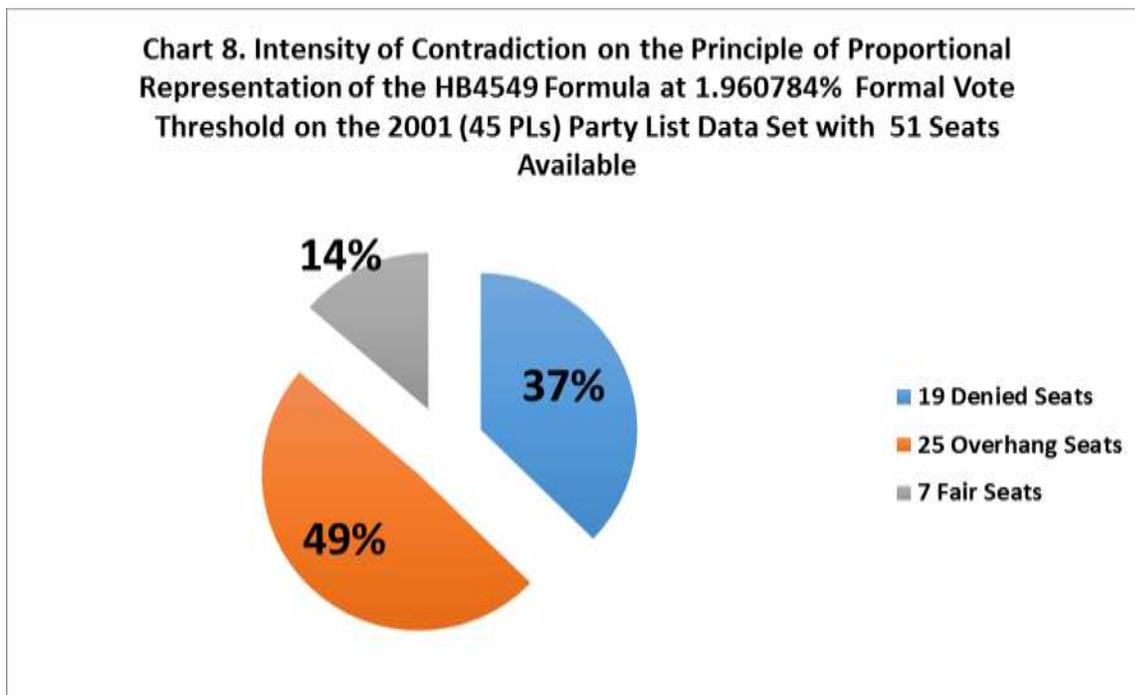
In the **2001(45 PLs) party list data set**, the proposed formula registered **19 denied seats** and **25 overhang seats**. The total of which is **86%** of the total party list seats available. Hence, it has an **86% intensity of contradiction**.

**HB4549** will always have overhang seats since it is allocating all the remaining seats to those party list organizations that do not qualify for a seat.

Since **HB4549** imposes a formal vote threshold that is equal to

$$\left( \frac{1}{\text{total number of party list seats}} \right) \times 100\%.$$

Hence, it is always prone to deny a seat compared to the **CARPIO Formula**, which does not impose a formal vote threshold. See **Chart 8**.



We consider the **CARPIO Formula** to have a **0% formal vote threshold** since it is computing the additional number of seats with the percentage share of votes the total party list votes cast and not with the total party list votes of the party list organizations with votes larger than or equal to **2%**.

The **0% vote threshold** and the **absence of party list organizations with number of votes that is equivalent to 4 or more seats** are the reasons why the **CARPIO Formula** does not contradict the principle of proportional representation in the **2010 and 2013 party list data sets**.

However, in the same data sets **HB4549** registers a high intensity of contradiction:

It has a **60% intensity of contradiction**, which is equivalent to **9 denied seats** and **17 overhang seats** out of **58 seats** in the **2010 party list data set**.

It has a **45% intensity of contradiction**, which is equivalent to **14 denied seats** and **20 overhang seats** out of **58 seats**, in the **2013 party list data set**.

However, if **HB4549** will revise its formal vote threshold to **0%** then all the party list organizations are qualified to receive a seat.

Thus, **HB4549** will not register a contradiction to the principle of proportional representation like the **CARPIO Formula** in the **2010 and 2013 party list data sets**.

However, the **CARPIO Formula** and the **HB4549 Formula** at **0% formal vote threshold** will not always register a **0% intensity of contradiction** to the principle of proportional representation.

**HB4549 with 0% formal vote threshold** will have a **27% intensity of contradiction** with **14 seats denied** out of **51 seats** in the **2001 (45 PLs) party list data set**.

It is only the **Largest Remainder – Proportional Representation Method** that will always register a **0% intensity of contradiction to the principle of proportional representation**.

## On the Index of Broadness

It has been regarded that a party list organization is **strong** if it can generate **at least two percent (2%)** of the total number of qualified votes cast for the party list system. A party is **weak** if it has **less than 2%** of the total number of qualified party list votes.

Hence, the **index of broadness** measures the degree that a seat allocation method allows weaker parties to be in the winning circle of party list organizations.

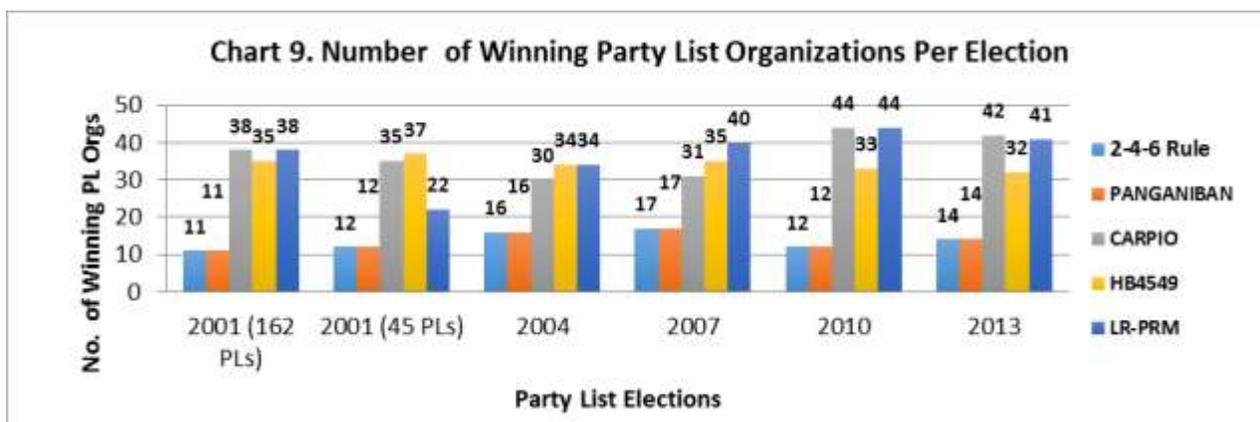
We shall take a look at the **ratio of the weak parties over the strong parties** with respect to the following:

- 1)  $\text{Index}(\text{Broad}_1) = \frac{\text{Number of Winning Parties} - \text{Number of Strong Parties}}{\text{Number of Strong Parties}} \times 100\%$ . This is the index of broadness of the first type that measures the ability of the seat allocation method to accommodate the weaker parties as part of the winning circle.
- 2)  $\text{Index}(\text{Broad}_2) = \left(1 - \frac{\text{Number of Seats of the Strong Parties}}{\text{Total Number of Seats Awarded}}\right) \times 100\%$ . This is the index of broadness of the second type that measures the strength of the weaker parties in terms of the share of seats the weaker parties control.

A **100% index of broadness of the first type** means that the **number of weak parties is equal to the number of strong** parties in the winning circle.

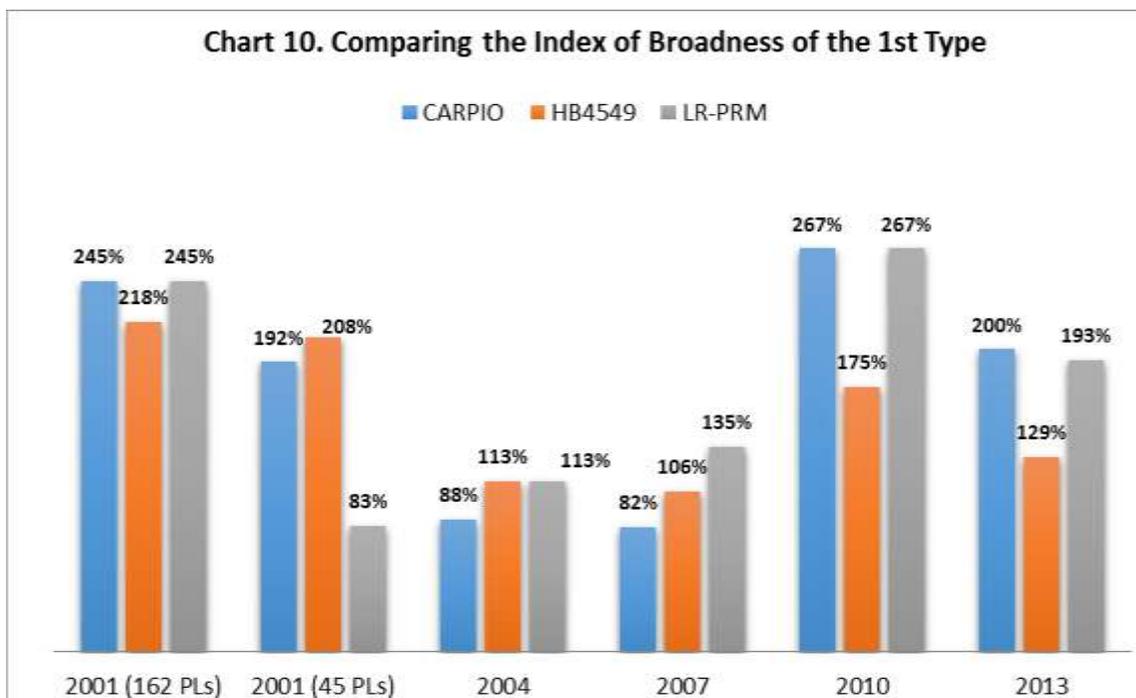
A **200% index of broadness of the first type** means that the **number of weak parties in the winning circle is twice the number of strong** parties.

A **0% index of broadness of the first type** means that there are **no weak parties in the winning circle**.



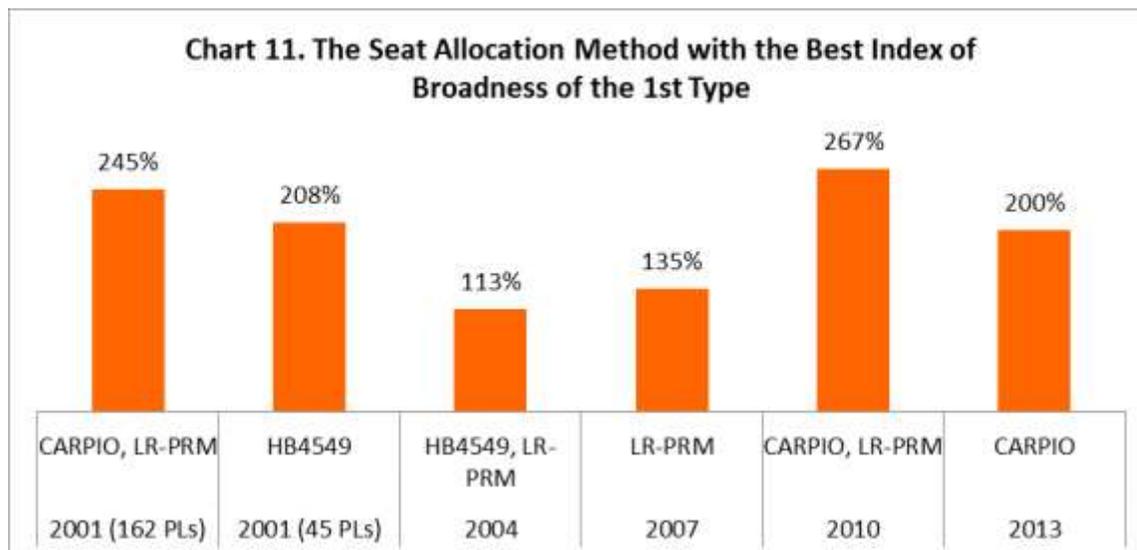
**Chart 9** shows the number of winning party list organizations per seat allocation method in each of the party list elections.

We take note that even if **LR-PRM** is awarding more than 3 seats to a party list organization, it can be as broad as possible. See **Chart 10**.



In terms of the number of winning party list organizations, **LR-PRM** has the most number in the **2007 party list data set** with **40 winning parties**. In **2004 party list data set**, **LR-PRM** shares with **HB4549** with the most number at **34 winning parties**.

In the **2010 party list data set**, it shares with the **CARPIO Formula** with **44 winning parties**. It is also true with the **2001 (162 PLs) party list data set** before the 117 party list organizations were disqualified where it shares with the **CARPIO Formula** with the most number of winning parties at **38**. Although, in the **2013 party list data set**, it was second to the **CARPIO Formula** (with **42 winning parties**) where **LR-PRM** awarded **41 parties** as winners.

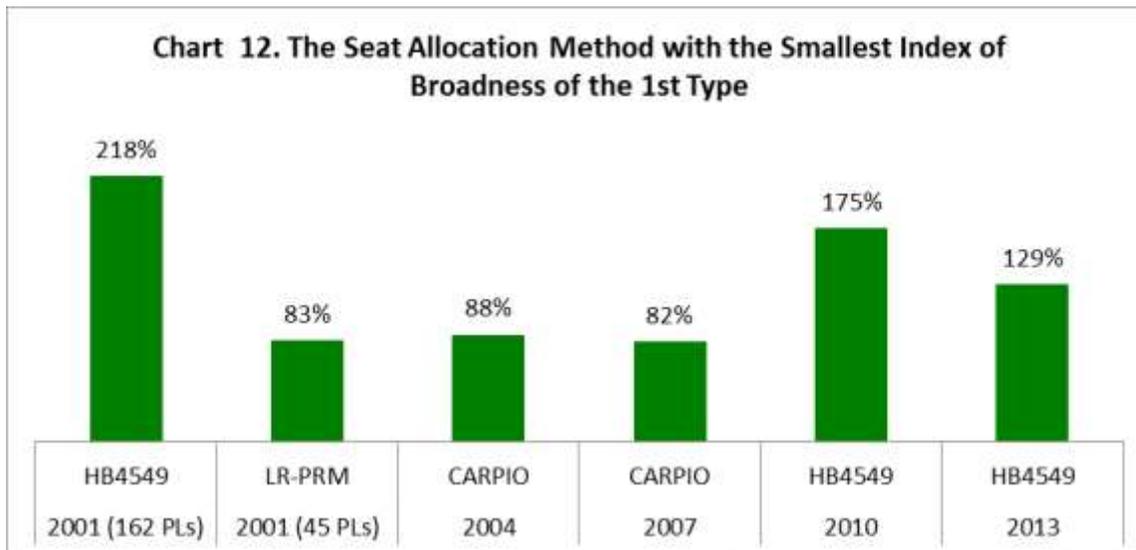


In terms of the **index of broadness of the 1<sup>st</sup> type**, LR-PRM is performing very well as shown in **Chart 10** except in **2001(45 PLs) party list data set**, where **117 party list organizations** were disqualified, with **12 strong and 10 weak parties** in the winning circle out of **45 remaining qualified parties**. The number of weak parties allowed by LR-PRM in the winning circle was always more than the number of strong parties.

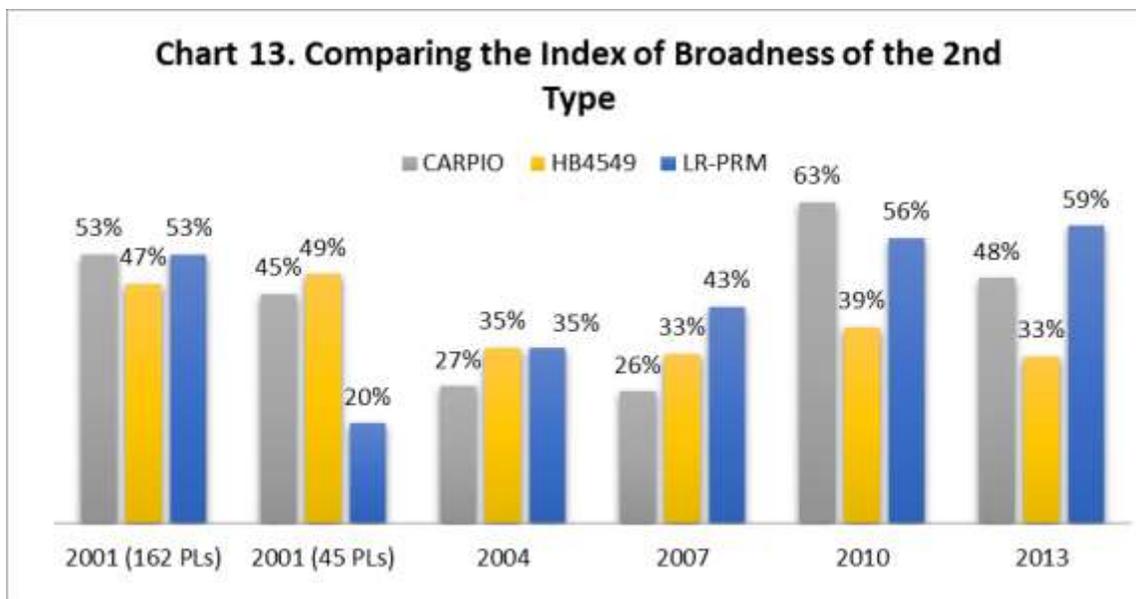
See **Chart 11** for the seat allocation method with the best index of broadness of the 1<sup>st</sup> type in each data set from **2001(162 PLs) party list data set** to **2013 party list data set**.

**Chart 12** shows the seat allocation method with the smallest index of broadness of the 1<sup>st</sup> type among all the 3 different methods with **100%-index of compliance**.

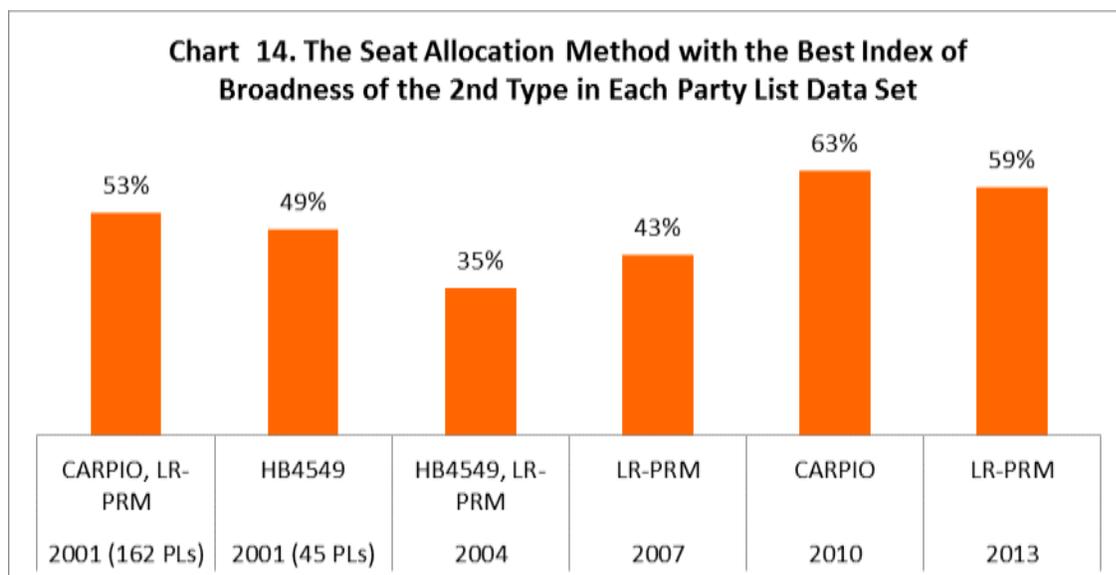
Although the **CARPIO Formula** in the **2007 party list data set** has the smallest **index of broadness of the 1<sup>st</sup> type** at **82%**, it means that there are **10 strong parties** as there are **8 weak parties** in the winning circle. This is not really bad compared to the **2-4-6 Rule** and the **PANGANIBAN Formula**, which allow the strong parties only in the winning circle.



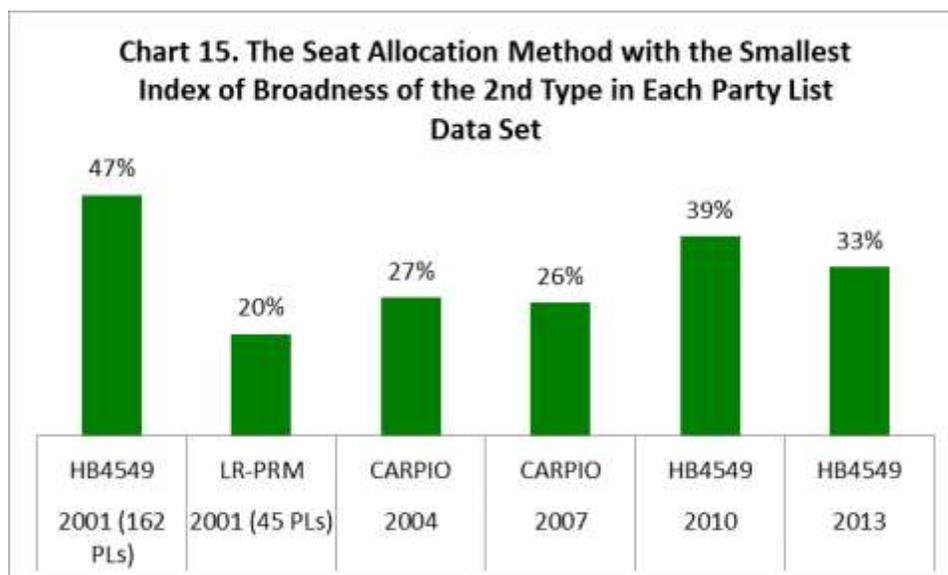
The **index of broadness of the 2<sup>nd</sup> type** shows the ratio of the number of seats of the weak parties and the number of seats controlled by the strong parties. See **Chart 13** for the comparison from the **2001(162 PLs) party list data set** to **2013 party list data set**.



The best record of **index of broadness of the 2<sup>nd</sup> type** among all the 3 seat allocation methods is given in **Chart 14**. **LR-PRM** has the best record in 4 out of 6 data sets while **CARPIO** and **HB4549** have the best record in 2 out of 6 data sets.



The seat allocation method with the smallest index of broadness of the 2<sup>nd</sup> type among all the 3 seat allocation methods is given in **Chart 15**.



**HB4549** has the **smallest index of broadness of the 2<sup>nd</sup> type** in 3 out of 6 data sets.

The **CARPIO** has the smallest index in **2 out of 6 data sets** while the **LR-PRM** has the smallest index in **1 out of 6 data sets**. It is in **2001(45 PLs) party list data set** where the strong parties control about **80%** of the total number of party list seats and **78%** of the total number of party list votes cast when the 117 party list organizations were disqualified.

### On the 3-Seat Cap and its Effect

The 3-seat cap was imposed in **R.A. 7941** to prevent the strong parties from controlling the seats allocated to the party list system. As a result the **Largest Remainder Method** or the **Highest Average Method** was abandoned in the allocation of seats to the party list organizations.

We already have used 3 different seat allocation methods since the 1998 party list election and a new method is proposed in **HB4549**.

The first two methods failed to comply with the 20% requirement of the 1987 Constitution on the members of the House of Representatives that are coming from the party list proportional representation system.

The third and the proposed method are always **100%**-compliant.

The **average index of proportionality** of the **2-4-6% Rule**, the **PANGANIBAN**, and the **HB4549** on the **5 party list data sets** are almost equal to **86%** while **CARPIO** has **93%** and **LR-PRM** has **98%**.

The effect of the **CARPIO Formula** and **HB4549** at each individual party list organizations with respect to the **principle of proportional representation** is not encouraging.

We did not find any inconsistency of the **CARPIO Formula** on the **2010** and **2013 party list data sets** since no party list organization was able to receive party list votes that is equivalent to **4 or more party list seats**. However, we find inconsistencies or contradictions with the other 3 data sets.

Since **HB4549** is allocating the remaining number of seats to those party list organizations that do not satisfy the natural formal vote threshold, which is numerically equal to the number of party list votes for one party list seat, it always has inconsistencies with the principle of proportional representation.

A way out is to lower the formal vote threshold to **0**. But it will obtain inconsistencies when there are party list organizations that can garner the number of party list votes that is equivalent to **4 or more party list seats**.

Since the **2-4-6% Rule** and the **PANGANIBAN Formula** were designed in such a way that only those having two percent (2%) or more of the total number of party list votes are allowed to receive a party list seat, their respective values of the index of broadness either of the first type or of the second type are always **0%**.

In examining the **CARPIO Formula, HB4549** and **LR-PRM** in their respective ability to allow the weaker parties to be in the winning circle, the **LR-PRM** even without a 3-seat cap has comparable or even better index of broadness.

In the **2001(45 PLs) party list data set** the strong parties control about **78%** of the total number of party list votes. As a result, it has about **80%** of the total number of party list seats.

**LR-PRM's** smallest index values were  $I(B_1) = 83\%$  and  $I(B_2) = 20\%$  in **2001(45 PLs) party list data set** which means that there are more than **8 weak parties** for every **10 strong parties** in the winning circle and **2 seats for the weak parties** for every **10 seats for the strong parties**.

This is comparable to the **CARPIO's** smallest index values of  $I(B_1) = 82\%$  and  $I(B_2) = 26\%$  in the **2007 party list data set**.

**Figure 1. Comparing the Seats Allocated to the Strong Parties by LR-PRM and CARPIO at 0% Formal Vote Threshold Using the 2010 Party List Data Set**

Rank	Strong Party List Organizations	LR-PRM	CARPIO	DIFFERENCE
		25	25	0
1	AKB	3	3	0
2	Senior Citizens	3	2	1
3	Buhay	3	2	1

4	Akbayan	2	2	0
5	GABRIELA	2	2	0
6	Coop-NATCCO	2	2	0
7	1-CARE	2	2	0
8	Abono	2	2	0
9	Bayan Muna	2	2	0
10	An Waray	2	2	0
11	CIBAC	1	2	-1
12	A TEACHER	1	2	-1

However, in the **2007 party list data set**, the strong parties have only **56%** of the total number of party list votes but **CARPIO** allows the strong parties to control **74%** of the total number of party list seats. On the other hand, **LR-PRM** and **HB4549** allow the strong parties to control **57%** and **67%** of the total number of party list seats, respectively. Let us now make a comparison on the seat allocation between the **LR-PRM** and each of **CARPIO** or **HB4549** at each strong party list organization in each party list data.

Note that if a party list organization has more seats allocated to it by the **LR-PRM** than by **CARPIO** or **HB4549**, we may consider the difference as the number of **shaved seats** from the party list organization by the other method.

Suppose, for example, that a party list organization has a number of seats that is equivalent to 5 seats by the **LR-PRM**. Since the other method has a **3-seat cap**, then the number of shaved seats from the **LR-PRM** by the other method is **2**.

On the other hand, if a party list organization has a lesser number of seats assigned to it by LR-PRM than that of the method, then we consider the difference as the number of bonus seats to the party list organization by the other method.

Consider **Figure 1**.

There is one shaved seat from each of the **SENIOR CITIZENS** and **BUHAY** by the **CAPRIO Formula**.

**Figure 2. Comparing the Seats Allocated to the Strong Parties by LR-PRM and CARPIO at 0% Formal Vote Threshold Using the 2010 Party List Data Set**

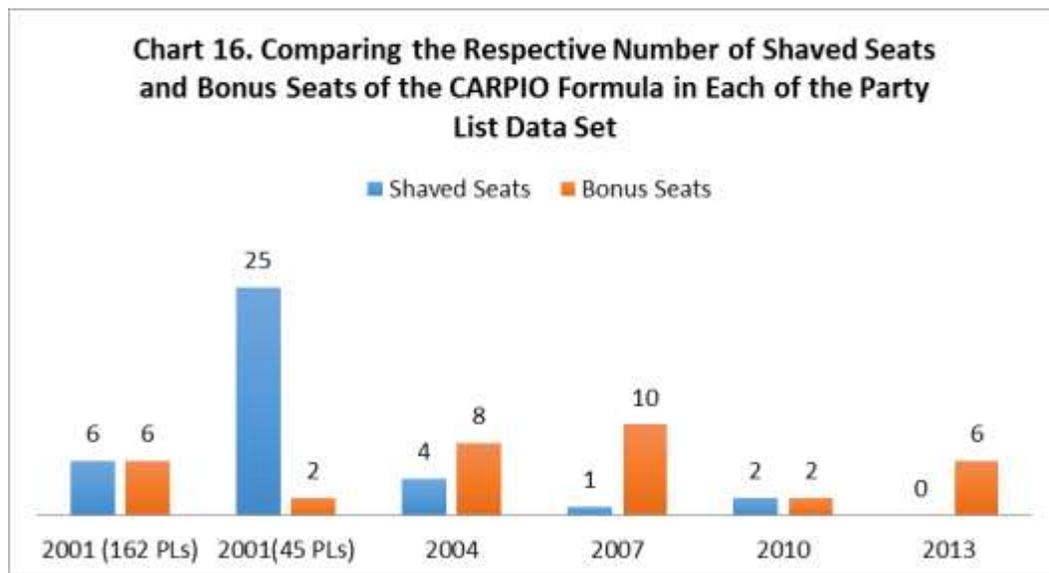
Rank	Strong Party List Organizations	LR-PRM	HB4549	DIFFERENCE
		25	35	-10
1	AKB	3	3	0
2	Senior Citizens	3	3	0
3	Buhay	3	3	0
4	Akbayan	2	3	-1
5	GABRIELA	2	3	-1
6	Coop-NATCCO	2	3	-1
7	1-CARE	2	3	-1
8	Abono	2	3	-1
9	Bayan Muna	2	3	-1
10	An Waray	2	3	-1
11	CIBAC	1	3	-2
12	A TEACHER	1	2	-1

There is one bonus seat from each of **CIBAC** and **A TEACHER** by the **CARPIO** Formula.

The net effect is zero. Thus, the shaving of seats by **CARPIO** is giving no benefit to the weak parties.

In Figure 2, we have **20 shaved seats** such that 19 shaved seats are a direct result of the 3-seat cap employed by **HB4549**.

Since there is not even a single bonus seat, the difference is **20**. Hence, we can conclude that the weak parties are given **20** seats as a result of shaving 20 seats from the strong parties.



**Chart 16** gives us the comparison between the number of **shave seats** and the **bonus seats** by the **CARPIO Formula** in each of the party list data seat.

In the **2001(45 PLs) party list data sets**, there are **25 shaved seats** from the strong parties from the **CARPIO Formula**. **Two seats** are given as **bonus seats** and **23 seats** are given to the weak parties.

In the **2001(162 PLs) and 2010 party list data sets**, the number of shaved seats remains in the hands of the strong parties since it is equal to the number of bonus seats.

In fact there are cases where the **CARPIO Formula** is shaving seats from the weaker parties, which are given to them by **LR-PRM**.

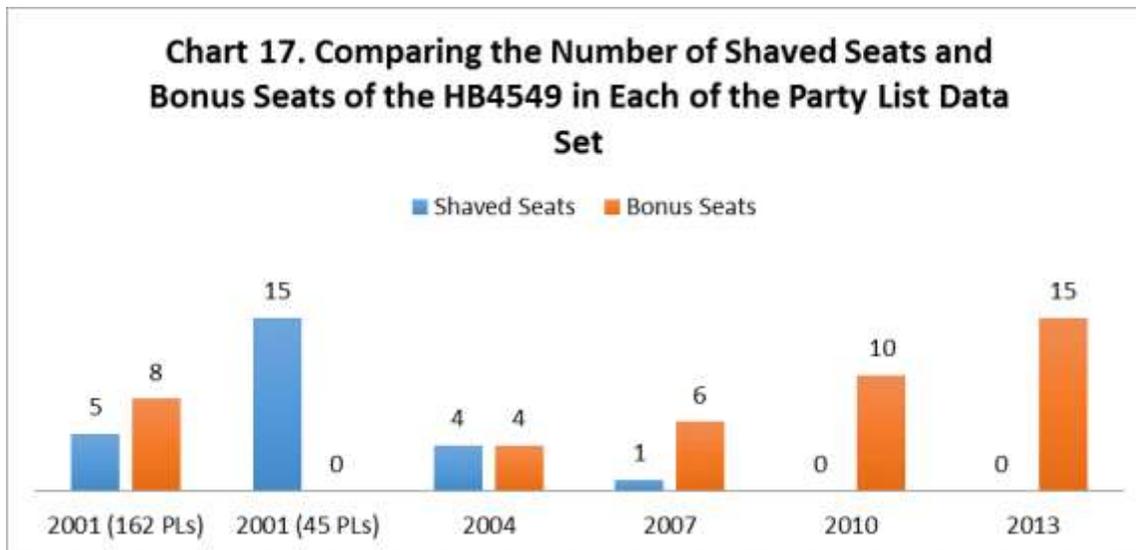
In the **2004 party list data set**, **4 seats** were shaved from the weaker parties.

In the **2007 party list data set**, there were **9 shaved seats**.

In the **2013 party list data set**, there were **6 shaved seats**.

These are our evidence that the **CARPIO Formula** is imposing the **3-seat cap** but is giving these shaved seats to other strong parties. See **Chart 18**.

It is also shaving the seats given by **LR-PRM** to the weak parties and is allocating these seats to the strong parties.



**Chart 17** gives us also the comparison between the shaved seats and the bonus seats.

In the **2010** and **2013 party list data sets**, there are **10 bonus seats** and **15 bonus seats**, respectively but no shaved seats from the strong parties. This means that **10 seats** and **15 seats** are shaved from the weak parties in the **2010** and in the **2013 party list data sets**, respectively.

In the **2001(162 PLs)** there are **5 shaved seats** but **8 bonus seats**. In effect, three (3) seats given by **LR-PRM** are shaved from the weak parties and are given to the strong parties.

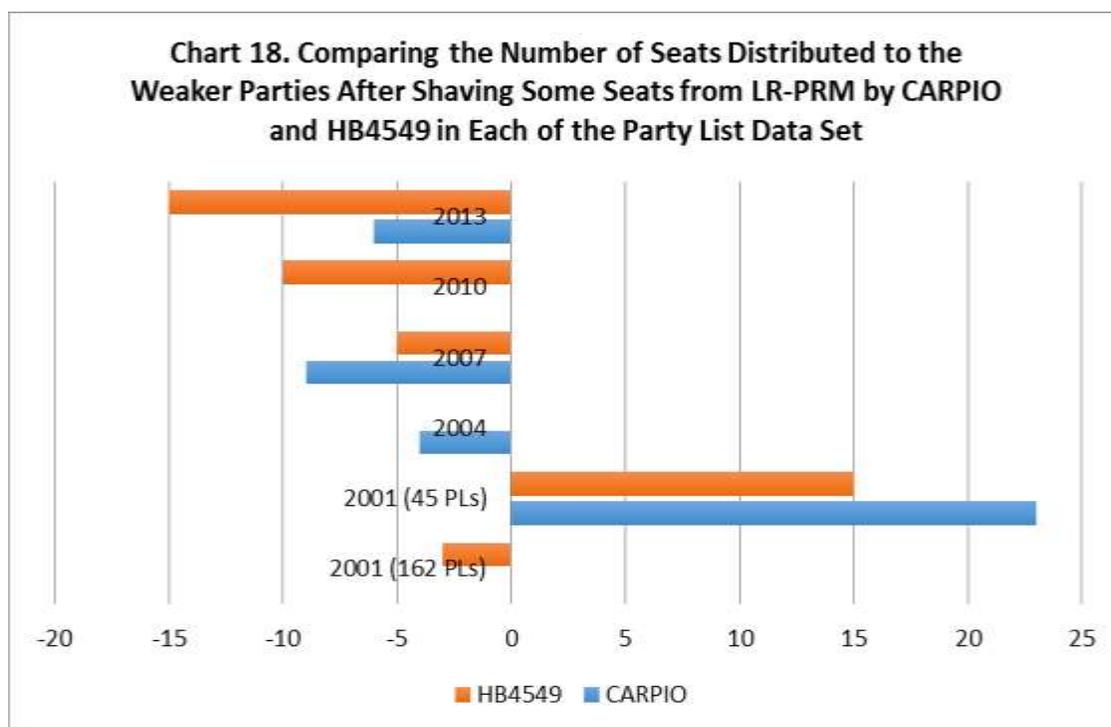
In **2007 party list data sets**, there are **5 shave seats** from the weak parties.

In the **2004 party list data set**, the **4 shaved seats** from the strong parties remain with the strong parties as they are given as **bonus seats**.

It is only in the **2001(45 PLs) party list data set** where the all the shaved seats are given to the weaker parties.

These are our evidence also that the **HB4549** is imposing the **3-seat cap** but is giving these shaved seats to other strong parties. See **Chart 18**.

It is also shaving the seats given by **LR-PRM** to the weak parties but is allocating these seats to the strong parties.



Hence, we are recommending the **exclusion of the 3-seat cap** since it is imposed in the Law but its purpose is not followed by our existing and proposed formulae.

Also, imposing a **maximum limit of 3 seats** is not consistent with **Section 17** and **Section 18 of Article VI** of the **1987 Constitution** in the composition of the members of the **House Electoral Tribunal** and of the **Commission on Appointments**.

**Section 17, Article VI** states that ... “Each Electoral Tribunal shall be composed of nine Members, three of whom shall be Justices of the Supreme Court to be designated by the Chief Justice, and the remaining six shall be Members of the Senate or the House of Representatives, as the case may be, **who shall be chosen on the basis of proportional representation from the political parties and the parties or organizations registered under the party-list system represented therein.**”

**Section 18, Article VI** also states that ... “There shall be a Commission on Appointments consisting of the President of the Senate, as *ex officio* Chairman, twelve Senators, and twelve Members of the House of Representatives, **elected by each House on the basis of**

**proportional representation from the political parties and parties or organizations registered under the party-list system represented therein.”**

In the present House of Representatives with 292 members from the single-member districts and the party list system, a member of the **Commission on Appointments** represents a political party or an organization registered under the party list system with **at least 25 members** and a member of the **House Electoral Tribunal** represents a political party or an organization registered under the party list system with **at least 49 members**.

Hence all party list organizations in the House of Representatives are excluded automatically from this manner of electing a member to the House Electoral Tribunal and the Commission on Appointments by the imposition of the 3-seat cap.

We also recommend that we shall adopt one of the two most commonly used allocation formula, which is the **LR-PRM**.



## **CONTACT INFORMATION**

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