

Norman Schofield · Gonzalo Caballero · Daniel Kselman *Editors*

## Advances in Political Economy

Institutions, Modelling and Empirical Analysis

This book presents latest research in the field of Political Economy, dealing with the integration of economics and politics and the way institutions affect social decisions. The focus is on innovative topics such as an institutional analysis based on case studies; the influence of activists on political decisions; new techniques for analyzing elections, involving game theory and empirical methods.

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Social Sciences / Political Science

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- 323 2. **Assessment of the policy platforms:** Candidates announce their platforms  $x_L$   
 324 and  $x_R$ .  
 325 3. **The general-election vote:** The median voter elects  $L$  or  $R$ .

326 Stage 1 does not involve any decision: the candidates are revealed to voters, along  
 327 with their valence attributes. The first decision is made in Stage 2 where each candi-  
 328 date must announce and promote her platform taking the other candidate's platform  
 329 into account. In Stage 3, once candidates' skills,  $v_L$ ,  $v_R$ , and platforms,  $x_L$ ,  $x_R$ , have  
 330 been observed and assessed, the median voter elects  $L$  or  $R$  to office. All this infor-  
 331 mation is common knowledge. The game must be solved by backward induction and  
 332 the solution concept is subgame-perfect equilibrium (SPE) in pure strategies. It will  
 333 be important to recall that a SPE requires that all strategies form a Nash equilibrium  
 334 (NE) in every subgame.  
 335

### 336 3.5 Results of the General Election

337  
 338 Before stating the main results of this section, some important variables should be  
 339 defined. I call  $\Delta v$  the difference in skill between  $R$ 's candidate and  $L$ 's candidate. To  
 340 be concrete,  $\Delta v \equiv v_R - v_L$ . Note that  $\Delta v$  can take three values:  $\Delta v \in \{-V, 0, V\}$ .  
 341 I call  $x_L^*$  and  $x_R^*$  the equilibrium strategies of parties  $L$  and  $R$ , and  $x^*$  the winning  
 342 platform. These parameters will determine the results of the general election, as  
 343 indicated in the main theorem on this section. It must be remember that valence was  
 344 assumed to be salient enough that  $|X_L|$  and  $|X_R|$  are smaller than  $V$ , which implies  
 345 that  $-V < X_L$  and  $X_R < V$ .  
 346  
 347

348 **Theorem 1** *The equilibrium strategies and equilibrium outcomes of this election for*  
 349 *given values of  $v_L$ ,  $v_R$ ,  $V$ ,  $X_L$  and  $X_R$  are given in Table 1, where  $\Delta v \equiv v_R - v_L$ .*  
 350

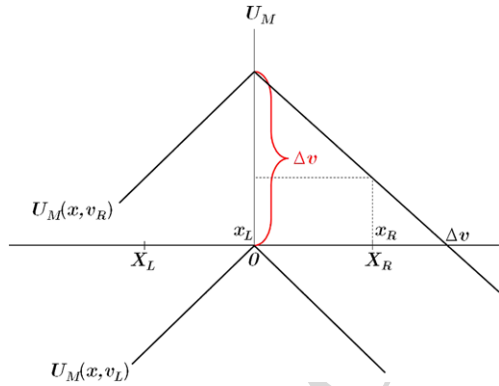
351 There are several comments to make about Table 1.<sup>3</sup> First note the results when  
 352  $\Delta v = 0$ , that is, when there is no skill difference between the candidates. Both par-  
 353  
 354

355 **Table 1** Equilibrium outcomes of the general election

| 356 Value of $\Delta v$ | 357 Equilibrium platforms<br>$x_R^*$ and $x_L^*$ | 358 Winning platform<br>$x^*$ | 359 Winning party                    |
|-------------------------|--|-------------------------------|--------------------------------------|
| 360 $V$                 | 361 $x_R^* = X_R$<br>362 $x_L^* \in \mathbb{R}$  | 363 $X_R$                     | 364 $R$                              |
| 365 $0$                 | 366 $x_R^* = 0$<br>367 $x_L^* = 0$               | 368 $0$                       | $R$ or $L$ with<br>equal probability |
| 369 $-V$                | 370 $x_R^* \in \mathbb{R}$<br>371 $x_L^* = X_L$  | 372 $X_L$                     | 373 $L$                              |

374 <sup>3</sup>The proofs of all the results come in the [Appendix](#).  
 375  
 376

**Fig. 2** Equilibrium platforms  $x_L^*$  and  $x_R^*$  when there is a valence advantage for  $R$  over  $L$



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ties converge completely to the median voter’s ideal point. However, when  $\Delta v \neq 0$  the candidate with highest skill is able to diverge from the median voter toward the ideal point of her party, and still win the election based on her superior skill. So the policy implemented is biased toward  $R$  when  $\Delta v > 0$ , biased toward  $L$  when  $\Delta v < 0$ , and unbiased when  $\Delta v = 0$ . In fact, given the assumption that valence is salient enough, the party with the highest-skilled candidate is able to pull policy all the way to its ideal point.<sup>4</sup> Such equilibrium is illustrated in Fig. 2, which depicts the case where  $0 < X_R < \Delta v$ .

#### 4 The Nomination Process

In this section, I take a step back in the election process to study the nomination of candidates within a party. At this stage, the identity of each party’s candidate is still unknown. Consequently, the exact values of the candidates’ campaigning skills are uncertain. However, there exist some prior beliefs about these skills based on some information about parties and their potential candidates. According to that information, the probabilities that  $L$ ’s candidate and  $R$ ’s candidate will be high-skilled are  $\pi_L$  and  $\pi_R$  respectively, with  $\pi_L, \pi_R \in (0, 1)$ . In other words,  $\pi_L \equiv P(v_L = V)$  and  $\pi_R \equiv P(v_R = V)$ . Those prior beliefs before the election campaigns are common knowledge among voters and parties.

The rest of this paper seeks to study the ability of party  $R$  to increase  $\pi_R$  by choosing a CSM over another. Indeed, choosing to hold a primary election could affect  $\pi_R$  positively under circumstances specified below. There could be a cost, however, in terms of the policy implemented by the candidate after a primary. Solving party  $R$ ’s cost-benefit analysis is the final goal of this research. I eschew in

<sup>4</sup>This ideal point depends on which group controls policy within the party. In this section we have called  $X_L$  and  $X_R$  the generic ideal points of parties  $L$  and  $R$ . In later sections, however, party  $R$ ’s ideal point will be given by  $X_R = X_{RE}$  if the leaders control policy, or  $X_R = X_{RM}$  if the members control policy. In other words, what we mean by “party” will vary according to the CSM.

415 this paper the parallel decision of party  $L$  who might also be pondering whether  
 416 to choose a primary election. Such analysis is being done in a separate paper, and  
 417 here I simply assume that party  $L$  has already chosen a candidate by any method. In  
 418 other words,  $\pi_L$  is taken as an exogenous parameter. In any case, remember that the  
 419 actual campaigning skills of  $L$  and  $R$ 's candidates are revealed when they start cam-  
 420 paigning to win the election. Thus  $v_L$  and  $v_R$  are fully known when voters decide  
 421 who to vote for.

#### 422 423 424 425 **4.1 Party Members Versus Party Leaders** 426

427  
428 Party  $R$  consists of an “elite” (or “leadership”) and a “membership” (or “rank and  
 429 file”). The elite of  $R$  will be referred to as  $RE$ . This leadership is policy-motivated  
 430 and has an ideal policy point  $X_{RE}$ , with  $X_{RE} > 0$ . The utility function of  $R$ 's  
 431 elite is

$$432 \quad U_{RE}(x) = -|X_{RE} - x|$$

433  
434 The rank and file (RAF) of  $R$  is also policy-motivated. To simplify the analysis,  
 435 I will assume that the RAF has a median member whose preferences are decisive in  
 436 the primary election. I call  $RM$  the median member of  $R$  and I call  $X_{RM}$  her ideal  
 437 point, with  $X_{RM} > 0$ . The utility function of  $RM$  is

$$438 \quad U_{RM}(x) = -|X_{RM} - x|$$

439  
440 In general, we will have  $X_{RE} \neq X_{RM}$ , so there will be a tension between the  
 441 policy preferences of a party's leadership and its RAF. It will be useful to mea-  
 442 sure the divergence, if any, between a party's establishment and its primary voters.  
 443 With that purpose, I define  $d_R$  as the *internal divergence* in party  $R$ , where  $d_R \equiv$   
 444  $|X_{RM} - X_{RE}|$ . An interesting interpretation of  $d_R$  is as the *congruence* (or lack  
 445 thereof) between  $R$ 's elite and mass membership. Higher levels of the internal di-  
 446 vergence  $d_R$  indicate a lower elite-mass congruence inside the party. Note that  $d_R$   
 447 can take any non-negative value:  $d_R \geq 0$ .

448  
449 Parties are also responsible for formulating policy platforms to compete in the  
 450 election. More precisely, parties are in charge of indicating the policy platforms  
 451 they wish their candidates to follow in each circumstance. If party  $R$  uses a lead-  
 452 ership selection, then its leaders formulate the policy strategies to be followed by  
 453 its candidate. If, instead, party  $R$  uses a primary election, then its candidate will  
 454 follow the policy strategies desired by the RAF. Note that both the leadership and  
 455 the RAF think strategically. This implies that they would not passively impose their  
 456 ideal points on the candidate, but rather, they will design a strategy that maximizes  
 457 their expected utility taking into account the behavior of the rival party in the general  
 458 election.  
 459  
460

**Table 2** The objective of party  $R$ 's candidate

|                           |  |
|---------------------------|--|
| After an elite selection: | $\max_{x_R} U_{RE}(x) = - X_{RE} - x $ |
| After a primary election: | $\max_{x_R} U_{RM}(x) = - X_{RM} - x $ |

## 4.2 Primary Election Versus Elite Endorsement

Before selecting a candidate, the leadership of party  $R$  needs to choose a candidate-selection method (CSM). There exist two methods: an elite endorsement or a primary election. The default CSM would be for the leadership to directly nominate or endorse an insider candidate. Alternatively, it could hold a competitive primary election where an outsider candidate has a chance to run, and the decision to choose the nominee is delegated to the party's rank and file. I call  $m_R$  the method that  $R$ 's leaders choose, with  $m_R \in \{elite, primary\}$ . Following standard language in the party-politics literature, I will call *selectorate* the group in charge of selecting a party's candidate. If  $m_R = elite$ , the selectorate is the party's leadership. If  $m_R = primary$ , the selectorate is the party's RAF. In the former case,  $X_R = X_{RE}$ . In the latter case,  $X_R = X_{RM}$ .

Candidates adopt the policy preferences of their selectorate. In other words, they behave as perfect agents of whichever group inside their party nominated them. Therefore, depending on whether the CSM is a primary election or an elite endorsement, the nominee will inherit the preferences of either  $RM$  or  $RE$ , respectively. This is summarized in Table 2.

The interpretation is that in striving to win the nomination, the pre-candidates are forced to cater to the wishes of those selecting them. In exchange for having their names on the ticket, they have to yield on policy by making concrete commitments to those in charge if the nomination. Those commitments are credible because parties have effective ways of enforcing their candidates' promises.

## 4.3 Insiders Versus Outsiders

An important difference across nomination rules is the number of aspirants who have a realistic chance of getting their party's nomination. When a party elite chooses to endorse someone without further consultation, it is usually because there is a trusted insider who has previously emerged as the natural nominee. In contrast, when a party decides to allow a truly competitive primary election, it is opening the door to outside aspirants who might have previously been unknown or ignored. This empirical observation motivates the following assumptions.

Any individual who is officially contesting the party's nomination will be referred to as a *pre-candidate*. If  $m_R = elite$  then party  $R$  has only one pre-candidate to choose from, which I call the *insider* and I denote by  $RI$ . If  $m_R = primary$  then party  $R$  has two pre-candidates to choose from, which consist of the insider,  $RI$ , and an outsider denoted by  $RO$ . Hence, by adopting a primary, the party is expanding the pool of candidates that it can choose from.



I call  $v_{RI}$  and  $v_{RO}$  the campaigning skills of  $RI$  and  $RO$  respectively, and I call  $v_R$  the campaigning skill of the candidate who is finally nominated by  $R$ . As I mentioned before, a candidate's skill can take two values, 0 or  $V$ . However, the exact values of the pre-candidates' campaigning skills are uncertain ex-ante. The party has some prior information about the probability that its insider candidate,  $RI$ , is high-skilled or low-skilled. That information could come from previous performance in office, from past elections, or from polls. According to that information,  $RI$  has a probability  $\pi_{RI}$  of being high-skilled, with  $\pi_{RI} \in (0, 1)$ . On the other hand, the party has *no* prior information about the outsider candidate. The party believes that the outsider candidate  $RO$  has a probability of one-half of being high-skilled, hence  $\pi_{RO} = \frac{1}{2}$ .

#### 4.4 Timing

The timing of the nomination is the following:

1. **The selection of the candidate-selection method:** The leaders of party  $R$  choose a nomination process.
2. **The nomination contest:** If the CSM is a primary election, the pre-candidates commit to pursuing the policy interests of  $RM$  and some information about their skills is revealed. If the CSM is an elite endorsement, the pre-candidates commit to pursuing the policy interests of  $RE$  and no information is revealed.
3. **The nomination decision:** Party  $R$  selects its candidate.

After this nomination, the game is played exactly as described in the previous section, i.e. the three stages of the nomination are followed by the three stages of the general election. All this information is common knowledge.

### 5 The Benefit of Primary Elections

In this section, I develop a model of primary elections as a means to acquire some information about the campaigning skills of aspirants. Primaries reveal partial information through a system of noisy signals sent by candidates and processed by primary voters using Bayes rule. This informational mechanism is the main innovation with respect to Adams and Merrill (2008), Serra (2011), Snyder and Ting (2011) and other models postulating that primaries reveal information about candidates. In those models information is *fully* revealed in the primary election, and there is no additional information in the general election. In contrast, in this model the information is only *partially* revealed in the primary, and there is additional information in the general election. As I will show, this realistic assumption leads to new insights about the adoption of primary elections, in particular the possibility that a high-skilled insider might prevent such primaries.

A later section describes a cost of primaries. This will allow studying, in the final section of the paper, the cost-benefit analysis carried out by party leaders when deciding whether to hold a primary election or stick to an elite selection.

### 5.1 *Primaries as a Mechanism to Reveal Information*

Here I formalize the informational incentive to adopt primary elections. For party leaders, the benefit is to increase the expected campaigning skill of their nominee. I will call that increase the “primary skill bonus”. Primaries achieve this in two ways. (1) The pool of potential nominees is expanded. Concretely, primaries open the door to untested or non-mainstream contenders who can register as pre-candidates hoping to display their skills during the primary campaign. Those outsiders might have a large appeal to voters but would not come to the party’s attention through an inside-track elite nomination. And (2) useful information about those pre-candidates is revealed. Specifically, primaries can reveal valuable information about the pre-candidates’ assets and resources. Indeed, during the primary campaigns the pre-candidates are tested on how they raise funds, manage a team of supporters, debate other candidates, design political advertisements and give interviews to journalists. So primaries serve as a testing ground for the subsequent general election. In that sense this paper provides an information rationale for democratizing a political party.

Given these differences, each method will have different probabilities of nominating a high-skilled candidate. The value that party leaders are seeking to maximize is  $\pi_R \equiv P(v_R = V)$ . To do so, they calculate which candidate-selection method  $m_R$  maximizes  $P(v_R = V|m_R)$ , with  $m_R \in \{primary, elite\}$ .

To calculate  $P(v_R = V|elite)$  note that if party leaders choose to select the candidate themselves they would directly nominate  $RI$ . The probability of nominating a high-skilled candidate would simply be  $\pi_{RI}$ . Hence  $P(v_R = V|elite) = \pi_{RI}$ .

If, however, they choose to hold a competitive primary election, the candidate  $RO$  would join the race and the nomination will be delegated to the party’s  $RAF$  who will decide between  $RI$  and  $RO$ . Hence the probability of nominating a high-skilled candidate,  $P(v_R = V|primary)$ , would depend on the actual skills of these candidates, which are *ex-ante* uncertain except for the prior beliefs.

The premise in this paper is that primaries will reveal some information about the actual skills of their pre-candidates. This information subsequently helps the party choose the most skilled one. To be more precise, if there is a primary election, a candidate’s performance in the primary can itself reflect high skill or low skill. Party members interpret the performance of a candidate in the primary-election campaign as a *forecast* of how well she would perform in the general-election campaign against the other party. Those forecasts are imperfect, however, because the information is “noisy.” Hence I assume that the true skills of candidates  $v_{RI}$  and  $v_{RO}$  are revealed only *partially* if there is a primary election.

To be concrete, I denote by  $s_j$  the performance of candidate  $j$  in the primary, with  $j = RI, RO$ . I say that  $s_j = high$  if  $j$ ’s performance showed high skill, and  $s_j = low$

599 if  $j$ 's performance showed low skill. I assume that a candidate's performance in the  
 600 primary has a probability  $q$  of accurately forecasting the performance she would  
 601 have in the general election, with  $q \in (\frac{1}{2}, 1)$ . In other words,  $s_{RI}$  and  $s_{RO}$  have prob-  
 602 ability  $q$  of "being correct". We can interpret  $s_j$  as a noisy signal of candidate  $j$ 's  
 603 skill, and we can interpret  $q$  as the quality of this signal. More broadly,  $q$  is a mea-  
 604 sure of the effectiveness of primary elections as an information-revelation method.

605 In sum, the pre-candidates' performances,  $s_{RI}$  and  $s_{RO}$ , are independently-  
 606 distributed random variables whose distribution depend on  $v_{RI}$  and  $v_{RO}$  in the fol-  
 607 lowing way:

$$\begin{aligned}
 608 \quad & P(s_j = \text{high} | v_j = 1) = P(s_j = \text{low} | v_j = 0) = q \\
 609 \quad & P(s_j = \text{high} | v_j = 0) = P(s_j = \text{low} | v_j = 1) = 1 - q \\
 610 \quad & \\
 611 \quad & j = RI, RO \\
 612 \quad & \\
 613 \quad &
 \end{aligned}$$

614 Once the party members observe the candidates' performances, they can update  
 615 their prior beliefs about  $RI$ 's and  $RO$ 's skills using Bayes rule. This approach to  
 616 voting based on updated beliefs following a noisy signal has its roots in Condorcet  
 617 (1785), Austen-Smith and Banks (1996), and Feddersen and Pesendorfer (1998).

618 The candidates' performances are public, and therefore the values of  $s_{RI}$  and  $s_{RO}$   
 619 are common knowledge. In particular, all the RAF members observe the same  $s_{RI}$   
 620 and  $s_{RO}$ , and hence they update their beliefs based on the same information. Given  
 621 its interest in winning the general election, the RAF will vote for the candidate who  
 622 is believed to have the highest skill. When a party member is indifferent between  
 623  $RI$  and  $RO$ , I assume she will vote for the one whose prior probability of being  
 624 high-skilled was largest. If both have the same prior, she will randomize equally.

## 625 626 627 **5.2 Primary Voters Update Their Beliefs**

628  
629 These elements allow studying the behavior of primary voters. When  $s_{RI} \neq s_{RO}$ , I  
 630 say that a member of party  $R$ 's rank and file will "vote according to the signals"  
 631 if her strategy is to vote for the pre-candidate whose signal was highest, meaning,  
 632 whose performance was best in the primary campaign. On the other hand, if her  
 633 strategy does not depend on the signals sent during the primary, meaning that per-  
 634 formance in the primary is irrelevant, I say that a member of party  $R$  will "ignore  
 635 the signals".  
 636

637 These concepts can be used to describe the RAF's behavior during a primary.  
 638 As it turns out, their behavior will depend crucially on their prior belief about the  
 639 insider candidate's valence,  $\pi_{RI}$ . In all the results below, the symbols  $\underline{\pi}$  and  $\bar{\pi}$  refer  
 640 to two constants whose values are  $\underline{\pi} \equiv \frac{(1-q)^2}{1-2q+2q^2}$  and  $\bar{\pi} \equiv \frac{q^2}{1-2q+2q^2}$ .  
 641

642 **Lemma 1** *In a primary election, for each value of  $\pi_{RI}$ , the rank-and-file members*  
 643 *of party  $R$  will*  
 644



- 645 • if  $\pi_{RI} \in (0, \underline{\pi}]$ , ignore the signals and always vote for *RO*
- 646 • if  $\pi_{RI} \in (\underline{\pi}, \frac{1}{2})$ , vote according to the signals if  $s_{RI} \neq s_{RO}$ , and vote for *RO* if
- 647  $s_{RI} = s_{RO}$
- 648 • if  $\pi_{RI} = \frac{1}{2}$ , vote according to the signals if  $s_{RI} \neq s_{RO}$ , and randomize between *RI*
- 649 and *RO* if  $s_{RI} = s_{RO}$
- 650 • if  $\pi_{RI} \in (\frac{1}{2}, \bar{\pi})$ , vote according to the signals if  $s_{RI} \neq s_{RO}$ , and vote for *RI* if
- 651  $s_{RI} = s_{RO}$
- 652 • if  $\pi_{RI} \in [\bar{\pi}, 1)$ , ignore the signals and always vote for *RI*.

653  
654 There are several noteworthy features of this result, the first one being how influ-  
655 ential the prior beliefs are: given that each member of *R* is assumed to be rational  
656 and to use all information available to make her decision, she will combine the  
657 prior beliefs about the candidates with the new information coming from their per-  
658 formance. However, the prior beliefs might be so compelling that even a Bayesian  
659 party member will choose to disregard the candidates' performances. In particular,  
660 for high enough values of  $\pi_{RI}$  the RAF will *always* vote for *RI* even if it receives  
661 strong indications of the insider's low skill compared with the outsider's high skill.  
662 Primary voters will simply not trust that such performances will carry through to  
663 the general election. Hence the insider candidate *RI* is immune against an open con-  
664 test with the outsider *RO*; he will be nominated regardless of their performances.  
665 This result is significant as it opens the possibility that any information revealed  
666 during the primary election will be useless: primary voters might vote according to  
667 preexisting information while completely ignoring the new information.

668 On the other hand, the results for intermediate values of  $\pi_{RI}$  go in the expected  
669 direction: primary voters will take the signals into account, and will vote for the  
670 candidate whose performance in the primary campaigns was best. Hence the insider  
671 candidate *I* will indeed be vulnerable to being beaten by the outsider *O* in an open  
672 contest.

673 Our next task is to quantify the benefit of holding a primary instead of a leader-  
674 ship selection. As I derive below, the bonus of using a primary election is to increase  
675 the expected skill of the party's nominee. Hence the value I am looking to find is  
676 the difference between  $E(v_R|primary)$  and  $E(v_R|elite)$ .<sup>5</sup> It is easy to see that such  
677 difference is given by

$$678 \quad E(v_R|primary) - E(v_R|elite) = V \cdot S$$

$$679 \quad \text{with } S \equiv P(v_R = V|primary) - P(v_R = V|elite)$$

680  
681  
682 The important value is *S*, which represents the extra probability of having a high-  
683 skilled candidate that a primary brings above an elite selection. I call it the *skill*  
684 *bonus* of a primary. Studying *S*, how large it is and how it changes, is the main  
685 task now. Rather than giving the exact value of *S*, which comes in the [Appendix](#),  
686

---

687  
688 <sup>5</sup>We should keep in mind that, even though the actual value of  $v_R$  is discreet, the expected value  
689  $E(v_R)$  is continuous.

I will focus on the key properties that will buttress the rest of the paper. I start by rephrasing the previous considerations in terms of  $\pi_R$ , which is the variable that party  $R$  is seeking to maximize.

**Theorem 2** *The probability that  $R$ 's nominee will be high-skilled,  $\pi_R$ , given  $R$ 's nomination process,  $m_R$ , is given by*

$$\pi_R \equiv P(v_R = V|m_R) = \begin{cases} \pi_{RI} & \text{if } m_R = \textit{elite} \\ \pi_{RI} + S & \text{if } m_R = \textit{primary} \end{cases}$$

where  $S$  is called the primary skill bonus and is given by  $S \equiv P(v_R = V|\textit{primary}) - P(v_R = V|\textit{elite})$ .

This demonstrates how the information revealed in primary campaigns is translated into a better nominee in terms of valence. Holding an internal contest will increase the probability of nominating a high-skilled candidate in the amount  $S$ . Is that a small or a large benefit? I answer that question in the next subsection.

### 5.3 What Makes Primaries More Appealing?

I begin by establishing whether primaries have a benefit to party leaders.<sup>6</sup>

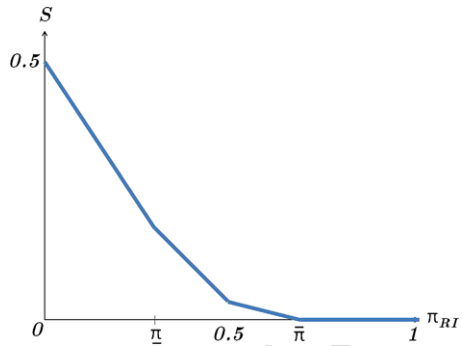
**Lemma 2** *The primary skill bonus  $S$  is strictly positive for  $\pi_{RI} \in (0, \bar{\pi})$  and zero for  $\pi_{RI} \in [\bar{\pi}, 1)$ .*

Primaries therefore do bring a benefit for small enough priors about the insider's skill. When the insider candidate is weak, meaning that  $\pi_{RI}$  is below a certain threshold, forcing her to compete with an outsider candidate increases the expected skill of the nominee by a strictly positive amount. The reason is that for  $\pi_{RI} \in (0, \bar{\pi})$  party members will take a serious look at the outsider candidate's performance in the primary to decide whether she is more convincing than the party insider. This result was expected as it conforms with previous findings in Serra (2011).

The surprising result comes from high priors about the insider's skill: in such case a primary election might not bring any benefit whatsoever. When the insider candidate is strong, meaning that  $\pi_{RI}$  is above a certain threshold, forcing her to compete with an outsider candidate does not increase the expected skill of the nominee at all. The reason is that for  $\pi_{RI} \in [\bar{\pi}, 1)$  party members find the insider candidate so compelling that they will vote for her regardless of the outsider candidate's performance in the primary. This result is new with respect to the papers about primaries that I am aware of.

<sup>6</sup>As mentioned before, the symbols  $\underline{\pi}$  and  $\bar{\pi}$  refer to two constants whose values are  $\underline{\pi} \equiv \frac{(1-q)^2}{1-2q+2q^2}$  and  $\bar{\pi} \equiv \frac{q^2}{1-2q+2q^2}$ .

**Fig. 3** The primary skill bonus  $S$  as a function of the insider's probability of being high-skilled  $\pi_{RI}$



It is now turn to study how  $S$  changes with a change in its two main determinants: the prior about the insider candidate's skill,  $\pi_{RI}$ , and the accuracy of the candidates' performances  $q$ . Do they make primaries more or less attractive? I first describe the comparative statics with respect to  $\pi_{RI}$ .

**Lemma 3** *The primary skill bonus  $S$  is strictly decreasing with  $\pi_{RI}$  for  $\pi_{RI} \in (0, \bar{\pi})$ , and constant (equal to zero) to any increase in  $\pi_{RI}$  for  $\pi_{RI} \in [\bar{\pi}, 1)$ .*

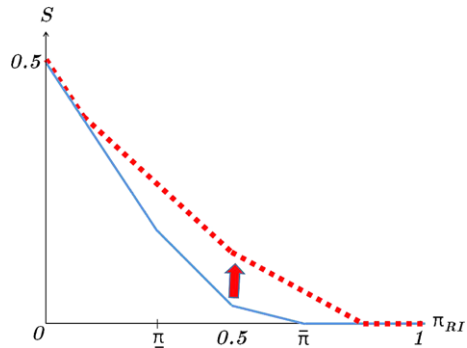
Several insights about  $S$  can come from the lemma above, most notably that it decreases with  $\pi_{RI}$ . This makes intuitive sense, because the benefit of primaries is to improve upon the skill of the candidate that would be nominated through an elite selection, namely the insider candidate. As the skill of the insider candidate is expected to be higher, it becomes less likely that a primary will improve upon it. In fact, as mentioned before, this electoral advantage reaches zero once the insider candidate's appeal to voters exceeds a certain threshold labeled  $\bar{\pi}$ .

The message is that the electoral advantage brought by primaries is larger the less appealing the insider candidate is to begin with. This is clearly seen in Fig. 3, which depicts the value of  $S$  as a function  $\pi_{RI}$ .

I can turn now to studying how  $S$  changes with  $q$ . Remember that we can interpret  $q$  as the *quality* of primary elections as an information-revelation method. To be exact, an increase in  $q$  improves the accuracy of the performances  $s_{RI}$  and  $s_{RO}$  as forecasts of future performances in the general election. This improvement could occur because the primary campaigns became longer, or because the media paid more attention to them, or because they included more challenges like debates on television and so on. In essence, a larger  $q$  implies that the primary performance is a better *forecast* of the candidate's campaigning ability in the general election. Intuition would suggest that any improvement in the primaries' technology would make those primaries more attractive. Surprisingly, as the following result shows, this intuition is only correct under certain circumstances.

**Lemma 4** *The effect on the primary skill bonus  $S$  of a marginal increase in  $q$  is strictly positive for  $\pi_{RI} \in [\underline{\pi}, \bar{\pi}]$ , but is null for  $(0, \underline{\pi})$  and  $(\bar{\pi}, 1)$ .*

**Fig. 4** The effect of increasing the quality of signals  $q$  on the primary skill bonus  $S$



The result goes in the expected direction for moderate priors about the insider candidate's skill. For intermediate values of the prior  $\pi_{RI}$ , marginal increases in  $q$  will indeed increase  $S$ . The reason is that primary voters are unsure about the relative merits of the insider candidate compared to the unknown outsider that will join the race. They will pay close attention to the primary campaigns to nominate the candidate with a better performance. A higher quality of the information revealed will increase the probability of making the right nomination choice. Such an increasing effect is depicted in Fig. 4.

However, for other priors, the quality of a primary elections will bear no impact on its benefit. When the insider candidate is expected to be overwhelmingly competent in the general election, she will be nominated even if her performance in the primary is appalling. Primary voters will trust that her performance in the primary was due to bad luck. On the other hand, when the insider candidate is expected to be overwhelmingly unqualified, she will lose to the outsider candidate even if her performance was better. Primary voters will believe her performance was just a fluke that does not justify giving her a chance in the general election. In sum, for extremely high or extremely low values of  $\pi_{RI}$ , primary voters quickly make up their minds, either to nominate  $RI$  for sure or to nominate  $RO$  for sure, regardless of any campaign events that may occur. Improving the quality of primaries by marginally increasing  $q$  will have no effect on this decision.

In sum, primaries have two potential benefits: (1) allowing primary voters to replace the insider candidate with an outsider candidate whose prospect are believed to be superior; and (2) using new information revealed during the primary campaigns to discriminate between both candidates. As it turns out, whether those benefits actually occur depends crucially on the prior beliefs about the campaigning skill of the insider candidate. This finding is qualitatively summarized in Table 3.

To summarize this section, the benefit, when there is one, of primary elections is a larger probability of nominating a candidate with a high campaigning skill. I called that extra probability the primary skill bonus. Primaries might carry a cost however, in terms of the policy that candidates are induced to adopt. That cost is described in detail in the following section. As a consequence, the party leadership needs to carry out a cost-benefit analysis when choosing whether to hold a primary election or not.