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Institutions as Causes and Effects: North African Electoral Systems During the Arab Spring

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Abstract

From late 2010 through 2011, popular uprisings toppled authoritarian regimes in Tunisia, Egypt, and Libya. In each country, a key component of the new regime's "founding moment" was the selection of rules for the first democratically elected assembly. This paper asks how the design of electoral systems affected the outcomes of the founding elections. We are interested in whether the rules of competition were consequential in determining winners and losers, and to the quality and trajectory of democratization. Our conclusions are based on analysis of district level results from the list proportional representation component of each election and on first person interviews with actors in who participated in the design of electoral rules.¹

¹ Please do not circulate without permission. The authors thank Safia Trabelsi for extraordinary research assistance.

1. Introduction

From late 2010 through 2011, a series of popular uprisings that came to be known as the Arab Spring shook the Middle East. Although ultimately most Arab regimes were able to stave off revolution, protests did lead to regime breakdown in four countries: Tunisia, Egypt, Libya, and Yemen. And, in the first three of those countries, the resignation of their dictators was quickly followed with the first free-and-fair elections in their histories. Tunisia elected its 217-member constituent assembly in October 2011. Egypt elected its 508-member people's assembly (Majlis al-Sha'b) over six weeks from November 2011 to January 2012. And Libya elected its 200-seat General National Congress (al-Mu'tamar al-Waṭanī al-Ām) in July 2012. The stakes in these so-called "founding elections" (O'Donnel 1986) could not have been higher. Not only would the outcome of each election determine who would govern during the interim period, but each of these elected bodies was responsible (either directly, as in Tunisia, or indirectly, as in Egypt and Libya) for crafting the country's future constitution. Moreover, as several scholars have noted, the makeup of these elected bodies ultimately had deep implications for each country's prospects for democratic consolidation. In Egypt, ultra-conservative Islamists won a supermajority in the legislature, setting in motion the defection of non-Islamist parties from the democratic game and the call for military intervention. In contrast, the relative electoral parity between Tunisia's Islamists and secularists is thought to have caused the former to compromise and to have kept the latter interested in further democratic competition (Bellin 2013).

If the stakes of the elections were high, then the uncertainty and fluidity surrounding them were even higher. None of these countries featured well-defined political institutions. The authoritarian regimes in Tunisia and Egypt had regularly held legislative elections, but the legislatures were widely considered rubber stamps and the elections rigged, Libya lacked even a Potemkin legislature, reflecting Qaddafi's philosophical aversion to institutions of any sort (not just democratic ones). Newly ascendant democratic actors wishing to refashion their countries' political systems thus had little in the way of institutional inheritance to draw upon. Most notably, they lacked even agreed-upon rules for the conduct of elections. Thus, in each of these countries, the selection of electoral institutions to govern the selection of the first democratically-elected assembly was of the utmost priority.

This paper is primarily concerned with the effects of those choices. It asks whether the electoral institutions selected during those key, founding moments were consequential in shaping what came after them. Would Tunisia's so-far salutary course have turned out differently had the electoral institutions chosen after Ben Ali's overthrow differed? Could Egypt have found itself on a different path if the designers of its electoral institutions had made other choices? In order to answer these questions, we adopt a twofold strategy. First, we conduct counterfactual analyses of electoral outcomes in each of the three countries under plausible alternative electoral rules. We show that in

all three countries, outcomes would have differed substantially—although the likely substantive impact of these differences varies considerably.

But demonstrating that elections could have turned out differently had different rules been chosen is actually insufficient for demonstrating the causal effect of institutions. To ask how the rules shaped outcomes is meaningful only if it is conceivable that some other rules might have been chosen. Often, as Przeworski (2004) has argued, institutions are themselves functions of underlying balances of power in a polity. Applying this reasoning to electoral institutions, it could be argued that an electoral rule that puts party X in power was chosen because party X *had* power (Knight 2001). In such a situation, it makes little sense to attribute outcomes to the choice of institutions, because no other institutional choice *could* have been made. This brings us to the second pillar of our empirical strategy. In order to determine whether electoral rules possessed independent causal impact in these three regime transitions, we analyze testimonials from participants in the design processes, drawn from first-person interviews and Arabic-language secondary sources. To what extent were other options actively considered, and why were the ultimately-selected institutions chosen?

To adumbrate our conclusions here: We find that electoral institutions “mattered” in all three of our cases. That is, outcomes would have differed—although to differing degrees—in each country had a different method of seat allocation been selected in the country’s list tier. The effect, we find, is most pronounced for Tunisia, where an alternative electoral rule would have delivered a supermajority to a single party. However, we find mixed support for the proposition that the effects of these institutions were independent of some pre-existing balance of political power. Instead, we find that where electoral institutions had the potential to be most consequential in determining the configuration of the party system (as in Tunisia), they were most likely to have been a *function* of the pre-existing balance of power between parties. In other words, precisely because the stakes of the rules were so high, and because the actors charged with designing the rules could perceive this fact, were rules chosen that more or less reflected the balance of power among parties at $t=0$. In contrast, electoral institutions were exogenous to the ultimate distribution of political power either when there extreme uncertainty over the potential effects of those rules (as in Libya), or when electoral rule choice resided in the hands not of the political parties that would contest elections (that is, the “affected interests”), but on extra-institutional actors who were able to impose decisions by virtue of their command of coercive power (as in Egypt).

The article proceeds as follows. We begin by establishing our theoretical perspective on the causal impact of electoral rules, arguing that the degree to which electoral rules reflect underlying balances of power or cause them are functions of contextual variables that can be observed at moments of institutional choice. We then explain the dimensions of institutional choice that confronted political parties in each country, before describing the electoral systems chosen in each: a closed list, proportional representation system in Tunisia with an electoral formula designed to advantage small

parties, to mixed systems in Egypt and Libya in which seats were allocated according to both majoritarian and proportional electoral rules. We then turn toward exploring the effects of these institutions, and to determining the relationship between institutional choice and the balance of power among electoral competitors. Were electoral rules chosen by electoral actors to reinforce the distribution of political power among them, or were they chosen for reasons unrelated to that distribution?

2. Assessing the Causal Impact of Institutional Choices

This paper asks whether institutions matter: that is, did the electoral rules chosen to govern elections in the Arab Spring's North African "success" cases actually effect the outcomes? We acknowledge that to ask how the rules shaped outcomes is meaningful only if it is conceivable that some other rules might have been chosen. It is helpful to think of the relationship between electoral rule choice and the power of political actors as lying along a spectrum running from Instrumental (that is, the rules are chosen by the competitors in a future election in order to reinforce the pre-existing balance of power among them) to Exogenous (in which the choice of rules is unrelated to the relative power balance in the polity).

Instrumental

Exogenous

At the left end (instrumental), all political actors understand their own electoral strength and that of their opponents, as well as the implications of the electoral rules available. There is a coalition that is able to identify its most-favored electoral system and put it in place. For example, a coalition that holds solid plurality support among the electorate and expects that condition to endure might adopt a plurality-based electoral rule, confident that doing so will yield ample seat bonuses in parliament. Under this scenario, the electoral system is an instrument of the governing coalition, reflecting the configuration of political forces in the country rather than shaping it. It is worth noting that these conditions—well organized political parties with sophisticated understandings of how electoral institutions will impact their electoral fortunes—are unlikely to be abundant in newly democratizing systems such as the cases under consideration here.

The right end of the spectrum might be said to more closely reflect the less orderly environments of post-Arab Spring institutional design processes. Electoral rules might be imposed by an outgoing regime; or the current actors might not fully understand the implications of the menu of electoral options; or they might not have reliable knowledge of their electoral strength and that of their opponents; or the choice of rules might be part of a broader compromise that involves trade-offs on other issues. Under any of these conditions, or combinations of them, the choice of rules can be thought of as at least partially exogenous to the configuration of electoral forces, and the rules might

independently affect how the behavior of political elites and voters are channeled into representation.

The spectrum is a heuristic. No observer of political transitions would conclude that politicians enter negotiations of electoral rules free of expectations about how the rules will affect their fortunes. And even theories of electoral system choice in which actors are instrumental acknowledge that the configuration of political forces in place when a system is chosen can subsequently shift, and that when they do the rules can exercise an independent causal impact (Rokkan 1970; Boix 1999; Colomer 2005; Benoit 2007).

This paper is, in part, an exploration of where Tunisia, Egypt, and Libya were on the Instrumental-Exogenous spectrum. Our main tool to shed light on this issue is a set of interviews with actors involved in the choice of electoral rules in each country. The paper also takes seriously the counterfactual that electoral rules other than those that were adopted *might have been* chosen, and explores the consequences of some specific alternatives. In particular, the formula for converting votes to seats dramatically shaped the balance of power among parties and alliances in every country. In Tunisia, both in 2011 and in 2014, and in Egypt in 2011-2012, the formula was pivotal to preventing a single party from commanding an outright majority of assembly seats.

3. Elements of electoral system design

The design of electoral systems encompasses a wide array of decisions from who is allowed to vote, to who can be a candidate, to when elections are held, and a variety of matters in between. In this paper, we focus on a subset of those decisions that are typically consider the most technically demanding, and substantively consequential, choices confronting electoral system designers:

1. Ballot structure: whether voters indicate a preference for candidates or lists, or both; and whether they indicate a single preference, or more than one, or can rank or weight their preferences,
2. District boundaries and magnitude: whether the country is divided into geographical districts from which legislators are elected, how those boundaries are determined, and how many candidates are elected from each district (also known as district magnitude, or DM),
3. Electoral formula: the algorithm used to convert votes into seats,

Elections for a single assembly can combine more than one electoral system, and the Egyptian and Libyan cases did just that. Thus we note the distinction between single-tier versus mixed systems. In ***single-tier systems***, all members of a given assembly are selected by the same method. Among the cases we examine, Tunisia adopted a single-tier system that uses the Hare Quota with Largest Remainders (HQLR) formula to elect candidates from closed list ballots, in districts with magnitude ranging from 1 to 10. By contrast, ***mixed electoral systems*** most frequently include some share of the assembly elected according to a candidate-centered system while the remaining members are elected by proportional representation (PR) from party or alliance lists. Both Egypt and

Libya adopted mixed systems for their assemblies. Table 1 summarizes the key elements of electoral system design for the founding assembly elections in each country.

[Table 1 here]

Tunisia

Tunisia's uprising was the first of the Arab Spring, and the country was the first to choose an electoral system and to hold elections. Its system is also the simplest. Members of the Constituent Assembly were elected from 33 districts, 27 in Tunisia and six more for expatriate voters in Europe, the Middle East, and elsewhere. Seats were apportioned to districts according to population, and the vast majority of districts elected between 5 and 9 representatives. Figure 1 shows histograms illustrating the distribution of DM for the districts in Tunisia (top), then for each tier in Egypt and Libya (discussed below).

[Figure 1]

Tunisian representatives were elected from closed lists, which is to say that parties or alliances present lists of candidates in a given district, and each voter indicates a preference only for a most favored list. After votes are tallied, seats are awarded to lists by the HQLR formula (more on this below), and then to candidates according to their position on the list. So if a list wins one seat in a given district, only the candidate at the top of the list is elected; if the list wins three seats, the top three candidates listed are elected; and so forth.

The electoral law included a gender quota requiring that each list should include equal numbers of men and women, or as close as possible in when the a list included an odd number of candidates, and that gender should alternate such that not all women candidates could be "buried" in unelectable slots at the bottom of lists. Even with alternation, only 27% of those elected in 2011 were women because most lists elected odd numbers of candidates, and men were nominated in most "odd" – that is, first, third, fifth, and so forth – slots.

Across all 33 districts, 560 distinct groups registered lists to compete. The vast majority of these, 406, ran in only a single district, and most of the rest competed in only a handful of districts. Only four alliances – Ennahda, Congress for the Republic, Ettakatol, and the Democratic Modernist Pole – managed to contest all 33 of the districts. Two more – the Progressive Democratic Party and Popular Petition – contested 32 districts, and six others contested more than 25. Table 2 describes the numbers of distinct lists that competed in Tunisia in 2011 (top) and in 2014, as well as in the PR tiers in Egypt and Libya (discussed below).

[Table 2]

The results from the Tunisian election of 2011 are illustrated in Figure 2. The competitive field was unbalanced. Of the 560 lists that ran, 26 won seats, whereas 21% of the vote went to lists that won no representation. The largest party, Ennahda, won 37% of the vote, more than four times the total of the next largest alliance. Based on this result, the HQLR formula awarded Ennahda 41% of the seats in the Assembly, or 4% above its vote share. It is noteworthy that, despite dominating the field of parties, Ennahda's seat bonus was not the largest. The bonuses of much smaller alliances were as large – and in one case, even larger – than Ennahda's in absolute terms, and many times larger in relative terms. Together, these seat bonuses for small alliances determined that Ennahda fell well short of a majority of the seats in the Constituent Assembly and, consequently, had to negotiate with other alliances in the process of drafting a constitution.

[Figure 2]

From 2011-2014, Tunisia's assembly acted both as the nation's legislature and as a body to draft a new constitution. The new charter was ratified in January 2014, and elections for a new parliament with a four-year term, the Assembly of Representatives of the People, were held in October of that year. Those elections used the same electoral system as was used for the Constituent Assembly in 2011. The results are shown in Figure 3.

[Figure 3]

By 2014, many of the secularist politicians that had formed the main opposition to Ennahda in the Constituent Assembly coalesced behind the Nida Tunis label, which won the most votes nationwide, followed by Ennahda, then by a range of smaller lists. The field was slightly less fragmented than in 2011, although there were still 312 lists that ran in only one district and only five that fielded candidates in every district. The share of the vote going to lists that won no representation fell from 21% in 2011 to 13%. Note that, as in 2011, the seat bonus of the largest party, Nida Tunis, was not the largest in the field. Indeed, the bonuses of the next three lists surpassed it, distributing power in the current Tunisian parliament across a range of parties.

Egypt

Egypt selected a mixed system for elections to the People's Assembly in 2011-2012. Two thirds of the seats were elected by PR from closed party lists using the HQLR formula, as in Tunisia. Three quarters of Egypt's 45 PR districts elected either four legislators or eight, with smaller numbers electing 10 or 12. Egypt employed a much weaker gender quota than Tunisia, requiring only that each party list in a given district

include at least one woman, but that candidate could be placed anywhere on the list, and most were placed in unwinnable positions.

One third of Egypt's seats were elected according to a candidate-based system held over from the Mubarak era. 83 districts elected two representatives each. Candidates ran at-large within these districts, with some certified by electoral authorities as having a background as either a worker or a farmer. Each voter then cast two votes, for different candidates. A candidate who earns support from more than 50% of voters² in the district is eligible to win a seat, *provided* that at least one winner in each district holds the worker/farmer designation. A second round election is required to resolve the outcome except under the rare condition when the majority requirement and the worker/farmer requirement are both met. The complex series of contingencies and requirements to determine winners is described in Table 3.

[Table 3 here]

Egypt imposed a weak gender quota for candidates in the PR tier, merely requiring that each district list include at least one woman, but with no requirement about the list position of that nominee. Most women were slotted low on lists, in unwinnable positions. In the candidate-centered tier, there was no gender requirement. Of the 498 candidates elected, only nine (1.8%) were women.

The proliferation of party lists was far less pronounced in Egypt than in Tunisia (see Table 2, above). In the former, 38 distinct lists were on the ballot across the 46 districts, and three-quarters of these managed to run in more than one district. In part, the smaller number of parties in Egypt's founding election was a function of the stringency of ballot access restrictions. According to Law 12 of 2011, in order for a party to register—and thus be eligible to participate in the elections—new political parties were required to obtain 5000 signatures, distributed among at least 10 of Egypt's 27 governorates, with no fewer than 300 signatures from each governorate (article 8).

Of the groups that participated in the election, the three major lists were alliances comprised of multiple parties (four in two cases, three in another), so the total number of parties was 46. 21 parties, from 15 different lists, won PR seats in the Assembly. In the candidate tier, there were winners from eleven parties (including one that won no PR seats), as well as 25 independent candidates. Figure 4 illustrates the results, contrasting the PR vote share for parties (blue bars), the PR seat share (red bars), and the candidate-tier seat share (green bars).

[Figure 4]

² That is, >25% of the votes cast, given that each voter casts votes for two different candidates.

Competition in Egypt was dominated by the Freedom and Justice Party, with 36% of the PR vote, but was not as unbalanced as in Tunisia. The second-largest list, al-Nour, won 27%. As in Tunisia, there were a number of moderate-sized parties, in the 5%-15% range, that won PR seats at rates slightly ahead of their vote shares. In the candidate tier, however, the advantage of size was more pronounced. The FJP won 62% of the candidate seats, al-Nour won another 18%, and 16% went to independent candidates. Only 4% of the candidate-tier seats went to candidates from smaller parties. In the aggregate, then, the FJP controlled 46% of the elected seats in the Assembly, al-Nour controlled 25%, the moderate parties that comprised the Egyptian Block alliance controlled only 15%, Independents held 5%, and the remaining 7% was split among smaller parties.

Libya

Like Egypt, Libya used a mixed system that combined PR with candidate-centered contests to elect its General Congress in 2012.³ 40% of seats were elected by PR from closed lists using the HQLR formula, as in Tunisia and Egypt. Twenty-one geographical districts were designated, but the PR contest was held in only twenty of them.⁴ Of those twenty, ten elected three representatives, six elected four representatives, and three elected five representatives, while the Bingazi district elected eleven. For its PR tier, Libya employed a gender parity quota with alternating list positions, like Tunisia's.

60% of Libya's legislators were elected by a candidate-centered system less convoluted than Egypt's. The country was divided into 73 geographical districts, 41 of which elected a single representative by plurality rule. In three districts, no candidate was elected.⁵ 19 of the other 29 districts elected two representatives each, seven elected three or four, and Bingazi elected nine – also by plurality rule. Candidate-centered plurality elections in multi-member districts are known as single non-transferable vote (SNTV)

³ Libya held two subsequent, incomplete elections in February and in June of 2014. The February election aimed to produce a Constituent Assembly comprised of twenty members from each of the country's three main regions – Tripolitania, Cyrenaica, and Fezzan – to be elected by plurality in single-member districts, with five special districts reserved for women. Widespread boycotts and violence depressed turnout and preventing polling altogether in 13 districts (*Libya Herald* 2014). The June election aimed to produce a new House of Representatives and used the same electoral rules as for the 2012 General Congress election. Again, boycotts and violence depressed turnout, with only 18% of eligible voters participating (*BBC* 2014). In November, the Libyan Supreme Court annulled the election. The parliament produced by the June 2014 election has continued to convene in the eastern city of Tobruk, but does not hold lawmaking authority over most of the country. In light of the incomplete and disputed outcomes of both of the 2014 elections, our analysis of the Libyan case focuses primarily on the General Congress elected in 2012.

⁴ The Jabal al-Gharbi and Nalut district did not hold PR election.

⁵ The Tarabulus (in central Tripoli), Janzour, and Zelten districts did not elect candidate-tier representatives.

and are currently also used in Afghanistan and Jordan. Of all electoral systems in use for national parliaments, SNTV is widely recognized as the least friendly to collective action by political parties and coalitions and, conversely, the most amenable to individualistic competition among independent candidates (Cox 1997; Reynolds and Carey 2012).

The full proliferation of parties in Libya is impossible to discern from the data we have been able to collect, which provide vote totals for the top lists but group the vote shares of minor lists within each district as "others" (Carr 2012). From these partially disaggregated returns, it is clear that more than 40 distinct lists ran, and the total number is almost certainly far higher, although likely not as high as the 560 that ran in Tunisia in 2011. Like in Tunisia, the vast majority of lists were purely local. Only six lists ran in more than one district, and none managed to field a list in all 20 PR districts that held contests.

Also similar to Tunisia, one list, National Forces Alliance (NFA), dominated the PR vote in Libya, as illustrated in Figure 5. Note that 25% of the PR vote in Libya went to lists that won no representation, meaning that many lists that *did* win seats would win representation well above their vote shares. Yet, as in Tunisia, these seat bonuses were concentrated among the moderate-sized and smaller parties, not the largest. The NFA captured 48% of the vote and 49% of the PR seats. The Justice and Construction Party (JCP), by contrast, won 21% of the PR seats with just 9% of the vote, and many smaller lists captured a PR seat or two with less than one percent of the overall vote.

[Figure 5]

Unlike Tunisia, Libya used a mixed system, and 120 of the 200 seats in the General Congress were allocated by plurality rule in candidate-centered contests. Here parties no longer had currency, and the affiliation of the 120 independents was initially obscure: although later estimates suggested that only 55, or just under half, these seats went to *genuine* independents. The first parliamentary election for Prime Minister gave some indication of partisan alignment in the new legislature. In the first round Mahmoud Jibril (NFA) got 86 votes (47%), the non-aligned technocratic candidate Mustafa Abushagur received 55 votes (30%) and Awad Barasi of the Muslim Brotherhood won 41 votes (22%). In the second round Abushagur defeated Jibril with 96 to 94. An analysis by Lacher (2013) estimated that National Force Alliance candidates won 25 of the 'independent' seats giving them 32% of the House, the Muslim Brotherhood's JCP won another 17 winning 17% of the legislature and the Salafi National front an extra 23 seats giving them 13%.

As there is no foolproof way to track partisan votes to seats won in the 120 majority seats, one cannot gauge the seat bonuses and losses, or effective disproportionality. But we do know that the proportions of wasted votes were large: 33% of all votes were wasted in the PR districts, an average of 64% of votes were cast for losing candidates in the FPTP districts and 60% in the SNTV districts. This is one of the highest levels of

wasted votes in the world. The PR side of Libya's election resembled Tunisia's rules, but with far fewer PR seats allocated and in smaller-magnitude districts. 600 female candidates ran for office but only one woman was elected as an independent in the non-PR districts. 32 women (40%) were elected among the 80 list PR MPs, but women's vast underrepresentation in the plurality contests left them at only 17% of the overall membership. The majority were from the largest parties, having been elected from the top lists in the PR tier. Sixteen were from the National Forces Alliance, and six were elected from lists of the Muslim Brotherhood's Freedom and Construction Party. Libya allowed citizens living in Canada, Dubai, Germany, Jordan, the US and UK to vote in their 'home' constituencies but these out of country votes did not swing the final results.

4. Assessing Alternative Systems

Addressing our central question – whether the choice of electoral rules affected the outcomes of founding elections in Tunisia, Egypt, and Libya – requires us establish a counterfactual. That is, what is the alternate scenario against which we compare the results of these elections? We pursue two approaches. The first is narrowly focused, considering one element of electoral system design, the PR formula used to convert votes to seats within districts. All three countries selected the HQLR formula, but they might well have chosen otherwise. Had they done so, there would have been no visible difference to voters in the electoral process. Thus, our counterfactual is simply how results would have differed had alternative PR formulas been employed.

It is important to note a fundamental methodological reservation about using electoral results to simulate outcomes under alternative rules – that, had different rules been in place, political actors, may have behaved differently, precisely in response to the incentives the rules generate. With some rules, the incentives are obvious. For example, imposing a 5% legal threshold at the national level, as in Germany, clearly discourages smaller parties, creating strong disincentives for would-be leaders to register any lists except those expected to win wide support. As a result, using actual German electoral results to simulate what *would* have occurred had the 5% threshold rule not been in place would be a dubious proposition.

We submit, however, that the difference between HQLR and the alternative formulas we consider is far subtler, was almost certainly not appreciated by voters, and may even have been grasped only murkily by most of the politicians who were deciding whether or not to enter the Tunisian electoral fray. In these contexts, where voters and politicians alike had little experience with competitive elections and with the rules employed for the Constituent Assembly contests, it is reasonable to assume that behavior under alternative PR formulas would not have differed appreciably from behavior under HQLR. The same leaders who registered lists under HQLR would have done so had the elections been run under another PR formula, and voters would have expressed the same preferences with their ballots. We cannot know for certain, of course, the extent to which this counterfactual applies, but our simulations rest on this assumption.

When we "re-run" Tunisia's elections from 2011 and from 2014, as well as the list tier elections from Egypt and Libya employing alternative formulas, and compare the outcomes with what occurred under HQLR, we find that in every case the outcomes were affected dramatically by formula. We complement our narrow focus on simulating results under alternative formulas with a broader approach that draws on interviews with individuals involved in electoral system design to consider what alternative decisions might have been made, and to speculate about how they might have affected outcomes. This approach brings designers' intentions to the fore.

Alternative PR Formulas

In the world of PR, there are two main "families" of formulas for converting votes to seats – quota and remainders methods, and divisor methods – and within each family, there are various formulas.

Quota & Remainders Methods

The basic principle here is to set a "retail price," in the currency of votes, at which seats in each electoral district may be "purchased" by lists. That price, or quota, is determined by dividing the total number of valid votes cast in a district by some number – in the case of the HQLR, this number is the DM.⁶ Once votes are tallied, each list is awarded as many seats in the district as full quotas of votes it won. For each seat awarded in this manner, a quota of votes is subtracted from the list's district total. If not all seats in the district can be awarded on the basis of full quotas, any remaining seats are allocated, one per list, in descending order of the lists' remaining votes. These seats, then, are purchased for less than the retail price (or quota) for a seat. Lists that win seats on the basis of their remainders are, effectively, buying seats "wholesale."

Note that, under HQLR, it is virtually impossible for all seats in a district to be purchased at retail price, so the HQLR method almost guarantees that, within a given district, lists will pay different prices for seats they win. To mitigate this problem, electoral system designers sometimes reduce the size of quotas by increasing the divisor used to determine them. For example, the Droop Quota (DQ) is calculated as:

$$\text{Number of Votes} / (\text{District Magnitude} + 1)$$

The smaller quota allows for more seats to be bought at retail (and thus, fewer on the basis of remainders), mitigating the problem of inequities across lists in the purchase price of seats.⁷

⁶ The Hare quota is also known as the "simple" quota.

⁷ Of course, reducing the size of quotas opens the possibility that votes could be distributed across lists in a manner that allows more full quotas to be won than there are seats available in the district. The likelihood of breaking the seat budget in this way depends on the number of

Divisors Methods

Rather than set a price in votes for the purchase of seats, divisors methods use the tallies of votes across lists to establish a matrix of quotients pertaining to lists, then allocate seats in descending order of quotients until all the seats in a given district are awarded. A hypothetical example illustrates. Imagine a district in which four lists – A, B, C, and D – compete and 1,000 votes are cast. The votes are distributed across lists as illustrated in the second row of Table 4: 415, 325, 185 and 75, respectively. The DHD method proceeds by calculating a matrix of quotients by dividing each list's tally by the sequence of integers 1, 2, 3, and so on. These quotients are shown in the successive rows of Table 4. Once the matrix is constructed, seats are awarded in the descending order of quotients. In this district, for example, if $DM=5$, then the distribution of seats would be A(2), B(2), C(1), D(0). By contrast, if $DM=10$, the distribution would be A(5), B(3), C(2), D(0).

[Table 4]

Under divisors methods, in contrast to quota-and-remainders, all seats are awarded according to a uniform principle. As with quota-and-remainders methods, one can imagine a rationale for altering the simplest version of the formula in order to achieve certain representational goals. For instance, calculating quotients by dividing vote tallies by the simplest sequence of integers (1, 2, 3 ...), as under DHD, erodes the value of large tallies only gradually, allowing larger lists to accumulate seats before smaller lists win any. (Note, from the $DM=10$ example, that List A wins its fifth seat before List D wins its first.) Thus, some electoral system designers aiming to encourage more inclusive outcomes recommend increasing the divisors by which quotients are calculated more rapidly (e.g. 1, 3, 5, ..., as under the St. Laguë Divisors system), eroding larger tallies more precipitously, and letting smaller lists in the door to representation with relatively lower vote shares.

The choice of a PR formula

In short, either a quotas-and-remainders approach or a divisors approach can be modified from its simplest (HQLR and DHD, respectively), in order to adjust the degree to which the formula rewards large versus small lists. The simplest quota-based formula, HQLR, is relatively friendly to small lists because the quota (retail price) it sets to purchase seats is high. Lists that win enough votes to purchase seats at retail pay a steep price for doing so, and in turn have their tallies diminished rapidly, meaning that lots of seats tend to be awarded by remainders, at discount prices, and to lists that did

lists competing in the district and the distribution of votes among them, as well (obviously) of how low the quota is set, but any quota-and-remainders-based electoral rule that seeks to mitigate the price inequity problem by reducing the size of the quota must provide some mechanism of handling the seat budget problem, if it should arise.

not even necessarily secure any full quotas. By contrast, the simplest divisors formula, DHD, is relatively friendly to large lists because, in constructing the matrix of quotients by which seats will be awarded, it erodes the tallies of large lists more gradually than do alternative sequences of divisors. Thus, the simplest variants in each family of formulas have *opposite* effects.

The simplest formulas, moreover, are by far the two most commonly used among countries that elect their legislative assemblies by list PR. Table 5 shows the distribution of democratic countries employing each formula for elections to their lower or only legislative chamber.⁸ The largest number of countries, 44, uses DHD, but HQLR is the next most common with 36. Another 15 employ alternative methods, most commonly St. Laguë divisors or a Droop quota and remainders, or they combine formulas, distributing seats at the initial district level by full Hare Quotas, but then foregoing the use of remainders to award seats in those districts, instead aggregating lists' district remainder votes in "super-districts," and distributing additional seats by DHD at this higher tier.

[Table 5]

Within PR systems, the choice of arithmetic formula is about how to distribute representational bonuses and penalties among lists, conditional on their overall electoral strength.⁹ In the currency of votes, HQLR sets two prices for seats and allows small lists the greatest opportunity to purchase seats at discount prices. DHD, by contrast, protects the advantage of big lists, allowing them to amass seats before smaller lists are awarded any. Tweaking the quota (in quota systems) or the increments in divisors (in divisor systems) redistributes bonuses and penalties from the large to the small or vice-versa. In short, there are various ways to tilt the field of electoral competition in ways that affect the relative prospects for larger versus smaller lists. Using the HQLR method was one decision among many, but it was critical in the cases we consider.

5. Simulations: Size and Seat Bonuses

To evaluate the impact of PR formula on outcomes, we collected district-level data on the distribution of votes across lists for each PR election. The data were collected from the following sources:

⁸ Countries electing all their legislators in single-member districts (SMDs), such as the United States, the United Kingdom, India, France, and many others are not included. For countries using mixed systems combining SMD elections for some seats with list PR for others, the formula used for the list PR seats is indicated.

⁹ Note that many other features of electoral rules, besides formulas, can be crafted to affect the relative prospects for large versus small lists to win seats, including DM, legal thresholds, upper tier districts for pooling remainder votes (Taagepera and Shugart 1989; Cox 1997).

- Tunisia: Independent Higher Authority of the Election (ISIE 2012 and 2014).
- Egypt: Egyptian Supreme Judicial Committee for Elections, 2012.
- Libya: The *Psephos* website archive (Carr 2012)

In each case, we first use the district-level data to reproduce the seat distributions across lists under HQLR. Then we simulate results as if the votes-to-seats conversion had been conducted using:

- DQLR – Droop Quota ($\text{Votes} / (\text{District Magnitude} + 1)$), an alternative quota-and-remainders formula, employing a lower "retail price" than HQLR;
- LQLR – Low Quota ($\text{Votes} / (\text{District Magnitude} + 2)$), an alternative that illustrates the effect of reducing retail prices further under a quota-and-remainders formula;
- DHD – d'Hondt divisors (1, 2, 3, 4, ...), the most common PR formula worldwide;
- STL – St. Laguë divisors (1, 3, 5, 7, ...), an alternative divisors formula, which increases the increments between divisors, eroding the quotients of large lists more quickly than DHD; and
- WEN – Wentworth¹⁰ divisors (1, 4, 7, 10, ...), an alternative that illustrates the effect of eroding the quotients of large lists still more rapidly.¹¹

Complete sets of seat distributions for each election under each of the six PR formulas are available in the Appendix A. Here, we focus on **seat bonuses**, which we calculate as the difference between the share of seats a party or alliance wins in parliament and its overall share of the nationwide vote. Figure 6 shows a series of scatters that and the distribution of national vote shares of each list in the Tunisian 2011 election plotted on the X-axis against the list's seat bonus (or penalty, if negative) on the Y-axis. The larger panels to the left show HQLR (top) and DHD (bottom), the most common formula used around the world. The smaller panels show simulations of results using Droop and Low Quotas (top), and St. Laguë and Wentworth divisors (bottom). The quadratic best-fit lines show the shape of the vote-to-bonus function associated with each formula.

[Figure 6]

Various scholars have observed that electoral systems tend to favor large parties at a proportional rate as they increase in size and penalize them as they decrease in size (Rae 1967, Lijphart 1990, Jones 1993). This principle suggests that the vote-to-bonus function should be concave, and indeed, the function is sharply concave for DHD, and also under STL. But in Tunisia 2011, and in all of the elections we examine, the vote-

¹⁰ We named this system, arbitrarily, after the last colonial-era governor of New Hampshire.

¹¹ The district-level data on which the analysis and simulations are based are available on Carey's website along with STATA code for producing the results and figures.

bonus functions under HQ-LR are convex. Parties in the moderate range of vote shares (5-10%) win bonuses as large in real terms, and larger in relative terms, than do the front-runners.

In Tunisia, the relative fortunes of Ennahda as opposed to the parties in the moderate range were a direct product of the dual pricing system for seats under HQLR, made particularly prominent in Tunisia's context of moderate DM and unbalanced competition. Of Ennahda's 90 seats, it purchased 62 on the basis of full Hare Quotas, and 28 on the basis of remainders. Of the other 127 seats in the Constituent Assembly, divided among 25 other parties, alliances, and local lists, only 14 were purchased on the basis of full quotas, and the remaining 113 were awarded wholesale, by remainders.

The impact of formula here is not merely of academic interest. The effect was to deny Ennahda a majority in Tunisia's Constituent Assembly. According to our simulation, had the 2011 election been held using the DHD formula, Ennahda would have won 69% of the seats (150 of 217). Under this scenario, it could have written whatever language it wanted into the country's new charter, and have governed as it saw fit for the duration of the parliament. Had the STL divisor system been used, Ennahda still would have won a solid majority of 55% seats. The actual results, under HQLR, were that Ennahda won 41% of the seats (on 37% of the vote) and needed to form a coalition with secularist parties both to govern and to write the constitution. Progress was slower than initially anticipated, and indeed both the constitution-writing process and the government were in jeopardy at times as negotiating partners fell out, but within two years, the assembly produced a new charter that won the support of 94% of its members. We cannot know how the constitution-drafting process would have proceeded had a single party controlled a majority of seats in the assembly, but had the 2011 election been run using the DHD or STL formula, the seat distribution would have provided substantially less incentive for deliberation and compromise.

Figure 7 show the analogous set of scatterplots for the Tunisian Assembly election of October 2014. The relative shapes of the functions under each formula are similar to those from 2011, but the fates of the main actors switched. In 2014, the leading party was the secularist Nida Tunis. Had DHD been used, Nida Tunis would have won a comfortable 53% majority. Under STL, it would have won 48% of the seats. Under HQLR, its 38% vote share translated into just 40% of the seats.

[Figure 7]

Following the November 2014 presidential election, the appointment of a cabinet required sustained negotiations among the Assembly's parties. By January 2015, a cabinet including representatives from Nida Tunis, Ennahda, the Patriotic Freedom Union, and Afek Tunis was confirmed by the Assembly with support of 75% of its members (*Al Jazeera* 2015a and 2015b). Here again, we cannot know for sure how the government formation process would have proceeded under other conditions, but there

is compelling reason to believe that either of the most commonly used divisors formulas would have provided less motivation for inclusiveness.

Figure 8 shows the same plots for the PR tier elections for Egypt's Assembly in 2011-2012. The relative shapes of the vote-bonus functions are consistent with those from Tunisia – concave for DHD in particular, and convex (barely) for HQLR. Egypt's mixed system combined candidate-centered elections with the PR tier, but here again, the PR formula was pivotal to whether a single party controlled a majority of assembly seats. In this case, DHD would have conferred 157 PR seats on Egypt's FJP – 31 more than its yield under HQLR. Together with its 102 candidate seats, the FJP's caucus would have stood at 259 of the Assembly's 508 seats, a 51% majority.¹²

[Figure 8]

The story of Egypt's constitutional formation process, of course, is less encouraging than Tunisia's. The second largest bloc in Egypt's Assembly was the Salafist al-Nour, which shared few principles with the more fragmented secularist opposition. The FJP, despite lacking an absolute majority of seats, was widely decried for an exclusive governing style. In contrast to Tunisia, it is hard to envision a counterfactual Egypt in which the establishment of democratic institutions would have played out differently had an alternative electoral rule been in place. Nevertheless, our simulation indicates that using HQLR as opposed to DHD for the PR tier formula prevented the election of an Assembly with a single-party majority.

Finally, Figure 9 shows the analogous plots for the PR tier in Libya's 2012 GNC. With Libya's modest DMs and its unbalanced competition, the relative shapes of the vote-bonus functions are even more pronounced than in Tunisia 2011 – concave for DHD, convex for HQLR, and less pronounced for the other formulas. Because 60% of the Congress's seats went to Independents elected in the candidate-centered tier, the PR seat distribution could not be pivotal to the formation of a partisan majority, but the NFA's share of the PR seats, based on its 48% vote share, would have jumped from 49% under HQLR to 68% had DHD been used.

[Figure 9]

To sum up here, the decision to use HQLR distributed lawmaking, and constitution-making, power in each of these assemblies differently from what would have obtained had different choices been made for PR formula. The differences were most striking in Tunisia, which relied exclusively on PR contests in moderate DM districts to allocate seats. In both Tunisian elections, the use of HQLR meant that no party won majority

¹² Tables showing the national PR vote shares and seat totals for both the PR and candidate-centered tiers for the Egyptian and Libyan elections are available in Appendix B.

control of the Assembly, whereas in both elections the first-place party would have under DHD.

This exercise depends on the plausibility of the simulated results under alternative formulas. That plausibility, in turn, hangs on whether one believes that voters and elites (those who decide whether to run a list in a given district, or who distribute resources to politicians who do run lists) would have behaved similarly under the alternative formulas. From voters' perspective, this counterfactual is not problematic. Which formula is used would not affect the structure of the PR ballot or how they cast their vote. It is safe to say that almost no voters would be conscious of PR formula as they choose among lists or vote. For elites, the question is more challenging. We want to know to what extent electoral system designers were aware of the implications of their choices at the time electoral rules were set. We turn to that question in the next section, which draws on interview with actors involved in those decisions.

6. The Process of Electoral System Design: The Question of Intent

To revisit the spectrum introduced earlier in this article, our aim is to determine whether electoral institutions in our Arab Spring cases were independent causes of the party systems observed in founding elections. If the design process falls on the "instrumental" end of the spectrum, then we must conclude that electoral rules are not causes but effects: In other words, the rules are chosen instrumentally to reinforce an existing balance of power among electoral actors, which is then reflected in electoral outcomes. If, however, the design process falls on the "exogenous" end of the spectrum, then the institutions are unrelated to the pre-existing balance of power, and we can meaningfully say that the resulting party system was to some extent the independent product of the electoral rule.

Our prior assumptions in our Arab Spring cases tilt toward exogeneity. After all, as noted earlier, in order to conclude that a given set of electoral rules are purely instrumental---that is, mere expressions of the relative power of political parties, rather than functions of it---we must believe that political actors have precise information about their electoral strength and are sophisticated enough to know how electoral rules work (in the abstract and in their particular cases). This is a tall order in any newly democratizing polity, let alone the cases at hand. For instance, in Egypt, not only were most political parties birthed after Mubarak's overthrow (and thus unlikely to possess detailed knowledge about their societal strength or the ways in which voting rules would influence their electoral fortunes), but electoral rule choice was tightly controlled by the military junta that took it upon itself to serve as Egypt's interim government. And Libya had almost no history of parties or elections to speak of, making it even more unlikely that electoral rules in that country were the carefully crafted choices of fully cognizant actors seeking to maximize their electoral gains.

Tunisia was unlike Egypt in that its electoral rules were chosen by civilian representatives of the political parties themselves, and unlike Libya in that it had some record of parliamentary and electoral life prior to the Arab Spring. Both features increase the likelihood that electoral institutions were not exogenous. On the other hand, most political parties were only just getting off the ground, and the one widely tipped to emerge as the most powerful—Ennahdha—had been banned for more than twenty years and was thus unlikely to have a strong sense of its strength on the ground. The technical sophistication of the institutional design decisions outlined above may have been a significant barrier to mastery for strategists of new political parties, thus preventing them from approaching them in a purely instrumental way.

In this section, we interrogate these questions more systematically, drawing upon first-person interviews and Arabic-language secondary sources to determine why specific electoral rules were chosen. We want to know (a) whether alternative electoral institutions were considered, and (b) whether political actors were cognizant of the ways in which these alternatives would advantage or disadvantage them.

Election system choice in Tunisia

Of the three cases at hand, Tunisia is the one in which electoral rules were most consequential. As demonstrated in section 5, if Tunisia's October 2011 constituent assembly election had been conducted using one of the so-called "divisor" or "highest averages" methods, Ennahdha would have earned a large seat bonus, ranging from 47 percent (under the Wentworth divisor) to 69 percent (under the more commonly used D'Hondt divisor). Instead, the choice of HQLR meant that Ennahdha only captured 41 percent of the seats, and was thus forced to govern in coalition with other parties. The question for us is whether the choice of HQLR was a reflection of the combined strength of these smaller, secular parties, or simply a function of luck? Or, to ask the same question in a slightly different way: Did the Islamists understand that the highest averages method would be more advantageous to them than the largest remainder, and if so, why were they unable to get it?

In order to answer these questions, we conducted interviews with key figures on the body ultimately responsible for crafting the electoral rules for Tunisia's founding election: High Commission for the Fulfillment of Revolutionary Goals, Political Reform, and Democratic Transition (al-Hay'a al-'Ulyā li-Taḥqīq Ahdāf al-Thawra wa al-Iṣlāḥ al-Siyāsī wa al-Intiqāl al-Dīmuqrāṭī, henceforth abbreviated HCFRG). This 155-member entity, which functioned as Tunisia's interim legislature until the conclusion of constituent assembly elections in October 2011, included representatives of political parties, civil society groups (including the powerful Tunisian General Labor Union (UGTT)), families of martyrs in the protests against Ben Ali, each of the country's 24

wilāyāt or governorates, among others.¹³ We sought out members with a variety of political affiliations and allegiances, and who played a particular role in electoral system design, with an aim toward reconstructing the rationales by which they decided on the electoral institutions that ultimately proved so decisive to their country. Our key question is: to what extent did they know how consequential the rules would end up being? Were the rules designed to produce the outcome that we observed, or was the ultimate pluralism of Tunisia's electoral landscape a happy accident?

Within the HCFRG, a committee of experts was formed to set up an independent electoral commission and to write the electoral law that would govern elections to the new constituent assembly (initially scheduled for July 2011, but ultimately completed in October of that year).¹⁴ According to a key member of the experts committee, a legal scholar named Chafik Sarsar, the group presented its proposals to plenary sessions of the broader HCFRG, which debated them "like a little parliament."¹⁵ As one might expect, many members of the HCFRG came to the institutional-design process knowing little about electoral institutions or their effects. Hafidha Chekir, a member of HCFRG and women's activist, testifies that "for the choice of the electoral system, the committee of experts had presented the different systems to the HAROR, people didn't know the difference." Instead, she reports, the HCFRG's reliance on the experts committee, and particularly its chair:

"Chafik Sarsar was the most knowledgeable about these systems. He presented several power points to the HAROR and was explaining to them the different systems, the difference between individual and lists, and within the lists what were the different types."

The reliance of the members on experts is attested to by Sarsar himself, who claims, "Those who also influenced the law were the experts themselves: the 155 members didn't really know the difference between the electoral systems." However, we should not infer from this that the final decision was made by the experts, or that the members

¹³ "Qā'imāt 'a'ḍā' Majlis al-Hay'a al-'Ulyā lil-Taḥqīq Ahdāf al-Thawra wa al-Iṣlāḥ al-Siyāsī wa al-Intiqāl al-Dīmqrāṭī (List of members of the council of the High Commission for the Fulfillment of Revolutionary Goals, Political Reform, and Democratic Transition)," Bawābat al-Ḥukūma al-Tūnisiyya (Tunisian Government Portal), April 7, 2011. Available at: http://www.tunisie.gov.tn/index.php?option=com_content&task=view&id=1488&Itemid=518

¹⁴ Interview with Chafik Sarsar, High Commission on Elections, Tunisia. Conducted by Safia Trabelsi, 7/16/2015, Tunis. On the rescheduling of the constituent assembly elections, see: "Tūnis... Al-hay'a al-'ulyā li-intikhāb al-majlis al-ta'sīsī taqtaraḥ al-ta'jīl ilā 'uktūbar (Tunisia: The high commission for electing the constituent assembly proposes delaying until October)," al-'Arabiyya, May 22, 2011. Available at: <http://www.alarabiya.net/articles/2011/05/22/150130.html>

¹⁵ Sarsar interview, July 16, 2015, Tunis

were indifferent to the electoral rule. Quite the contrary. Almost all of our interviewees attest to the purposive and self-interested approach of the various political actors to the decision. For example, Sarsar testifies that his group offered the HCFRG two choices—a two-round, single member district system, and a closed list system with highest averages. “We had a preference for the highest average,” he testifies, “but this is democracy and we needed to provide people with choice.” In the end, as we have seen, the committee ended up choosing neither of the options he presented. The two-round system was most quickly dispatched with. According to Mootaz Gargouri, a legal scholar and HCFRG member who served on the elections subcommittee, “When we suggested the list system to the council of the HCFRG, the large majority chose the list system, because they are political parties, the list is more suitable for them...”¹⁶

In fact, the power of political parties and their influence over the final decision is a common theme in all of our interviews. According to Mouldi Riahi, a representative of the left-leaning Democratic Forum for Labor and Liberties (al-Takatul al-Dīmrāṭī min ajl al-‘amal wa al-ḥuriyyāt, commonly called Ettakatol), although political party representatives made up just 36 of the committee’s 155 members, they exerted outsized influence:

“the parties were a minority, it is very important, people thought that the parties were the main actors, but they represented a bit more than 1/5 of the total number, it is not a lot, it is not determinative. But what was influential was the strength of their suggestions and their ability to defend these propositions.”¹⁷

Mootaz Gargouri of the experts committee similarly testifies to the importance of political parties in the HCFRG:

“Some people and representative of parties are influential within the HCFRG, for instance Chokri Belaid [of the leftist Movement of Democratic Patriots (Ḥarakat al-Waṭaniyyīn al-Dīmuqrāṭiyyīn), Samir Dilou of Ennahda, Sahbi Atig [and] Nouredine Bheiri, of Ennahdha, Issam Chebbi of the [Progressive Democratic Party]. They have a political weight and was making pressure which affected the electoral law from what was prepared by the experts.”

Given these testimonials to the influence of the political parties over the institutional design process, it is perhaps unsurprising that they eschewed the two-round system. But, having agreed on a closed list, proportional representation system, debate in the HCFRG quickly turned to the electoral formula by which proportionality was to be

¹⁶ Interview with Mootaz Gargouri, member of the sub-committee on elections, conducted by Safia Trabelsi, 7/22/2015, Tunis.

¹⁷ Interview with Mouldi Riahi, Ettakatol Party representative on HCFRG, conducted by Safia Trabelsi, 7/24/2015, Tunis.

achieved. Although Sarsar says that he initially recommended only the highest averages method, this was not adopted by the members. Hafidha Chekir, the women's rights activist who was also a member of the experts committee, says that once the members opted for PR over the two-round system, "we suggested the highest average and the HQLR. Shafik Sarsar showed us the different systems."¹⁸

As best we can tell from our interviews, two camps emerged, one favoring the largest remainder method, the other favoring highest averages. The actors seem to have been cognizant of the stakes of the different systems. According to Sarsar, "Smaller parties preferred the [proportional representation with largest remainders] because they have more chance." Gargouri lays out the choice clearly:

"There are two types of PR: there is the PR with largest remainders and the PR with the largest averages. [...] The largest remainder [...] allows a mosaic, so even small parties can be represented in the [constituent assembly], whereas with the largest average [there will be] three or maximum four parties represented in the [assembly]."

According to Mouldi Riahi, the stakes involved in the choice were considerable:

"The [constituent assembly] will draft a constitution. So it shouldn't be possible to put the drafting of the country's constitution, in the hands of a group of people or a group of parties. This is very dangerous, if we wanted a constitution that represents Tunisia, then we should[allow] the largest part of the society to participate. So that is why we agreed on the proportional representation and the largest remainders, to give the largest presence to the political parties and independent lists."

According to Gargouri: "the largest average was promoted by a minority who wanted to have more stability, but the majority of the parties wanted the largest representation." A similar testimonial is rendered by Hafidha Chekir: "We favoured the list party and the HQLR system because we guaranty the Mosaic of representation, pluralism."¹⁹ Farhat Horchani, the chair of the experts committee on elections and a constitutional lawyer, makes a similar argument: "The question is which PR system should choose. So we choose the PR system with highest remainders, this is a system that allows a large representation." Finally, Maya Jribi, of the Progressive Democratic Party says that most parties preferred the largest remainder system for two reasons: first, "because we just

¹⁸ Interview with Hafidha Chekir, member of the sub-committee on elections. 7/19/2015, Tunis.

¹⁹ Interview with Hafidha Chekir, member of the sub-committee on elections, conducted by Safia Trabelsi, 7/19/2015, Tunis.

came out from a revolution and we didn't know the weight of every party. We couldn't claim the weight of this one or that one," and second, because "we were thirsty of representativity. So in order guarantee a pacific transition [...] [in which] everyone participates, [the electoral system] has to allow a large representativity in the parliament."

It is difficult to read these concerns over inclusiveness and representation as anything other than code words for avoiding potential dominance by Ennahdha, which had quickly emerged during the transitional period as "the most popular, best organized political party in the country."²⁰ On this point, Hafidha Chekir is fairly explicit, testifying that a key determinant of the choice of electoral rule was that "we didn't want that Ennahdha [to] dominate, we wanted to reduce the power of Ennahdha."²¹

As one might expect, Ennahdha had rather different preferences. According to Samir Bettaib of the leftist Ettajdid Party,

"At the end Ennahdha wanted the largest the average, I don't know who also wanted it, but it was mainly Ennahdha, and the others wanted the largest remainders. For Ennahdha and the others who wanted the PR with the highest Average is to gather the maximum, not to have a political scene exploded, the largest [averages] reinforce the big parties rather than the small parties."

A similar testimonial to Ennahdha's preference for largest remainders is offered by Ettakatol's Mouldi Riahi, we conjectures that: "Ennahdha [...] thought by adopting the largest averages, they could reach the highest representation and to have an absolute majority alone in the NCA."

In fact, so interested in domination does Ennahdha seem to have been that two of our interviewees testify that the party had initially wanted not proportional representation with highest averages, but a straightforward majoritarian system, which, the reasoning goes, would have offered them an outright majority and free reign over the constitution-writing process. Najoua Makhoulouf of the UGTT and a member of the HCFRG says that Ennahdha "insisted" on single member districts. Maya Jribi, then of the PDP, is more tentative: "If my memory is good, I am not sure about it, but I think that Ennahdha wasn't for the proportional in the beginning, but this is need to be verified." These testimonials reinforce a general picture of Ennahdha self-interestedly seeking to maximize its electoral advantage.

²⁰ Shadi Hamid, *Temptations of Power*, Oxford University Press, 2014, p. 196.

²¹ Interview with Hafidha Chekir, member of the sub-committee on elections, conducted by Safia Trabelsi, 7/19/2015, Tunis.

However, whether Ennahdha wanted majoritarianism or simply proportional representation with highest averages, its alleged desire for legislative dominance was to be thwarted. According to Riahi, the party's argument for highest averages "found a big opposition, because the largest average serves the interest of big parties." Consequently, Riahi says, "they quickly retracted when they saw the reactions and that the general tendency wasn't for this option." Riahi ascribes this to what he perceives as the Islamist party's overriding, even cynical pragmatism: "this pragmatism lead them to not insist, to retract because things are not going the way we want them to go." In other words, the story that emerges here is one in which an array of civil society groups and political parties had enough countervailing power within the HCFRG and in the broader Tunisian society to compel Ennahdha to compromise

This narrative, of Ennahdha preferring a system that would magnify its advantages but backtracking in the face of massive opposition fits our broader conception of electoral institutions as reflections of the relative political power of the actors who choose them. First, the accounts here all emphasize that the parties knew what they were doing when they chose the largest remainders, and they did so with a view toward maximizing their own positions (or minimizing those of their rivals). Second, the accounts all suggest a bargaining process in which power, and not principle, ruled the day. This is to be expected. After all, the very structure of the electoral rule design process, with its healthy representation of smaller parties and of civil society actors could be said to reflect the strength of those actors on the Tunisian political landscape. It's no surprise, then, that the result of their deliberations also reflected this fact.

Our account, however, would be incomplete if we did not note discordant testimonies. For instance, the Ennahdha representatives that were interviewed testified that their party all along desired the largest remainders system, as they wanted to avoid monopolizing the political landscape. If this were the case, then it would support a conception of the electoral rule choice in Tunisia being *exogenous* to the balance of electoral power among parties. An emblematic statement is that of Nouredine Beheri, who acknowledges that "the interest of our party, as we were the biggest party or one of the biggest parties, is to have the majoritarian system or the proportional system with the largest averages [...] but we accepted to have the largest remainders, because we wanted to have an assembly that gather all the trends (ideologies) so it will represent the Tunisian people."²²

Beheri, as a member of Ennahdha, might be expected to offer a self-serving narrative emphasizing his party's foresight, but more difficult to dismiss is the testimony of Mootaz Gargouri, a constitutional lawyer on the committee and unaffiliated with any

²² Interview with Nouredine Behiri, Ennahdha Movement Party, conducted by Safia Trabelsi, 7/27/2015, Tunis.

political party: "I will surprise you and say Ennahdha [on] the voting day was with the largest remainder, it didn't oppose to it. Why? Because even Ennahdha didn't know its own real weight." It's not clear from Gargouri's account whether he means that Ennahdha simply did not vote against HQLR at the end of the deliberations, or that Ennahdha never made an argument against it (and for a highest averages formula) during those deliberations. Moreover, later in the same interview, even Gargouri seems to suggest that testimonies like Beheri's are largely self-serving: "after the elections, [Ennahdha] used it [i.e. their support of largest remainders]. [T]hey said we made concession to promote the democratic transitions."

We will not be able to resolve these questions here. Our temporal remove from the events of 2011, the incentives of parties and participants to dissemble, as well as general human fallibility and forgetfulness, make it difficult to reconstruct the process by which Tunisians chose their electoral rules in October of 2011. But the balance of the evidence here suggests that the political institutions that seemed to have proved so consequential in determining the balance of political forces in Tunisia are instead more properly understood as a consequence of it.

Egypt: Exogenous but inconsequential

If Tunisia represents a situation in which political parties and civil society groups bargained over electoral rules and arrived at a solution that reflected the balance of political power among them, Egypt represents a case where institutions were almost entirely imposed from above. In Egypt, as in Tunisia, electoral rules reflected the interests of those with the most power to influence the outcome. The difference is that those with the most power to influence the outcome in the Egyptian case were not those who would be affected by that outcome (i.e. political parties), but rather the holders of coercive power (the national military, and specifically a 21-member junta called the Supreme Council of the Armed Forces).

The outsized role played by the army in electoral system design should not be surprising. Scholars have long testified to the political centrality of the Egyptian military (Abdel Malek 1968) which has, in the scholar Steven Cook's (2007) words, "ruled but not governed" since a clique of officers seized power from the monarchy in 1952. When Mubarak was forced to resign in February of 2011, he ceded power not to the speaker of the parliament, as was mandated by the constitution, but to the Supreme Council of the Armed Forces. This was very different from what took place in Tunisia after Ben Ali's resignation. In that country, power was shared between a caretaker government made up of figures from the ruling party, and a newly ascendant coalition of civil society groups and political parties (which later coalesced into the HCFRG).

As in Tunisia, the stakes of the elections were extremely high: the newly elected assembly would select a 100-member committee that would be tasked with writing the constitution. However, where Tunisian political parties bargained over *how* the elections

would be conducted, Egyptian parties debated whether to have the elections at all, with the Muslim Brotherhood calling for early elections, and the so-called secular opposition calling for a postponement of elections and the writing of a constitution by an unelected committee. The non-Islamists were transparent in their rationale for wanting to postpone elections: they believed that the Muslim Brotherhood, with its record of electoral success under Mubarak and its storied party discipline, would dominate any early contest. Given the secularists' belief in the electoral power of the Muslim Brotherhood, it is not clear whether they ever applied themselves seriously to the question of what Egypt's new electoral institutions should look like.

Another key difference between Egypt and Tunisia was that in Egypt, electoral institutions that had operated during the authoritarian era remained salient, as the military seemed intent on preserving as much of the pre-revolutionary institutional structure as possible. That system—called the *fardi* or individual candidacies system—divided Egypt into 222 dual-member, majoritarian districts. Critics had long charged that the *fardi* system degraded politics, making it about patronage and personalities rather than about policies and programs, and they had agitated for a party-list system. However, when the Supreme Council of the Armed Forces made public its proposed electoral rule to govern the parliamentary elections originally scheduled for September 2011, two thirds of the 498 elected seats were to be allocated according to the old system, with just one third allocated to party lists. Moreover, parties were to be prohibited from fielding candidates for the *fardi* tier.

The relevant question for our inquiry is: where did this electoral rule come from? Shortly after Mubarak's overthrow, the SCAF convened a National Accord that attempted to gather all major Egyptian political and social forces and tasked them with generating basic principles for the new constitution, but there is no evidence that this body—which the Muslim Brotherhood boycotted—had any input into the SCAF's electoral engineering. On the contrary, according to one report, all of the parties in the accord rejected the proposed law, and argued that the law “opens the door to the return of pillars of the National Democratic Party who have money and power at the local level, thugs, and representatives of tribal and clan solidarities.”²³ The Muslim Brotherhood, for example, called for a system of closed party lists (although the precise electoral formula was unspecified).

The SCAF responded to the opposition by amending the electoral law a month later, reducing the number of *fardi* seats from two-thirds to one third of the legislature. This too, met with opposition, and political parties, including the Muslim Brotherhood, shifted from demanding a pure list system to demanding that parties also be allowed to

²³ “Tahadiyyat amam al-intikhabat al-tashri’iya fi Misr (Challenges ahead of the legislative elections in Egypt),” Arab Center for Research and Policy Studies, October 23, 2011.

field candidates in the *fardi* tier.²⁴ The military acquiesced to this demand in October, and elections commenced the following month. It is worth noting that the military's selection of Hare quota for the list tier does not seem to have troubled the Islamists, even though one writer has suggested that Egypt's interim military rulers might have chosen this system explicitly in order to trim Islamist sails.²⁵ The military may have believed that between a large *fardi* tier that would advantage local notables, and a highly proportional list tier, the Muslim Brotherhood would be kept to a reasonable size. As we saw, however, the Brotherhood and the Salafists together earned a supermajority in the both tiers, with the Brotherhood on its own capturing 65 percent of the seats in the *fardi* tier.²⁶

It's worth asking what an "instrumental" electoral system would have looked like in the Egyptian case, and whether it would have been chosen had the SCAF not dominated the design process. Reading off party strength from the outcome of the November 2011-January 2012 parliamentary election, it is clear that Islamist parties were the most powerful political actors. Both the Brotherhood and the Nour Party clearly would have benefitted from an electoral system that favored large parties, such as one of the divisor systems described in section 4. Would they, however, have sought such a system? There is evidence to suggest not. During the early days of the transition, the fear of Islamist dominion was palpable, and the Muslim Brotherhood in particular took steps to allay it. First, the group promised not to seek a majority of the seats in the legislature. Ultimately, the Brotherhood ended up fielding candidates in a majority of the districts, but its members claim that this was not a violation of their promise, as the party ended up capturing only 40 percent of the seats. Second, as we have seen, the Brotherhood favored a closed list system, even though a majoritarian system would have played to its strengths. Third, the group attempted to construct a cross-party unified list to contest the 2011 elections. Although parties initially pledged to the list, such as the Wafd Party,

²⁴ "Misr: al-majlis al-askari yuqarir ta'dil qanun al-intikhabat wa dirasat inha' halat al-tawari' (Egypt: The Military Council decides to amend the electoral law and to study ending the state of emergency)," BBC News Arabic, October 1, 2011

²⁵ David Jandura (2011). "Predicting the Results of Egypt's Elections: Why the Electoral Rules Do Not Actually Favor the Muslim Brotherhood," *The Monkey Cage*, November 29. Available at <<http://themonkeycage.org/2011/11/29/predicting-the-results-of-egypts-elections-why-the-electoral-rules-do-not-actually-favor-the-muslim-brotherhood/>>, accessed August 21, 2014.

²⁶ Source: The Center for Voting and Democracy. <http://www.fairvote.org/egypt-and-the-winner-take-all-distortion>

ended up departing from it, the Brotherhood's "Democratic Alliance" did feature at least two prominent secular parties, the Karama (Dignity) Party of Hamdin Sabahi, and the Ghad (Tomorrow) Party of Ayman Nour. Together, these facts suggest that, had the political parties been able to choose the electoral system themselves, the rules might have been even more proportional than the mixed system selected by the SCAF. At the very least, the Muslim Brotherhood would probably not have pulled electoral rules in a majoritarian direction.

This cursory discussion of the Egyptian narrative reflects the closed nature of the process of electoral rule selection in that country. It also reflects the ultimately minimal impact of electoral rules on the outcome of Egypt's founding election. The fact that the SCAF imposed an electoral rule that was more favorable to the Brotherhood than the rule they would have chosen themselves is, in the end, an inconsequential bit of irony.

Electoral System Design in Libya²⁷

If Tunisia represents a case in which rules reflected the interests of parties and Egypt one in which the rules reflected the interests of generals, Libya is more difficult to categorize. As we will see, some aspects of the electoral framework adopted by that country were very much instrumentally selected by self-interested partisan actors; others were quite literally stumbled into; and still others were more or less imposed from the outside.

The Libyan electoral system was quite literally a blank slate. Under Gadhafi, the country had had virtually no electoral history, not even one of sham "authoritarian elections" (Lust-Okar 2006; Brownlee 2007; Blaydes 2010). The United Nations had in 1952 drafted an electoral system for the Libya that was comprised of fifty-five classical first-past-the-post single member districts, but that plan was never implemented. In 1964, Libya conducted its only pre-2012 national election, but that experience was marked by low turnout, widespread vote-buying, and electoral fraud. In the upper house, senators were appointed by King Idris. In the 1970s Muammar Gadhafi organized a General People's Congress based on delegates from 22 regional congresses, which were in turn based on 1,500 urban wards, but there were no real elections, and the central Revolutionary Command Council had final say on government policy (Van De Walle 1998; Anderson 2014).

In the immediate aftermath of Gadhafi's fall there were tentative discussions in the Benghazi based National Transitional Council (NTC) to elect a new constitutional

²⁷ Our discussion here is informed by email interviews with Panto Letic, Chief Electoral Advisor, UN Electoral Support Team; Niklaus Kabel Pedersen of the International Foundation for Election Systems, and a senior United Nations official involved in the process (all August 2015). Direct quotes are from those interviews.

assembly by 20 first-past-the-post (FPTP) seats in each of ten agreed-upon provinces. This plan was widely condemned by nascent political parties, women's and minority groups, as it was seen both as an anti-party mechanism aimed at empowering local strong men at the expense of emerging liberal and secular groups, marginalized minorities, and the Muslim Brotherhood. The Justice and Construction (JCP) and the National Front (NFP) parties lobbied particularly strongly against the FPTP proposal, which was eventually tabled.

Confusion and division led to indecision on what system to use, and the NTC ultimately stumbled into a series of revised proposals that pleased some and alienated others. In January 2012, the High National Election Commission, proposed an Assembly of 200 representatives elected countrywide, of which at least 10% should be women. Existing members of the NTC and former Gaddafi government members, including their relatives, were banned from running. A new draft released a few weeks later switched the system back to a single member district basis, removed the women's quota, and lifted the prohibition against NTC member candidacies. This too was criticized, and the Commission then presented a new proposal that combined elements of the proportional and majoritarian systems it had earlier offered. The new system was to be a parallel system of 136 closed list PR seats and 64 constituency seats. There was no quota for women. On January 20th 2012, the UN Secretary General sent a letter to the Chairman of the NTC noting that the UN would be 'disappointed' if there were no special measures implemented to promote the representation of women in the GNC. This led the designers to mandate that party lists alternate men and women – a clear sign of external agency in the process.

However, fears that proportional representation would advantage the Muslim Brotherhood persisted among elements of the NTC. On January 21st a mob stormed the NTC building in Benghazi, and again the committee went back to the drawing board. The number of constituency seats was increased to 120. Rather than creating 120 single member districts, the Commission opted to have only 40 members elected in first past the post single member districts, with the other 80 elected by a single vote in 29 multi-member districts (creating the single non-transferable vote in these districts). SNTV was chosen not explicitly but as a result of other balloting choices. As one international expert reported,

“The Libyans did not, at any point, say ‘we want SNTV’ in so many words. The UN used SNTV, to refer to the system that had the features the Libyans had described (a race in which voters could cast one vote for a person, not a party, in constituencies that might have one seat each but possibly more). There was no strong preference for a proportional, plurality or majority formula as such.”

This led to a system that was complex and ad hoc, and gave rise to inconsistencies across regions in the choices voters confronted. Each of the 106 seats for Tripolitania, the western region, represented 31,988 people, while each of the 34 seats for Fezzan in

the south represented 11,880. The country's 13 districts were first allocated seats according to a formula that weighed both population and geographical land area, such that the under-populated expanses of the south and east were afforded greater representation per citizen than the west. Within the 13 districts, 73 sub-districts were identified, and seats were apportioned on the basis of negotiations among sub-districts. Each district then petitioned for how its seats would be divided between the PR and constituency-based tiers established by the election law. Demand for constituency-based seats exceeded the 120 available, and the HNEC persuaded some districts to accept a greater share of PR seats than requested in order to comply with the law. Even still, the share of seats elected by PR varied across districts. In Tripoli, 16 of 30 seats were elected by PR, whereas at the other end of the spectrum, in Gharian, no PR election was held and all 13 seats were elected by plurality rule. (Kjaerum, Lust, Fly Pedersen, and Wichmann (2014).

Despite the haphazard nature of the electoral system ultimately adopted by Libya, the process does not seem to have been random. The election system negotiations were led by NTC-appointed individuals who had socio-political investments in the choices. Sources close to the discussions identify two major players who came to represent the country's principal political and geographical tensions. Othman Magirhy, a National Transitional Councilor from Tobruk in the eastern part of the country, who was noted to be hostile to the emerging Libyan Muslim Brotherhood. Magirhy became chair of the NTC Electoral Committee. His foil was Lamin Belhaj, a Muslim Brotherhood member from Tripoli, in the West. Magirhy and Belhaj personified the main tensions in the design process. A party based system versus more individualized candidate-based elections and the struggle between the west (Tripolitania) and the East (Cyrenaica). Other contributing actors were Abdulrazaq al Aradi (from Tripoli) and Dr. Salwa al Daghili. Al Aradi generated mathematical projections about the creation of constituencies, the use of existing administrative boundaries and the allocation of seats to constituencies. But Magirhy and Belhaj were ultimately the lead architects of the consensus mixed FPTP-SNTV-PR system.

The arguments against using PR revolved around a fear of complexity and a desire to limit the strength of parties (one might posit that was based on general distrust of all parties or a strategic effort to limit popular vehicles such as the Brotherhood). One international participant reports that anti-Brotherhood committee members felt PR was a non-starter because there was insufficient time to develop 'proper' political parties. There was also a feeling that the first elections were unique. They would start with something 'simple,' and then come up with something more refined after for subsequent elections. In the context of the deliberations, simplicity was equated with voters casting ballots for individuals, not parties. However, the same observer speculated that the real reason was the fear that the Brotherhood would win a majority of seats if parties were allowed to compete. Indeed, the MB itself, as the only organized national political force, believed it would stand to gain most from a PR system. In addition, most non-MB drafters felt that some degree of the *geographical*

representation of voters was critical. This revolved around; bringing about regional balance between East, West and South and ensuring the representation of local interests. Ultimately progressive civil society groups were unhappy with the move away from PR but the decision makers were more focused on just having elections rather than on the specific rules adopted. Their primary motivation was “getting the process rolling and the elections implemented within the timeframe given.”

By all accounts, Magirhy and Belhaj had significant agency over the choices. Outreach to stakeholders beyond the NTC was variable. There were somewhat cosmetic nods to public consultation through mail, the web and public forums but none of these significantly altered the choices made in committee. However, it does appear that significant effort went into securing political buy-in from powerful regional and ethnic groups. In sum the Libyan designers sought to pull institutional levers to advantage their parties and preferences, and by-and-large had a grasp how the levers should work.

The electoral process in Libya was perceived by many as a success largely because Libyans were happy to see the NTC replaced by an elected body. However, as the new government lurched from crisis to crisis many voters blamed political parties for the lack of effectiveness of government. This may have been misplaced and unfair but it reinforced the feeling that elections should not encourage parties, rather individual candidates should be paramount. Indeed, candidates running under the FPTP/SNTV races were expected to not have any political party allegiance, which was not the reality. Without the special measures for women, it is likely that there would have been almost no women winners, as demonstrated by their lack of success in the FPTP/SNTV seats. Did the electoral system design of 2012 produce the outcomes predicted and desired? The vote may have been chaotic and the new legislature fragmented and inept but, as a senior UN official told us, “Libyans may not have been satisfied with the performance of their MPs afterwards, but the election produced *precisely* the kind and the level of representation that was intended by the drafters.”

Conclusion: Electoral rules and political power

In this paper, we have explored the role of the electoral systems chosen in the aftermath of the regime breakdown in Tunisia, Egypt, and Libya in determining the configuration of political power in each country. We have shown that different electoral institutions would almost certainly have generated different—and at least in one case, vastly different—partisan landscapes. However, the discussion above suggests that two factors help determine the extent to which we can say that electoral rules *shape* a given partisan landscape.

The first is the relationship in a given polity between electoral power and political power. Where electoral power and political power are one and the same—that is, where the groups that contest elections are also the groups with the power to decide

the rules of the game---this increases the likelihood that the rules were chosen instrumentally to reinforce the pre-existing balance of power. In such circumstances, electoral institutions are more likely to be reflections, rather than causes. Where electoral power and political power are divided---that is, where the groups that contest elections do not have the power to decide the rules of the game---then, almost by definition, electoral rules can be seen as exogenous to the relative power of political parties, and thus exert a causal impact on the configuration of political representation. Tunisia and Libya represented the former kind of polity, while Egypt represented the latter.

The second factor that determines whether electoral institutions are instrumental or exogenous is the capacity of the political actors involved. In Tunisia, the process of electoral rule choice was driven by political parties and civil society organizations that were able to absorb the proposals of experts, link these proposals to their interests, and debate them on their merits. In Libya, the process appears to have been haphazard, with experts designing electoral institutions and changing these (sometimes quite radically) in response to protests. There does not appear to have been the organized, systematic comparison of options that characterized the Tunisian case. And, as we have seen, in the case of one institutional decision---whether to apply a quota for women's representation---the decision seems to have been entirely exogenous to the interests of the parties involved.

One of the ironies of this study is that the cases where the electoral formulae had the least impact on the broad outcome were ones in which those formulae were most likely to be exogenous to the underlying distribution of partisan support. In short, when electoral rules didn't matter, they were most likely to be imposed. This naturally raises the question of whether the instrumentality of institutions is a function of the magnitude of their effects. As Knight (2001) points out, where institutions have major distributional implications, they are most likely to emerge as a function of bargains between affected interests, and to reflect the relative power of those interests. Where institutions have smaller distributional implications, then the design process is less a matter of bargaining than of converging around some focal point.

More broadly, there is almost certainly a relationship between the exogeneity of electoral institutions during founding elections and prospects for democratic consolidation. Democracy survives when electoral founding elections bring with them no surprises---when no party feels that it was so disadvantaged by the rules of the game that it would rather exit the game entirely. Defection from democratic institutions is less likely to occur when, as in Tunisia, those institutions represent a bargain among political actors who know their interests and understand how different institutional forms impact those interests. Where electoral institutions are exogenous to the relative strength of the actors who will be affected by them, democratic consolidation is difficult. After all, such a situation emerges either political parties are too new and too unmoored from society to know their own strength, too unsophisticated to know how

rules might affect their fortunes, or too inconsequential to choose the rules for themselves. None of these is a recipe for a stable democratic system, regardless of the outcome of a founding election.

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Table 1. Electoral systems for Arab Spring founding elections.

	TUNISIA	EGYPT		LIBYA	
Tier	Single	Candidate	List	Candidate	List
Seats	217	166	332 ²⁸	120	80
Votes	1 vote, closed lists	2 votes, for different candidates.	1 vote, closed lists	1 vote for a candidate	1 vote, closed lists
Districts	33	83	45	69	20 ²⁹
Magnitude	Median = 7 Min = 1 Max = 10	Median = 2 Min = 2 Max = 2	Median = 8 Min = 4 Max = 12	Median = 1 Min = 1 Max = 9	Median = 3.5 Min = 3 Max = 11
Formula	HQLR	Two-round majority	HQLR	Plurality ³⁰	HQLR
Quotas/ Reservations	Gender parity; alternating list positions	Reservations for workers and farmers. ³¹	Gender – At least 1 woman per list; no list position requirement	None	Gender parity; alternating list positions
Cycle	Non- concurrent	Non-concurrent		No presidential election	

²⁸ In addition to the 498 elected seats, 10 more members of the Assembly were appointed, after the election, by the SCAF.

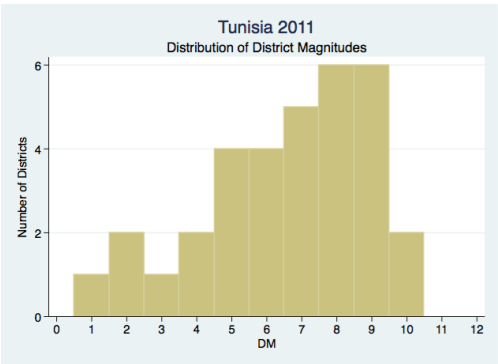
²⁹ A twenty-first district did not hold a PR contest in the 2012 election.

³⁰ Of the 69 districts for candidate contests, 41 awarded one seat so were single-member plurality (SMDP). The other 28 awarded 2-9 seats, so are designated as single non-transferable vote (SNTV). SMDP and SNTV are identical on vote method and formula. In each case, voters indicate their most preferred candidate and seats are awarded in the order of personal votes won with no minimum requirement.

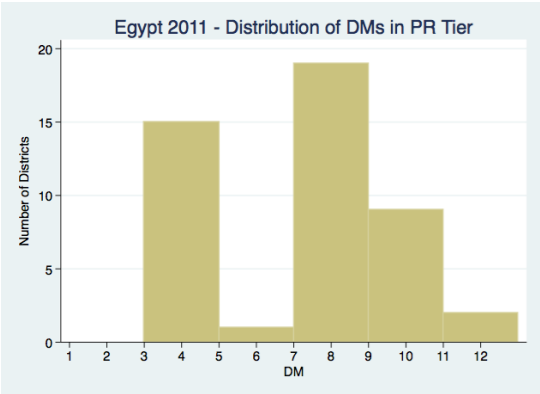
³¹ In the first round, all candidates within a given district run at-large. Any candidate who wins support from a majority of voters (that is, >25% of votes, given that each ballot contains 2 votes) is eligible to win a seat, *provided* that at least one winner in the district is a "worker" or "farmer," as certified by the Electoral Commission. Outcomes are determined as described in Table 2.

Figure 1. Distribution of DM

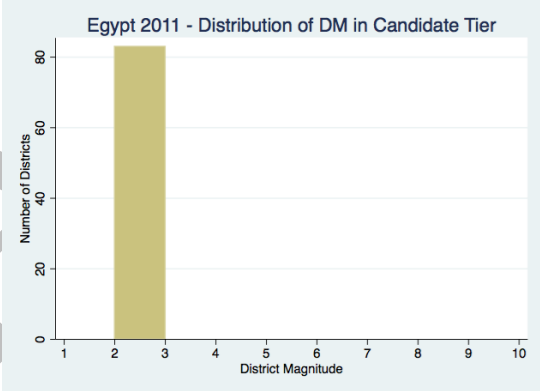
Tunisia



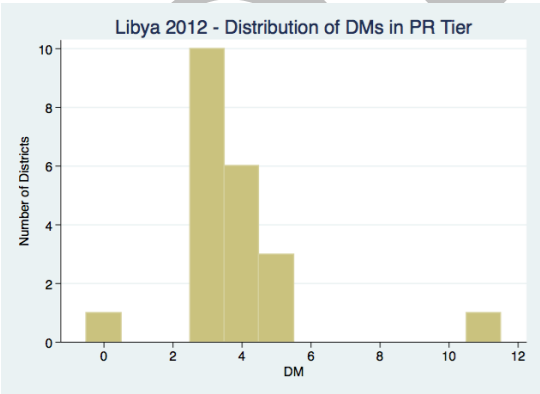
Egypt
PR Tier



Candidate Tier



Libya
PR Tier



Candidate Tier

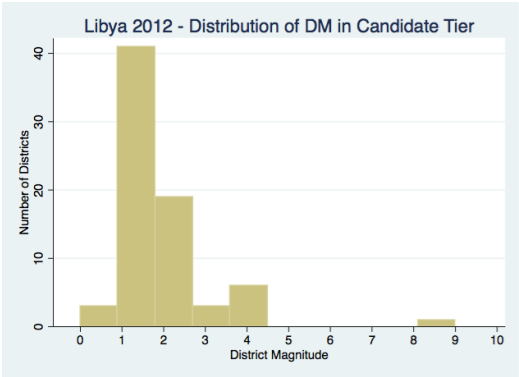


Table 2. Number and nationalization of PR lists.

Election	Total Lists	Ran in >1 District	Ran in Every District
Tunisia 2011	560	154	4
Tunisia 2014	428	116	5
Egypt 2011	38	29	1
Libya 2012	>40	6	0

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Figure 2. Tunisia 2011 national vote shares and seat shares for parties that won seats

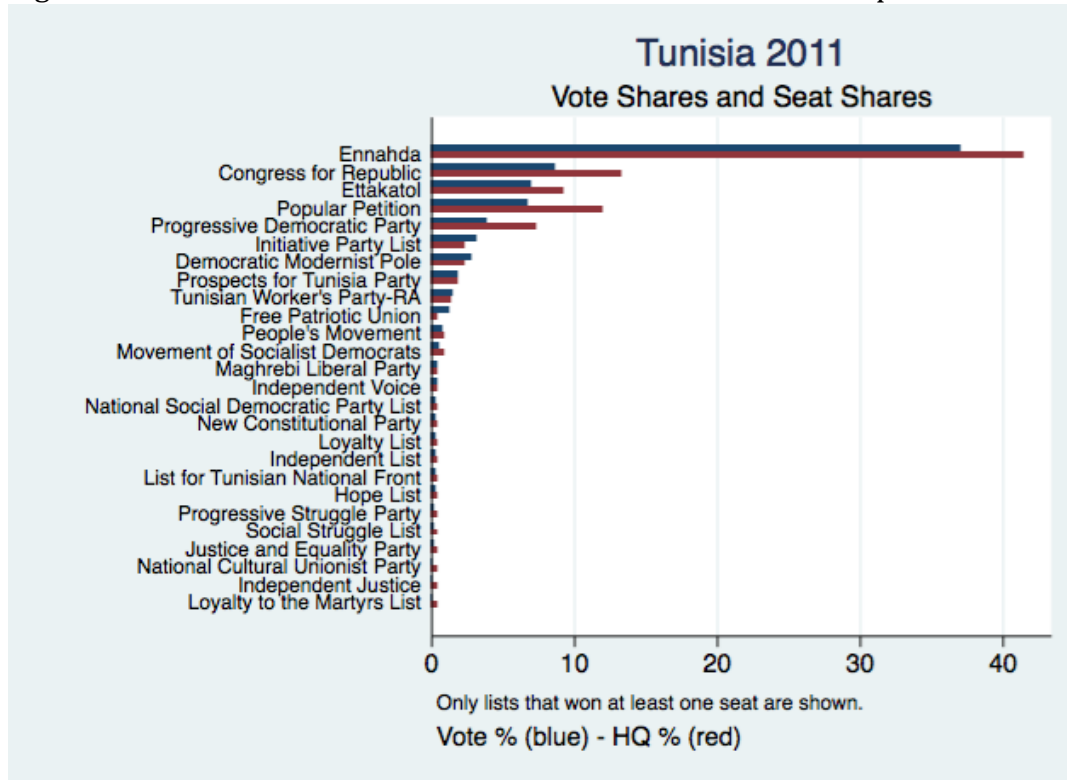


Figure 3. Tunisia 2014 national vote shares and seat shares for parties that won seats.

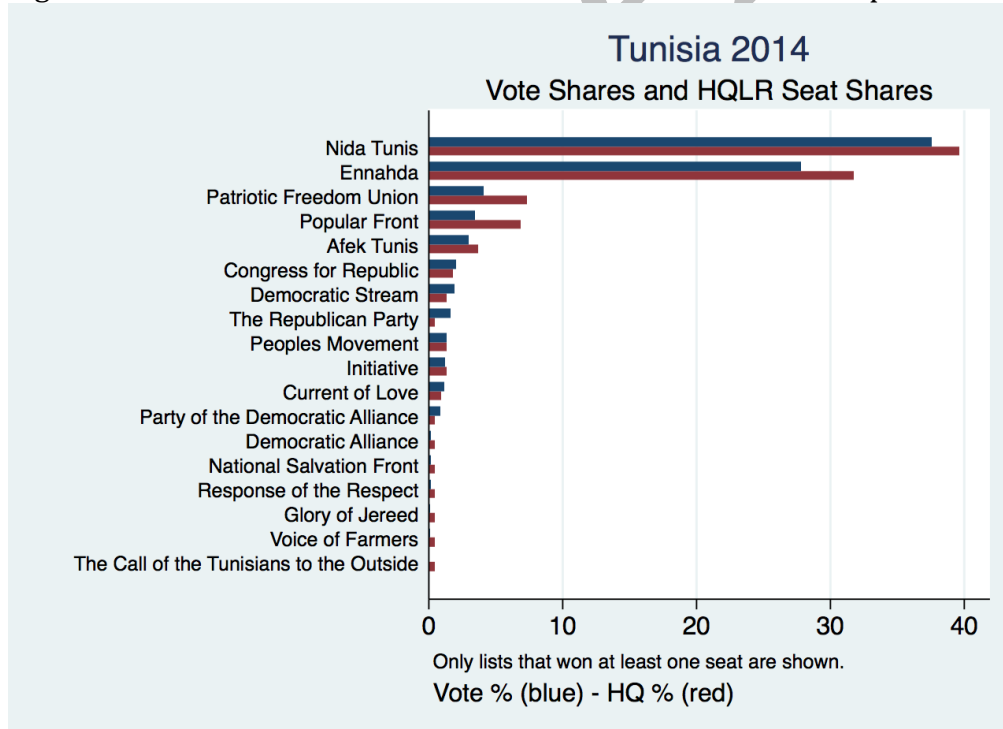
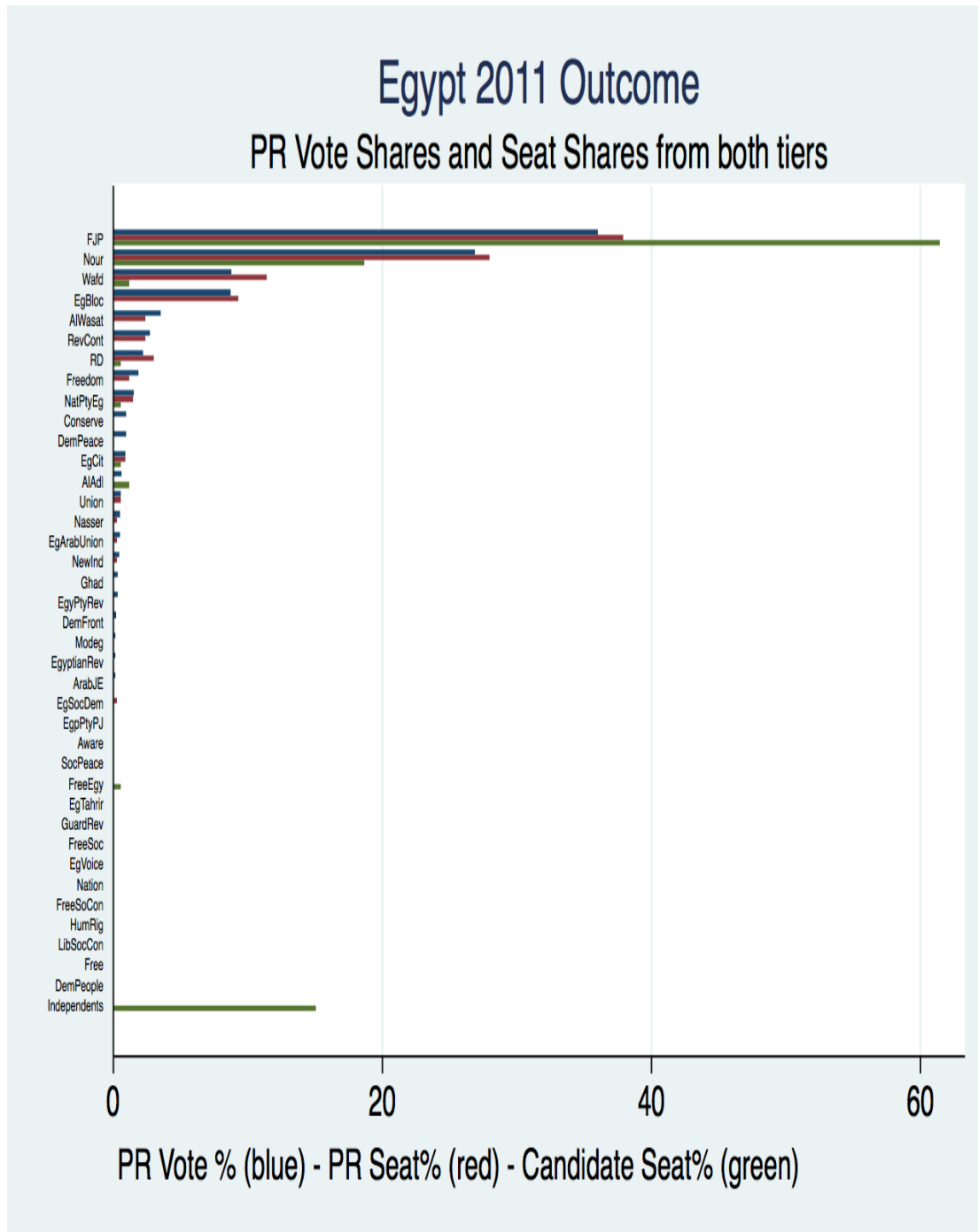


Table 3. Egypt's two-round system with sectoral reservations

First-round outcome	Second-round process
2 majority-supported candidates, at least one of whom is a worker/farmer...	Both are winners; no second round.
2 majority candidates, but neither is a worker/farmer...	The candidate with the most votes wins a seat. The top two worker/farmer candidates contest a second round for the remaining seat.
1 majority candidate who is not a worker/farmer...	The top 2 worker/farmer candidates contest a second round for the remaining seat.
1 majority candidate who is a worker/farmer...	The next top 2 vote-winners (regardless of worker/farmer status) from the first round contest a second round for the remaining seat.
No majority candidate...	4 candidates contest a second round. These four must include the top two worker/farmer candidates from the first round even if they are not among the top four candidates. The second-round winners must include the top worker/farmer, plus the other top candidate (whether worker/farmer or not).

Figure 4. Egypt 2011-2012 election outcome, PR and candidate tiers³²



³² There were twice as many PR seats as candidate seats, so the relative sizes of the red and green bars reflect proportions, not absolute numbers.

Figure 5. Libya 2012 election outcome, PR and candidate tiers.

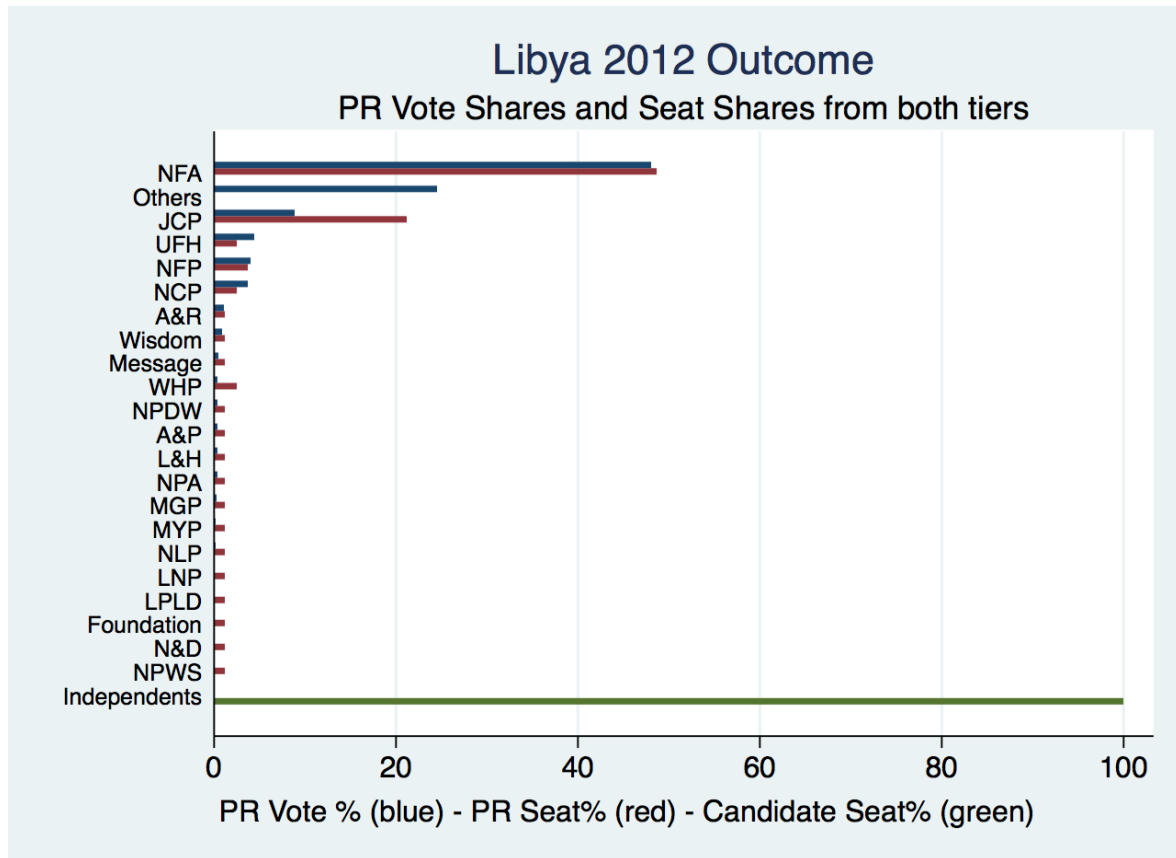


Table 4. Illustration of the DHD method in a hypothetical district

List	A	B	C	D
Votes	415	325	185	75
1st Q	415.0	325.0	185.0	75.0
2nd Q	207.5	162.5	92.5	37.5
3rd Q	138.3	108.3	61.7	25.0
4th Q	103.8	81.3	46.3	18.8
5th Q	83.0	65.0	37.0	15.0
6th Q	69.2	54.2	30.8	12.5

Table 5. Use of HQ and DHD for elections to national legislative lower chambers.

HQLR	DHD	Other formulas (e.g. Droop Quotient, St. Lague Divisor, or combinations)
Algeria	Albania	Austria
Armenia	Angola	Bosnia and Herzegovina
Benin	Argentina	Denmark
Burkina Faso	Belgium	Germany
Costa Rica	Bolivia	Greece
Cyprus	Brazil	Iraq
Dem.Rep. Congo	Bulgaria	Kosovo
East Timor	Burundi	Latvia
Egypt	Cambodia	Nepal
Georgia	Cape Verde	New Zealand
Guinea	Chile	Norway
Guyana	Colombia	Palestine
Honduras	Croatia	Slovakia
Indonesia	Czech Republic	South Africa
Italy	Dominican Republic	Sweden
Libya	Ecuador	
Liechtenstein	El Salvador	
Lithuania	Estonia	
Mauritania	Fiji	
Mexico	Finland	
Mongolia	Guatemala	
Morocco	Hungary	
Namibia	Iceland	
Panama	Israel	
Peru	Japan	
Philippines	Luxembourg	
Romania	Macedonia	
Rwanda	Madagascar	
Senegal	Moldova	
Slovenia	Montenegro	
Sri Lanka	Netherlands	
Taiwan	Mozambique	
Thailand	Nicaragua	
Tunisia	Paraguay	
Ukraine	Poland	
Zimbabwe	Portugal	
	Romania	
	Serbia	
	Slovenia	
	South Korea	
	Spain	
	Switzerland	
	Turkey	
	Uruguay	
	Venezuela	

Sources: Colomer 2004; Nohlen 2005; Wikipedia 2015.

Figure 6. Seat bonus by vote share in Tunisia's 2011 Constituent Assembly election, by various PR formulas.

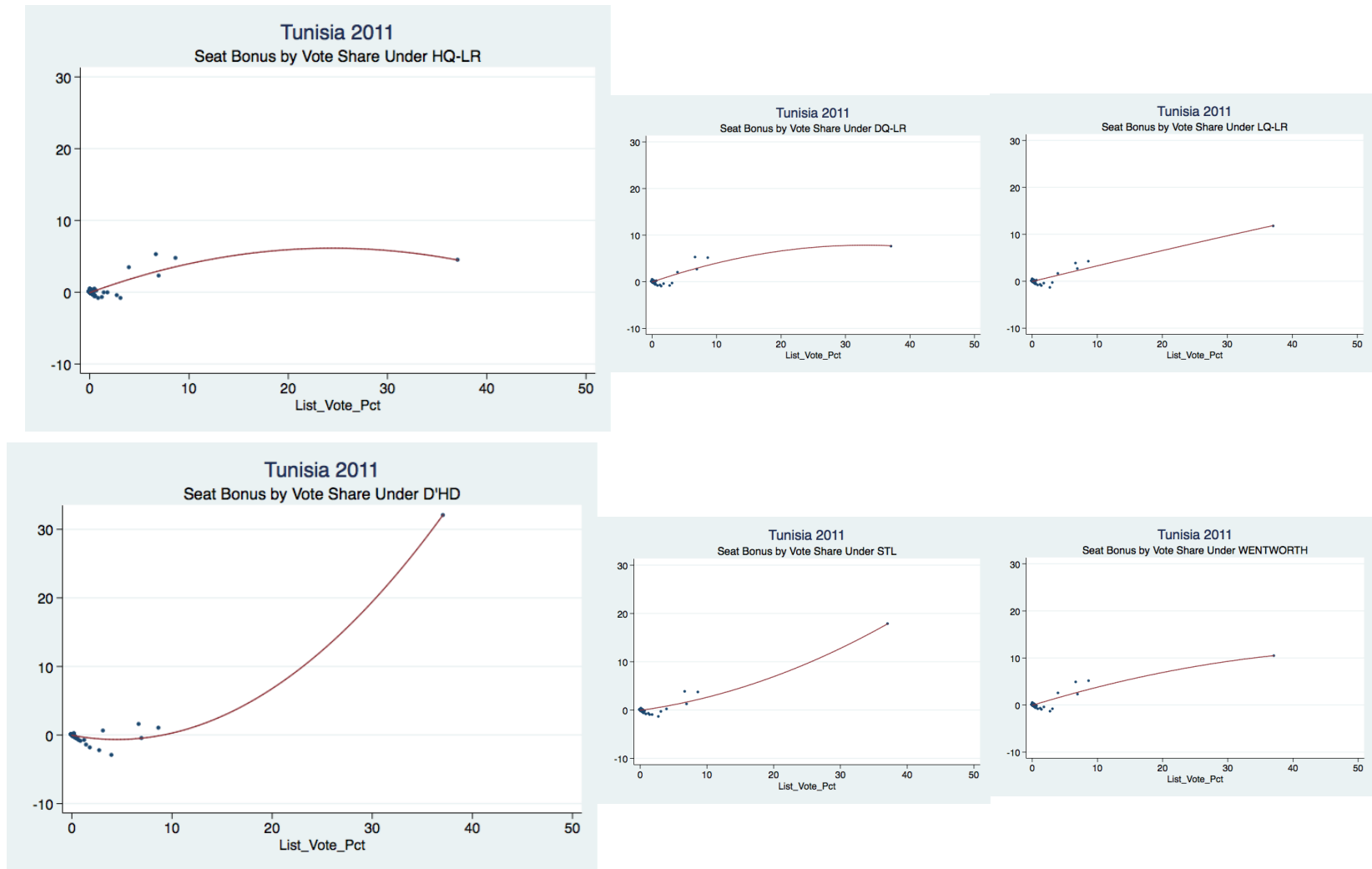


Figure 7. Seat bonus by vote share in Tunisia's 2014 Parliamentary Assembly election, by various PR formulas.

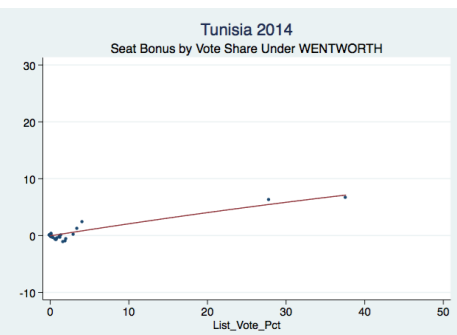
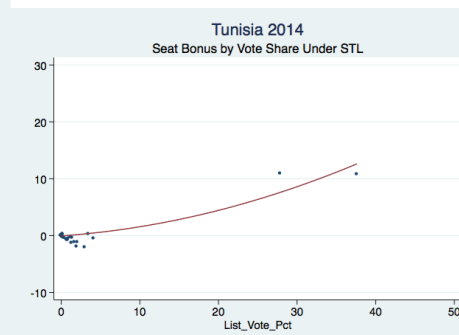
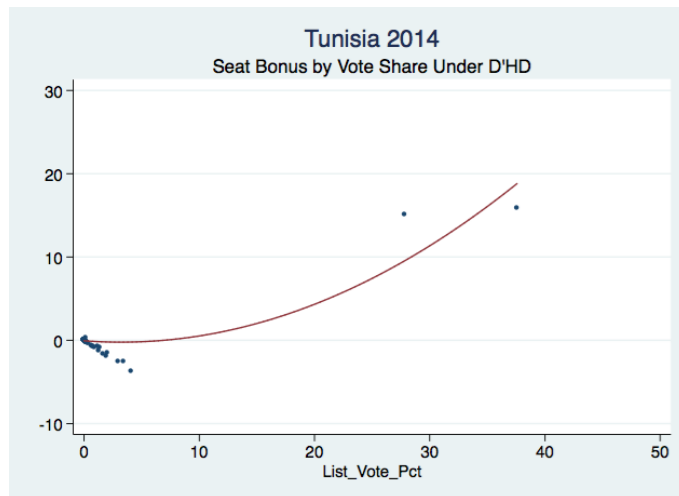
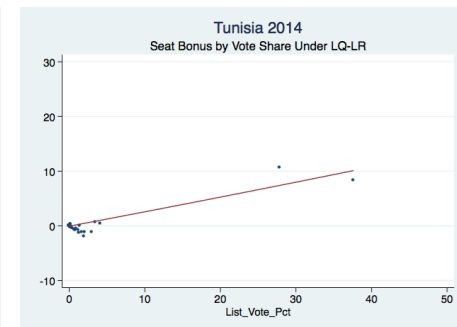
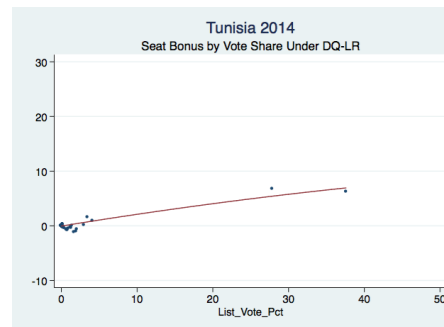
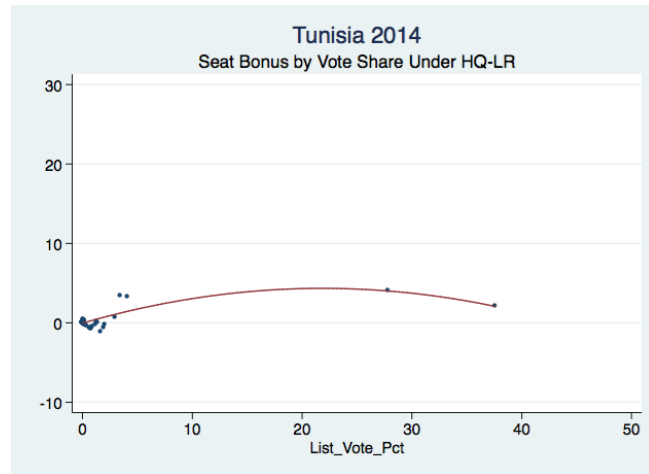


Figure 8. Seat bonus by vote share in PR Tier of Egypt's 2011-2012 Constituent Assembly election by various PR formulas.

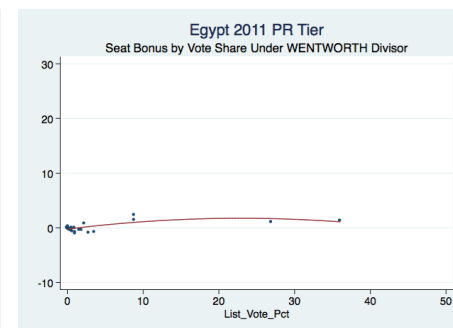
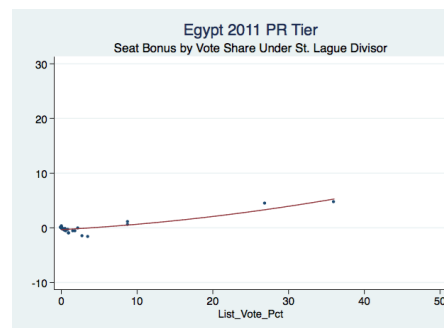
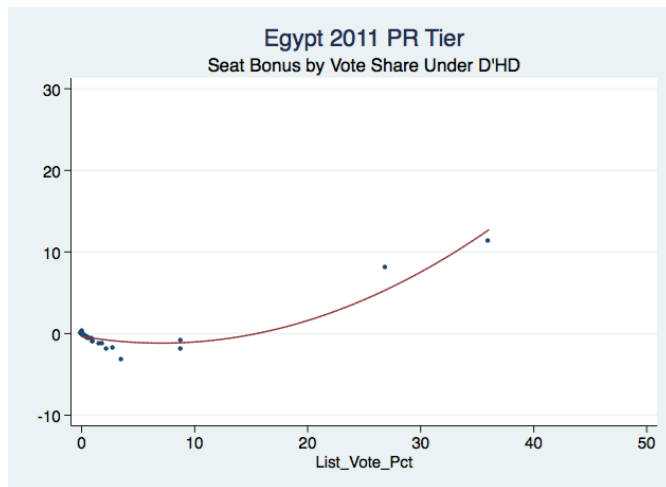
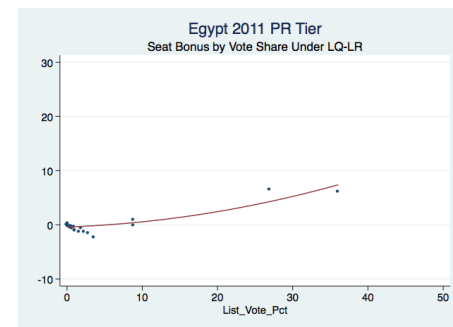
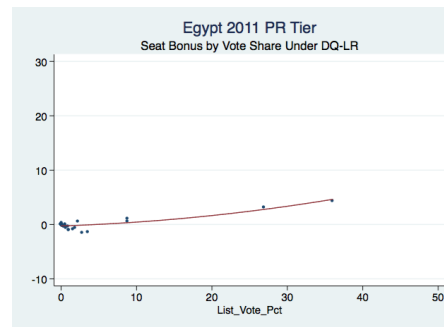
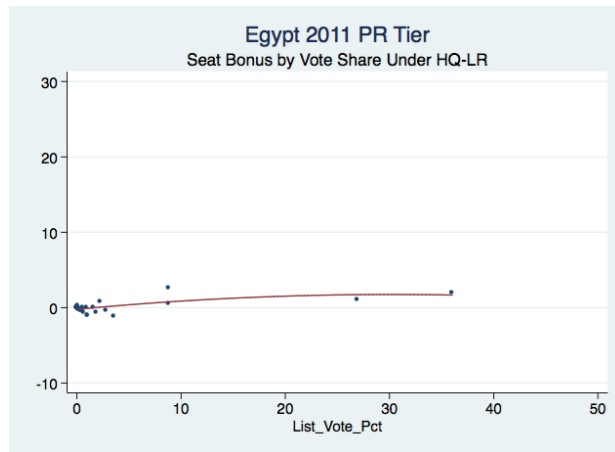
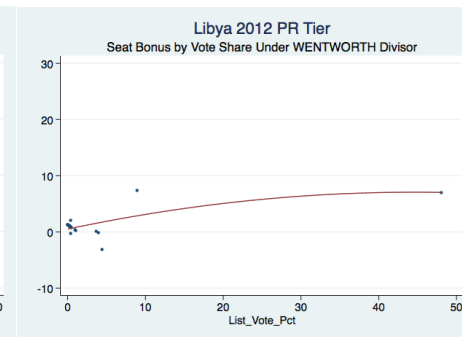
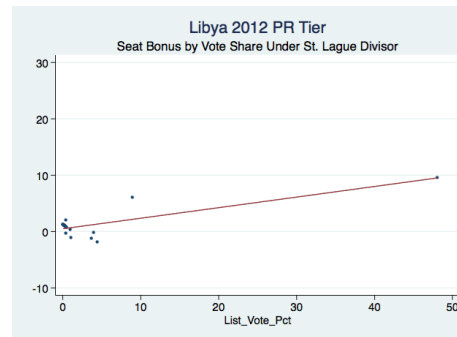
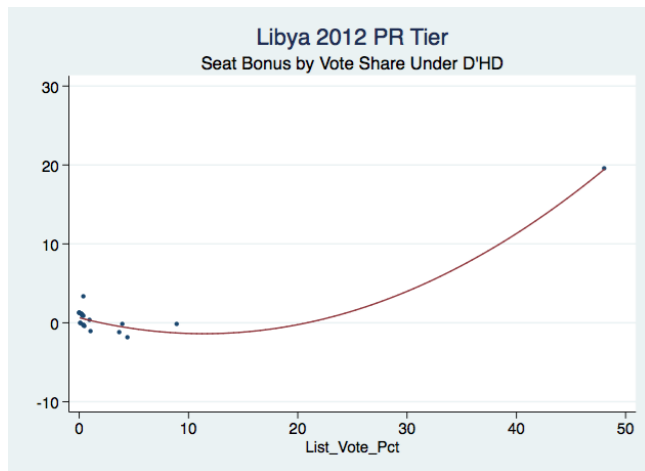
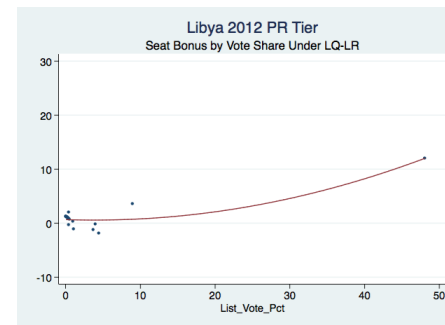
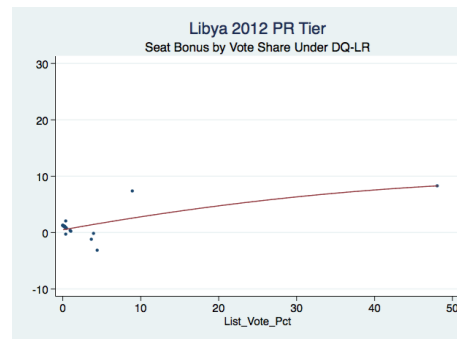
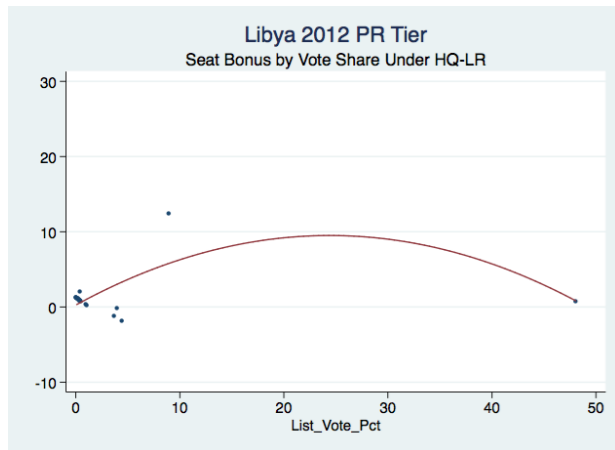


Figure 9. Seat bonus by vote share in PR Tier of Libya's Constituent Assembly election by various PR formulas.



Appendix A: Full vote and seat distributions for each election under HQLR and each simulated PR formula.

Tunisia 2011

Rank	List	Votes	Vote%	Seats					
				HQ	DQ	LQ	DHD	SLD	WD
1	Ennahda	1,501,774	37.09	89	97	106	150	119	103
2	Congress for Republic	353,299	8.72	29	30	28	21	27	30
3	Ettakatol	285,460	7.05	20	21	21	14	18	20
4	Popular Petition	273,659	6.76	26	26	23	18	23	25
5	Progressive Democratic Party	160,471	3.96	16	13	12	2	9	14
6	Initiative Party List	129,131	3.19	5	6	6	8	6	5
7	Democratic Modernist Pole	113,022	2.79	5	4	3	1	3	3
8	Prospects for Tunisia Party	76,621	1.89	4	3	3	0	2	3
9	Tunisian Worker's Party-RA	60,565	1.50	3	1	1	0	1	1
10	Free Patriotic Union	51,671	1.28	1	1	1	1	1	1
12	People's Movement	30,497	0.75	2	2	2	0	1	1
15	Movement of Socialist Democrats	22,804	0.56	2	1	1	0	1	1
19	Maghrebi Liberal Party	19,219	0.47	1	1	0	0	0	1
21	Independent Voice	16,891	0.42	1	1	1	0	1	1
24	National Social Democratic Party List	15,569	0.38	1	0	0	0	0	0
26	New Constitutional Party	14,228	0.35	1	1	1	0	0	1
30	Loyalty List	12,607	0.31	1	1	1	0	0	1
31	Independent List	11,980	0.30	1	1	1	1	1	1
32	List for Tunisian National Front	11,396	0.28	1	1	1	0	1	1
33	Hope List	11,299	0.28	1	1	1	1	1	1
38	Progressive Struggle Party	9,322	0.23	1	0	0	0	0	0
45	Social Struggle List	7,823	0.19	1	1	1	0	1	1
47	Justice and Equality Party	7,621	0.19	1	1	1	0	1	1
52	National Cultural Unionist Party	5,581	0.14	1	1	0	0	0	0
63	Independent Justice	4,232	0.10	1	1	1	0	0	1
79	Loyalty to the Martyrs List	3,022	0.07	1	1	1	0	0	1

Tunisia 2014

Rank	List	Votes	Vote%	HQ	DQ	LQ	DHD	STL	WENTWORTH
1	Nina Tunis	1,279,941	37.58	86	95	100	116	105	96
2	Ennahda	947,014	27.80	69	75	84	93	84	74
3	Patriotic Freedom Union	140,873	4.14	16	11	10	1	8	14
4	Popular Front	118,041	3.47	15	11	9	2	8	10
5	Afek Tunis	102,915	3.02	8	7	4	1	2	7
6	Congress for Republic	69,794	2.05	4	3	2	1	2	3
7	Democratic Stream	66,396	1.95	3	2	0	0	0	2
8	The Republican Party	56,223	1.65	1	1	1	0	1	1
9	Peoples Movement	45,839	1.35	3	3	3	1	2	3
10	Initiative	43,161	1.27	3	2	0	0	0	2
11	Current of Love	40,826	1.20	2	2	1	1	2	2
12	Party of the Democratic Alliance	30,498	0.90	1	1	1	0	1	1
24	Democratic Alliance	5,792	0.17	1	1	0	0	0	0
25	National Salvation Front	5,753	0.17	1	1	1	0	0	0
26	Response of the Respect	5,589	0.16	1	1	1	0	1	1
30	Glory of Jereed	5,111	0.15	1	1	1	1	1	1
42	Voice of Farmers	3,515	0.10	1	0	0	0	0	0
61	Call to Outside	1,814	0.05	1	0	0	0	0	0

Egypt 2011-2012

Rank	List	Votes	Vote%	HQ	DQ	LQ	DHD	STL	WENTWORTH
1	Nina Tunis	1,279,941	37.58	86	95	100	116	105	96
2	Ennahda	947,014	27.80	69	75	84	93	84	74
3	Patriotic Freedom Union	140,873	4.14	16	11	10	1	8	14
4	Popular Front	118,041	3.47	15	11	9	2	8	10
5	Afek Tunis	102,915	3.02	8	7	4	1	2	7
6	Congress for Republic	69,794	2.05	4	3	2	1	2	3
7	Democratic Stream	66,396	1.95	3	2	0	0	0	2
8	The Republican Party	56,223	1.65	1	1	1	0	1	1
9	Peoples Movement	45,839	1.35	3	3	3	1	2	3
10	Initiative	43,161	1.27	3	2	0	0	0	2
11	Current of Love	40,826	1.20	2	2	1	1	2	2
12	Party of the Democratic Alliance	30,498	0.90	1	1	1	0	1	1
24	Democratic Alliance	5,792	0.17	1	1	0	0	0	0
25	National Salvation Front	5,753	0.17	1	1	1	0	0	0
26	Response of the Respect	5,589	0.16	1	1	1	0	1	1
30	Glory of Jereed	5,111	0.15	1	1	1	1	1	1
42	Voice of Farmers	3,515	0.10	1	0	0	0	0	0
61	Call to Outside	1,814	0.05	1	0	0	0	0	0

Libya 2012

Rank	List	Votes	Percent	HQ	DQ	LQ	DHD	STL	WEN
1	NFA	712672	48.06	39	45	48	54	46	44
2	JCP	132703	8.95	17	13	10	7	12	13
3	UFH	65865	4.44	2	1	2	2	2	1
4	NFP	59829	4.03	3	3	3	3	3	3
5	NCP	55342	3.73	2	2	2	2	2	3
6	A&R	16593	1.12	1	1	0	0	0	1
7	Wisdom	14479	0.98	1	1	1	1	1	1
8	Message	7860	0.53	1	1	1	0	1	1
9	WHP	6947	0.47	2	2	2	3	2	2
10	NPDW	6919	0.47	1	1	1	1	1	1
11	A&P	6267	0.42	1	0	0	0	0	0
12	L&H	6093	0.41	1	1	1	0	1	1
13	NPA	5725	0.39	1	1	1	1	1	1
14	MGP	4989	0.34	1	1	1	1	1	1
15	MYP	3517	0.24	1	1	1	1	1	1
16	NLP	3472	0.23	1	1	1	1	1	1
17	LNP	2467	0.17	1	1	1	0	1	1
18	LPLD	2240	0.15	1	1	1	0	1	1
19	Foundation	1525	0.10	1	1	1	1	1	1
20	N&D	1400	0.09	1	1	1	1	1	1
21	NPWS	1355	0.09	1	1	1	1	1	1
~	Others	364553	24.59	0	0	0	0	0	0

Appendix B. PR Vote Shares and Seat Totals for Egypt and Libya

Egypt 2011-2012

List	PR Votes	PR Vote Pct	PR Seats	Candidate Seats
FJP	10700000	36.02	126	102
Nour	7999429	26.92	93	31
Wafd	2622298	8.82	38	2
EgBloc	2599823	8.75	31	0
AlWasat	1045779	3.52	8	0
RevCont	816392	2.75	8	0
AlAdl	186216	0.63	0	2
NatPtyEg	456308	1.54	5	1
DemPeace	288285	0.97	0	0
RD	655002	2.20	10	1
EgyPtyRev	95492	0.32	0	0
EgCit	279607	0.94	3	1
Freedom	555650	1.87	4	0
Modeg	60512	0.20	0	0
Nasser	158499	0.53	1	0
Ghad	106613	0.36	0	0
Aware	20406	0.07	0	0
NewInd	139560	0.47	1	0
Conserve	297265	1.00	0	0
LibSocCon	3047	0.01	0	0
EgyptianRev	56613	0.19	0	0
Union	163267	0.55	2	0
EgArabUnion	155644	0.52	1	0
DemFront	65197	0.22	0	0
HumRig	4436	0.01	0	0
SocPeace	19633	0.07	0	0
ArabJE	48960	0.16	0	0
GuardRev	10668	0.04	0	0
Nation	7352	0.02	0	0
EgpPtyPJ	21090	0.07	0	0
FreeSoCon	6666	0.02	0	0
EgTahrir	13070	0.04	0	0
Free	2382	0.01	0	0
EgVoice	7591	0.03	0	0
FreeEgy	13831	0.05	0	1
FreeSoc	10450	0.04	0	0
EgSocDem	22379	0.08	1	0
DemPeople	277	0.00	0	0

Independents	0	0	0	25
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Libya 2012

List	PR Votes	PR Vote Pct	PR Seats	Candidate Seats
NFA	712672	48.06	39	0
JCP	132703	8.95	17	0
UFH	65865	4.44	2	0
NFP	59829	4.03	3	0
NCP	55342	3.73	2	0
A&R	16593	1.12	1	0
Wisdom	14479	0.98	1	0
Message	7860	0.53	1	0
WHP	6947	0.47	2	0
NPDW	6919	0.47	1	0
A&P	6267	0.42	1	0
L&H	6093	0.41	1	0
NPA	5725	0.39	1	0
MGP	4989	0.34	1	0
MYP	3517	0.24	1	0
NLP	3472	0.23	1	0
LNP	2467	0.17	1	0
LPLD	2240	0.15	1	0
Foundation	1525	0.10	1	0
N&D	1400	0.09	1	0
NPWS	1355	0.09	1	0
Others	364553	24.59	0	0
Independents	0	0.00	0	120