Endogenous Affirmative Action: Gender Bias Leads to Gender Quotas*

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Abstract

The adoption of gender quotas in elections, like the recent "parity law" in France, can be fully rationalized on the basis of the self interest of male incumbents. This paper explains why the parity law was approved and, at the same time, why it has not been very effective at the national level. The existence of a voters' bias in favor of male candidates is sufficient to convince the incumbents to advocate for equal gender representation in party lists, because it *raises* the incumbents' chances of being reelected. The existence of male bias in the French electorate is empirically confirmed in this paper. We also show that parity law may have assembly composition effects and policy effects that vary with the electoral system.

Preliminary and Incomplete

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1 Introduction

In 2001 the French Parliament passed a law, the so called *parity law*, which forces parties to choose roughly equal numbers of men and women as candidates in their lists. For each of the most important elective bodies – namely the Assembly, the Senate, and the Municipalities – there is a radically different electoral system, and the parity law has determined drastically different effects in those three types of elections.[1] This paper aims to explain why gender quotas like the parity law can be (almost unanimously) chosen by the incumbent politicians, even though they are almost all men, and provides a number of insights on the role of electoral systems in terms of the *ex-ante* incentives to pass the law as well as in terms of the *ex-post* differences in gender representation effects and policy effects. The *ex-ante* reasoning of incumbent legislators that we uncover can also be extended to a broader set of contexts, and could help to explain the emergence of many types of affirmative action laws. The *ex-post* effects that we shall discuss clarify some links between electoral systems and party behavior, which could be useful in electoral design.

Deputies are elected to the French Assembly through single-member-district majority rule (SMD henceforth). Parity in such elections means that each party should have between 48% and 52% of candidates of each gender across districts. A peculiar feature of the French Parity Law, as it was approved in 2001, is that if a party does not satisfy this equal split criterion it must pay some *fees* per violation (or suffer proportional reductions in government funding).[2] Why did the incumbent deputies almost unanimously support the parity law, and why did they, at the same time, allow parties to violate that new affirmative action law by paying fees? The common explanation given in newspapers and among parity observers is that parity law was

[1] The Assembly is formed using single-member-district majority rule. The Senate is elected using proportional representation. Finally, municipal elections employ a two-round proportional representation system with a fifty percent majority bonus for the plurality winner of the second round.

[2] The main right wing party (UMP) presented in 2002 only 19.93% of women and paid EUR 4M, representing 15.8% of its government funding, while the main left wing party (a coalition led by the Socialist Party) presented 36.13% of women and lost 9.1% of its funding (see Jourdain [5]). This paper will clarify why it is to be expected that the stronger party is the most willing to violate the law, even though everybody approved it *ex-ante*.

passed because parties realized that the French people wanted it; but they did not fully apply it because of the pressure of male incumbents to remain candidates in favorable districts.[3]

Here we propose a completely different explanation for the support given to parity law by the male incumbent deputies. Given the presence of some male bias in the voters' population, which we shall empirically verify, it is rational for male incumbent deputies to pass a parity law: In fact, a parity law weakens the pool of challengers, since it becomes likely for an incumbent to face a woman challenger in the next election and women are perceived to have, on average, a weaker electoral support.

As far as the rationalization of per violation fees is concerned, we will show that parity law with the possibility to violate it by paying fees can dominate *ex-ante*, under some reasonable conditions, both the status quo and parity without that flexibility. The model also predicts, consistent with the observed behavior in 2002 elections, that the party favorite in the polls is the most likely to pay fees. The argument goes as follows: Given the voters' bias in favor of men candidates, parties are in favor of a gender quota because it increases the probability for incumbents (conditional on running) to run against a woman and be reelected. On the other hand, strict parity (with no violations allowed) decreases the probability for the male incumbents of a large party to run again. Therefore, fees are rationalizable as they constitute a direct way to make more incumbents run than the strict application of parity would allow. The *ex-ante* drawback of parity with fees is that if one party pays fees, this decreases the chances for the candidates of the other party to run against a woman. Therefore it is not always true that parity with fees *ex-ante* dominates both strict parity and no-parity. One sufficient condition for this to be true is if there exists a (realistic) preference by party leaders for incumbents over new candidates. Given this party preference for reelecting incumbents over electing new candidates, if fees are sufficiently large, parties are willing to pay them only in order to allow incumbents to run. Parity with large fees, then, has the two nice properties that (1) it increases the probability for incumbents to run against women,

[3]This is the view developed, for instance, by the official "Observatoire de la parité entre les femmes et les hommes" in their report to the Prime Minister following the elections (see Zimmerman [8]).

and (2) it does not prevent incumbents from large parties to run.

To continue with the discussion of the *ex-ante* motivations of the law, it is interesting to note that, at the time of its discussion, the members of the Assembly (deputies) were basically all in favor, whereas many senators were against it and asked for amendments (see below, section **??**). We have already given the intuition for the full support given to the law by the deputies, given the SMD system. The intuition for the opposition of the senators is an even more straight forward consequence of the electoral formula. To see this, assume for simplicity (and almost realistically) that all the incumbent senators are men. Senatorial elections are conducted using Proportional Representation (PR henceforth), and parity law requires each party to alternate men and women in the candidate list. Given that voters can only choose among parties and the k seats assigned to a party go to the top k candidates in the party list, parity law determines (ceteris paribus) an automatic substitution of incumbents with female challengers. In summary, the combination of SMD majority rule with the presence of some degree of male bias allows the incumbent deputies to gain from the parity law whereas the opposite is true for the senators given PR.

In terms of *ex-post* effects, the first question concerns the gender representation outcome: The 2002 Assembly elections resulted in only a moderate increase in the percentage of women elected, from 10.9% to 12.3%, and the result was not much better than this in the 2001 Senate elections. Why was the law so little effective at the national level? The reason for the low effectiveness in Assembly elections is related once again to the presence of male bias among voters. Given the evidence provided in this paper about such a male bias in the French voters' population, passing parity law only helped strengthen *ex-post* the incumbency advantage of the already elected deputies, hence the low effectiveness. On the other hand, the low effectiveness in Senate elections is, as we will argue, a temporary effect of party proliferation strategies that won't be available in the future.

As a side *ex-post* phenomenon, it is also interesting to note that parity law affects the party composition of the Assembly. We show that, in the aggregate, parity law should be expected to favor the underdog party. The intuition for this result is simply that, as parity helps incumbents, some of them are reelected in spite of a sharp decrease in the voters' preference towards the platform they defend.

Given that the theoretical results of the paper rest on the crucial assumption that in the electorate there is a net bias in favor of men, we will establish empirically that this is indeed the case. We will show that a male bias still existed in France in the relevant period. That is, controlling for observables, when a new (or incumbent) male candidate runs against a woman, he does better than male and female new (or incumbent) candidates running against an opponent of the same sex. Similarly, females running against males do worst than females running against females. We will also show that this male bias is not the result of new male candidates running in districts more favorable to their party than new female candidates. That is, we will establish that gender of the new candidates is not correlated to the party's performance in their district at the last election.

There are many reasons for considering the French case more than just an interesting case study. First of all, one thing that makes this an interesting focus for electoral design is that it constitutes a unique natural laboratory, given the three very different electoral systems for the three main elective bodies. For example, the low effectiveness of parity law emphasized above for the two national elective bodies contrasts with the municipal level results, where the electoral system is a two-round PR system with a majority bonus: such a system made women obtain almost 50% of the seats. With a two-round PR system neither could male bias play a role nor it was possible to make use of the same party proliferation strategies used in the Senate elections. More generally, our analysis hints which electoral reforms could make parity more effective. Consistent with the observation that French deputies were in favor of the law whereas senators opposed it,[4] an electoral reform that makes a parity law more likely to be effective is, on the other hand, likely to generate opposition by the incumbents. In other words, if such an electoral reform is made before parity laws are discussed, such an electoral reform may make it impossible to pass the parity law. The advocates of a more equal gender representation in politics face

[4] "The Senate's legislative powers are limited; the National Assembly has the last word in the event of a disagreement between the two houses." (US Department of State (2004)) This is clearly visible in Title V Article 45 of the Constitution "If the joint committee does not succeed in adopting a common text, or if the text is not adopted as provided in the preceding paragraph, the Government may, after a further reading by the National Assembly and by the Senate, ask the National Assembly to make a final decision."

a trade-off when evaluating an electoral system: the more effective parity is likely to be with an electoral system, the more unlikely it is that a parity law is approved (given that electoral system) or that such an electoral system is approved given a parity law.

The French experience analyzed in this paper may also be considered important in terms of comparative politics. As we will report below in a brief comparative section, most scholars now agree that the small number of women in politics in the United States derives from a "supply" problem, and not from a "demand" problem, since no evidence can be found of male bias in the American voters' population, nor in party behavior. We will not extend the comparisons to other countries, leaving a full-blown comparative study for future research, but the comparison between France and the US is at least suggestive of a likely correlation between "demand" biases and affirmative action laws.

The paper is organized as follows. We will start from the theoretical and empirical analysis of SMD assembly elections. We will then move to the senatorial races and we will elaborate on the electoral design issues mentioned above. The final section will discuss the insights of this analysis that are likely to extend to a general category of endogenous affirmative action problems and will contain some comparative remarks.

2 Single Member District Elections

In this section, we focus on the National Assembly elections, for which the electoral system is two-ballot majority rule. For the sake of simplicity, in our theoretical model we assume that there are only two parties, so that the system is equivalent to one-ballot plurality.

Downs defines a political party as "a coalition of men seeking to control the governing apparatus by legal means" where by coalition he means "a group of individuals who have certain ends in common and cooperate with each other to achieve them." A simple way to operationalize this definition in a theoretical framework is to view a party as a "coalition of incumbents with similar policy preferences". Given the importance of incumbent politicians in any party hierarchy, it is clear that any party leader will have at least two objectives in mind when choosing the composition

of the party candidate list: the maximization of the number of seats the party will obtain and the maximization of the chances of reelection of the party's incumbent politicians. The assumption that parties care about the number of seats obtained by their policy platform as well as about the probability of reelecting incumbents will be kept throughout the paper. We normalize the party utility of obtaining a seat for one of its new candidates to 1; a party utility from obtaining a seat for an incumbent is $1 + a$, where a denotes the additional value of reelecting an incumbent as he is part of the party leadership. We assume $a > 1$, so that reelecting an incumbent is more than twice as important as electing a new candidate. In addition, when fees exist for any violation of the electoral law, a party also has to minimize the fees to be paid.

Beside the advantage given to incumbents by their respective party leaders, incumbents have other institutional advantages. For example, incumbent politicians have the advantage of being able to pass new laws before elections. Hence, if there are laws that favor the incumbents of all parties against the challengers, the incumbents are likely to pass such laws, unless there are also large effects on the distribution of seats across parties. This type of incentive to change laws in order to be reelected is going to be uncovered in detail in what follows.

2.1 Male bias and parity law: a simple model

The model we now introduce has two essential features. First, one party is larger than the other, in the sense that it has more incumbents (all male) in the assembly at the time when parity law is discussed. Hence the larger party has more male incumbents than the number of male candidates allowed by a strict application of parity law. Second, deputies have to decide whether to pass the parity law and whether to allow violations for some fee, under some uncertainty about the outcome of the next elections. This uncertainty will be lower at the time of list composition.

Let L and R denote the two parties. Assume that L is the large party, i.e., out of $n > 2$ districts, L has $k > n/2$ incumbents. This is the status quo at the time when parity law is discussed (time 0, or constitutional stage of the game). We rank the districts from district 1 being the most left-wing to district n being the most right-wing, and we assume that this ranking does not change across the possible states of

the world, which are characterized by correlated shocks to the distribution of voters' platform preferences in the districts. In other words, labeling by l (r) any district where party L (R) turns out to have the majority of voters' platform preferences, the set Ω of possible states of the world is the set of n-dimensional vectors with l in the first z components and all r in the remaining $n-z$ components. Thus, given this type of correlation that leaves the left-to-right ranking of districts unchanged, the probability distribution over the set of states of the world can be summarized by $p(z)$, where z takes integer values from 0 to n.

In order to make computations manageable, we assume that n is even and $k = \frac{n}{2} + 1$, and that

$$\begin{aligned} p(z) &= 0 \qquad \forall z < \tfrac{n}{2} - 1 \text{ and } \forall z > \tfrac{n}{2} + 2 \\ &> 0 \quad \textit{for the remaining four values of} z \end{aligned} \tag{1}$$

This implies that at least the first $\frac{n}{2} - 1$ districts are expected to remain left wing, and the three swing districts are $k-1, k, k+1$. In words, we are making the uncertainty "as small as possible", assuming that the number of left-wing districts either remains $k = \frac{n}{2} + 1$ or changes by one, up or down.[5] Focusing just on the swing districts, the states of the world correspond to the four realization vectors rrr, lrr, llr, lll in the three swing districts.[6]

As hinted above, the game has three stages: the constitutional stage (time 0); the list composition stage (time 1) and the voting stage (time 2). At the voting stage, for any list composition, the outcome of the election in each district depends on the voters' platform preferences in that district as well as on the gender of the

[5]The simplified model maintains all our desired basic features: (1) there is a slight status quo advantage for one party; (2) such a party cannot keep all its incumbents with parity unless it pays the decided fee; (3) there exists a state of the world where the majority of seats goes to the other party in the next election. There is no reason to believe that our results would change (qualitatively) if the uncertainty were to be "greater". Note also that a status-quo advantage for party L is introduced only because we want to explain why larger parties have more incentives to pay fees. If we ignored this objective, we could keep a symmetric status quo, and would still obtain the result that parity law is unanimously preferred by the deputies (details available upon request).

[6]Given the assumption $a > 1$, our focus on the swing districts alone is without loss of generality: it can easily be shown that if party L has to give up an incumbent in order to satisfy parity law, it will never sacrifice one from the first $\lfloor n/2 - 1 \rfloor$, where reelection is certain if the male incumbent runs.

candidates. We assume that voters prefer men candidates. That is, a platform preference can be offset by the gender preference, if the candidate representing the otherwise winning party is a woman and her opponent is a man. In other words, if in district j the realization of voters' platform preferences is l, this means that party L will win in district j if the two candidates are of the same gender, and if the candidate of party L is a man running against a woman; but will lose if L's candidate is a woman against a man.

Given that n is even, passing parity without the possibility to violate it by paying fees implies that each party must have exactly $\frac{n}{2}$ men. At the constitutional stage the deputies have to choose the fee per violation, which we denote by c. If $c = 0$, it means that no parity requirement is introduced. If c is fixed to ∞, parity is introduced without the possibility to pay for more male candidates. Any intermediate value for c is a parity system with fees. We will prove the ex-ante Pareto optimality of a strictly positive but finite value of c.

At time 1, parties have to form their list. The information is more precise than at time 0. In particular, we assume that all uncertainties have disappeared at the list composition stage. Parties know the state of the world. Composing list consists of choosing the gender of the candidates in each district. Strategy WMW, for instance, means that a man is sent in district k, whereas two women are sent in the other districts, $k-1$ and $k+1$. Given the relative party utility from electing incumbents vs. new candidates, if a party chooses a man candidate in a district where it won the previous election, that candidate is the incumbent.

If parity is passed, then only one man can run for party L, unless party L pays the fee for another candidate. Party R is allowed, without paying anything, to have two men running.

Given that there is no strategic voting at time 2 and no uncertainty at time 1, final payoffs can be perfectly computed at time 1. There is one game for each possible state of the world. For each of these time-1 games there are, in principle, eight strategies for each party. For the sake of clarity, we will simplify the games in the following way. We let party L disregard strategies WWW, WWM, MWM and WMM. WWW is obviously never optimal: having only female candidates minimizes the number of seats and, moreover, the gender quotas do not allow L

to have three women unless it pays for one of them.[7] Strategy WWM is never optimal either, as it amounts to use the gender quota to allow a non-incumbent man to run (remember that the utility of having an incumbent reelected is higher than the utility of having a new candidate elected). Strategies MWM and WMM are suboptimal for a similar reason: They correspond to the party paying the fee for one additional male candidate, but to the benefit of a new one instead of an incumbent.[8]

Regarding party R, we can restrict attention to strategies WMM, MWM and MMM. Indeed, the quota allows it to have two men without paying any fee, so that having one male candidate or none are never rational actions. MMW is never optimal either, because dominated by the possibility to have the incumbent re-run rather than one of the two new candidate men.

We now analyze fully the $\ell\ell\ell$ case.[9] The resulting payoff matrix is in Table 1. Let us describe how it is constructed. If parties play, for instance, (MMW, MWM), then the distribution of seats is $(2, 1)$, as party L wins the election in districts $k-1$ and k, but loses in district $k+1$ where a woman runs against a man. On the other hand, the three men elected are incumbents, as they were running in districts were their party won the previous elections. Finally, party L pays the fee once, as its number of men running exceeds the quota by 1, whereas party R does not pay anything. Party utilities are given by the sum of their three components, yielding in this case $(2 + 2a - c, 1 + a)$.

[7] Formally, WWW is a strictly dominated strategy in all games.

[8] Formally, WWM is strictly dominated in the games parameterized by states $\ell\ell\ell$ and $\ell\ell r$. It is not strictly dominated in the other games, but it is weakly dominated after deletion of the party R strategies which are strictly dominated. Being weakly dominated of course, does not mean that it cannot support a Nash equilibrium. As a matter of fact, however, no Nash equilibrium is ever supported, in the $8 * 8$ games, by the strategies which we disregard here. Details can be obtained from the authors.

[9] The payoff matrix of the three other cases is given in the appendix. We will highlight the differences of those other cases with respect to the lll state of the world.

$L\backslash R$	WMM	MWM	MMM
MWW	$1+a, 2+a$	$2+a, 1+a$	$1+a, 2+a-c$
WMW	$2+a, 1+a$	$1+a, 2+a$	$1+a, 2+a-c$
MMW	$2+2a-c, 1+a$	$2+2a-c, 1+a$	$2+2a-c, 1+a-c$
MMM	$3+2(a-c), 0$	$3+2(a-c), 0$	$3+2(a-c), -c$

Table 1: Payoff matrix of the list composition game in the $\ell\ell\ell$ state of the world.

The only way for R to obtain a seat in state lll is by having a man running against a woman. Consequently, the crucial question is how many male candidates party L will have. The decision by L to have one, two or three male candidates depends on c, which is decided at time 0. Let us assume first that c is very low (say, close to 0). Then the best strategy for L is to pay the fee for two candidates, as this guarantees to win all seats. This corresponds to the Nash equilibria where L plays MMM and R plays any combination of WMM and MWM. The utility vector associated to these equilibria is $(3+2(a-c), 0)$.

For some larger values of c (precisely for $c \in (1, a)$), it is no longer worth paying if the profit is only to have one more candidate elected, but it remains profitable to pay if it allows an incumbent to be reelected. At the Nash equilibrium L plays MMW and R plays any combination of WMM and MWM. The payoffs are $(2+2a-c, 1+a)$.

For high values of c, L will decide not to pay at all. But even with one man running, L may gain two seats, if the female candidate in one of the first two districts turns out to run against the female candidate by R. For the opposite reason, R tries to send its male candidate in the district where the $L-$candidate is a woman. The unique Nash equilibrium is $(0.5MWW + 0.5WMW,\ 0.5WMM + 0.5MWM)$ with associated payoffs $(1.5+a, 1.5+a)$.[10] The threshold value of c above which this equilibrium arises is $a + 0.5$.

The preferences over c of both parties in the case $\ell\ell\ell$ are now easy to determine. Party L prefers $c = 0$, whereas party R prefers c very large. Note that there is a

[10] In reality list composition is a long-lasting process where party leaders have to gather a lot of information about the preferences of electorates in a lot of districts. It is therefore impossible to wait until one party knows the list composition of the other. This is only captured in a reduced form way by our simultaneous process (and by the possibility of mixed strategies), but one could equivalently model it as a war of attrition where every party tries to choose last.

crucial discontinuity at $c = 1$ in the utility of party R. This jump (from 0 to $1 + a$) comes from the change in the number of seats obtained but also from the possibility to have an incumbent elected.

The equilibrium payoffs for the other cases are determined in a similar way. In the $\ell\ell r$ case, the main difference in the payoff matrix is that party R is now sure to win one seat at no cost in district $k + 1$. It can win a second seat only if party L does not pay for being allowed to have its two incumbents running, in which case the seat distribution will depend on the gender of the candidates in districts $k-1$ and k (two candidates of the same gender benefit to party L). As above, party L will only decide not to pay the fee for its second incumbent if c is very large ($c > a + 0.5$).

We end up with two possible equilibria. If $c \in (0, a + 0.5)$, then L plays MMW and R randomizes over WMM and MWM, and equilibrium payoffs are $(2 + 2a - c, 1 + a)$. If $c > a+0.5$, then, as above, the Nash equilibrium is $(0.5MWW + 0.5WMW, 0.5WMM+0.5MWM)$ with associated expected payoffs $(1.5 + a, 1.5 + a)$.

Again, L would like to have c as low as possible whereas R would like a prohibitive c. The crucial thing, however, is that the value of c below the threshold $a + 0.5$ does not influence the number of incumbents reelected and, therefore, has a continuous impact on the party utilities.

If the state of the world is ℓrr, then R sends its two male candidates (among whom one incumbent) to districts k and $k + 1$, thereby winning those districts for sure, whereas L keeps its incumbent running in district $k - 1$, wins that seat, and does not have any incentive to pay fees, as any L-male candidate running in district k or $k+1$ looses. Thus, there is a unique Nash equilibrium, (MWW, WMM), with associated payoffs $(1 + a, 2 + a)$.[11] The value of c does not play any role in this case, as neither the behavior, nor the payoffs of the parties depend on c (parties spontaneously respect the quotas).

The last case, rrr, is in many respects opposite to the first one. Party L is likely to loose both seats, unless one of its male candidates runs against a woman. This happens only if c is so high that R does not pay for the running of a third man, and if one $L-$male candidate turns out to run against a woman. For low values of c, party R now behaves as the large party: it pays the fee for a third male candidate

[11] In the boundary case where $c = 0$, there are several equilibria, all of which have the same payoffs.

and wins all seats. The utility distribution is then $(0, 3+a-c)$. For values of c in the interval $[0.5, 1]$, it becomes interesting for R not to pay the fee and try to still win three seats by an appropriate location of the male candidates. The equilibrium strategies are more complicated to describe, and the resulting equilibrium payoffs are $(c, 3+a-c)$.[12]

Note again that at $c = 1$ there is a huge discontinuity in the equilibrium utility of the small party – now party L: fees are large enough that it is no longer interesting for R to overrule the legal quota. On the other hand, party L is now ready to pay one fee, have two incumbents running with the certainty that one of them is elected. The equilibrium strategies are MMW for L and a randomization over WMM and MWM for R, providing sufficient uncertainty (about where the $R-$female candidate runs) to induce L to pay the fee and have two male candidates. Payoffs are now $(1+a-c, 2+a)$, and it is also important to note that R keeps its incumbent.

For very large values of c, it is no longer interesting for L to pay the fee either. Party L would like to send men where R-candidates are women, whereas party R would like its candidates to run against candidates of the same gender. The unique Nash equilibrium is $(0.5MWW + 0.5WMW,\ 0.5WMM + 0.5MWM)$ with payoffs $\left(\frac{1+a}{2}, 2.5+a\right)$, which means that party L is no longer certain of having an incumbent elected.

The preferences over c in state rrr are the following: party R prefers very low c, whereas party L prefers a c slightly above 1, as it is necessary (and the cheapest way) of getting one incumbent reelected.

The following table summarizes how equilibrium utilities depend on c in the different possible states.

[12] With $c \in (0.5, 1)$, the relevant strategies are $(0.5MWW + 0.5WMW)$ and MMW for party L, and $(0.5WMM + 0.5MWM)$ and MMM for party R. One can focus on the reduced game

$L \backslash R$	$0.5WMM + 0.5MWM$	MMM
$0.5MWW + 0.5WMW$	$\frac{1+a}{2}, 2.5+a$	$0, 3+a-c$
MMW	$1+a-c, 2+a$	$-c, 3+a-c$

At equilibrium, party L plays MMW with probability $2c-1$ and party R plays MMM with probability $\frac{1+a-2c}{1+a}$.

c	$(0, 0.5)$	$(0.5, 1)$	$\left(1, \frac{1+a}{2}\right)$	$\left(\frac{1+a}{2}, a+0.5\right)$	$(a+0.5, \infty)$
$\ell\ell\ell$	$(3+2(a-c), 0)$	$(3+2(a-c), 0)$	$(2+2a-c, 1+a)$	$(2+2a-c, 1+a)$	$(1.5+a, 1.5+a)$
$\ell\ell r$	$(2+2a-c, 1+a)$	$(2+2a-c, 1+a)$	$(2+2a-c, 1+a)$	$(2+2a-c, 1+a)$	$(1.5+a, 1.5+a)$
ℓrr	$(1+a, 2+a)$	$(1+a, 2+a)$	$(1+a, 2+a)$	$(1+a, 2+a)$	$(1+a, 2+a)$
rrr	$(0, 3+a-c)$	$(c, 3+a-c)$	$(1+a-c, 2+a)$	$\left(\frac{1+a}{2}, 2.5+a\right)$	$\left(\frac{1+a}{2}, 2.5+a\right)$

Table 2: Equilibrium utilities of parties L and R as a function of c and the state of the world

At time 0, incumbents have to vote on the value of c. Their preferences depend on their subjective probabilities associated to each state of the world. Let us begin by assuming that they are prudent, in the sense that they wish to maximize their lowest utility level. The lowest utility level of party L (resp. R) is the one associated to state rrr (resp. $\ell\ell\ell$).It is clear from the table that the best value of c is just above 1. Therefore, all incumbents agree at time 0 that the best electoral system is parity with sufficiently large fees.

If parties are not prudent in the extreme sense just described, but give a sufficiently large weight to the state of the world which is worst for them (state rrr for L and $\ell\ell\ell$ for R), then the result still holds and an interior value of c still ex-ante Pareto dominates all the others. We thus have the following result:

Theorem 1 *Assume that voters prefer male candidates, and parties put a sufficiently large weight on the worst possible state of the world in terms of voters' preferences in the swing districts. Then, the deputies of an ideologically split assembly unanimously approve a parity law with fees.*

Given that the chosen level of c at time 0 is just above 1, the equilibria of the games analyzed above have the property that only the larger party in the status quo actually pays fees. Given the combined effect of the 1995 and 1997 elections, the party with the largest number of incumbents in 2002 was UMP, and the fact that UMP has paid much more fees than PS is broadly consistent with our model.

2.2 Effects of parity law

We have just shown that male bias allows the incumbents to obtain a new type of global incumbency advantage by passing an affirmative action law with a progressive cover. After the causes, it is important now to discuss the consequences of parity law, looking at the effects on the *gender composition* as well as on the *party composition* in the assembly. Let us first show why parity law has been so little effective in changing the number of elected women. As one can see from the above analysis, parity has an effect on the gender composition of the assembly only in cases ℓrr and rrr, that is, when there is a significant change in the platform preferences of the electorate with respect to the status quo. In those cases, the number of women elected is 1. Let us recall that we have focused on those three swing districts because the election results in all other districts were certain, with the consequence that all male incumbents in those districts are reelected. The expected number of elected women is then necessarily very low.

The effect on the assembly party composition is clear cut. Each state of the world tells us how the seats would have been distributed without parity in the three swing districts. In states $\ell\ell\ell$ and rrr, parity allows incumbents, who would otherwise be beaten, to be reelected. We have then an important corollary of the above analysis:

Corollary 1 *Parity may affect the party composition of the assembly (and hence policies) when voters' platforms preferences change with respect to the status quo. In this case, the number of seats won by the loosing party is (weakly) larger than if parity was not applied. In short, when it has an effect on the party composition, "Parity helps the looser."*

2.3 Existence of male bias among voters

In this section, we will show empirically that, in the 2002 French National Assembly election, a male bias existed among voters. As in the model above, we define the male bias as the additional percentage of votes a male candidate gets, ceteris paribus, when he runs against a woman.

Before giving the details of the econometric work, let us recall that the alternative explanation (in the press) for the low number of women elected was a *party*

bias in favor of men, represented by a presumed strategic allocation of men in favorable districts – that is, districts where the probability of being elected is higher. Therefore, beside exhibiting some male bias as defined above, we need to show that this does not derive from party bias. Indeed, we show below that the data does not exhibit any party bias in the allocation of new candidates to districts. In other words, parties have not preferred men to women in "good" districts.[13]

Our data is constructed based on the information collected from the website of French National Assembly.[14] The website provides, among other things, biographical information on 2002 candidates, their party affiliation and incumbency status, and the district-by-district first- and second-round results in both 1997 and 2002 elections, together with abstention rate of each district. In order to avoid difficulties associated with variable number of parties and the resulting strategic voting behavior, we focus on those districts where election went to the second-round and where the two second-round candidates were from the two main party coalitions of 2002 elections, PS and UMP. We will see that men candidates' advantage comes in part from a male bias among voters.[15]

For observation/candidate j, we assume a linear model of the form $y_j = \beta X_j + \varepsilon_j$. Different specifications will be estimated, but in the basic one the regressand y_j is candidate j's score in the second-round of the 2002 elections. Beside a variable measuring the male advantage, which we describe next, the vector X_j of controls includes the score in the second-round of the 1997 election by the candidate of the same district and same party as candidate j.[16] This party-district-specific variable counts for the aggregate preference toward a specific party within each district.

[13] Clearly, overall men may be in better districts since most incumbents are men.

[14] http://www.assemblee-nationale.fr/elections

[15] Recall that by male bias we do not refer necessarily to discriminating preferences, but to whatever reasons that make voters have a net preference for men when keeping all the other observable variables constant. For example, a male bias can arise from a wide-spread belief that men are more corrupt, or bring more pork to the district, whereas women are more concerned about global public goods, and the electorate of a district may prefer a focus on the former type of policies. See Kunikova and Rose-Ackerman for some important distinctions between corruption and pork barrel politics.

[16] Thus we also eliminate some observations that have no such correspondence in 1997. For example, if no PS or UMP candidates ran in that district in 1997 or they were eliminated in the first round.

A second control is age difference between opponents in the same districts, since a candidate's age is plausibly correlated with his(her) perceived quality. We also control for the difference of the square of their age.[17] Finally, we control for Party affiliations, since they could be correlated to the gender bias. This is done by including an indicator variable that takes value 1 if the candidate is from UMP and 0 if he or she is from PS. A constant term is also included, which represents the average score a candidate won in 2002 when all other regressors were zero. Error terms (ε_j) follow standard assumptions imposed by ordinary least squares estimation method.

The key regressor is the male advantage, which measures the male bias. The model assumes that when a male candidate has a female opponent, he does better than when the opponent is male (holding everything else constant). The male advantage can be measured by a variable that takes value 1 if a male has a female opponent, 0 if the two candidates are of the same gender, and -1 if a female has a male opponent. We will also show, although it is not crucial to our argument, that the implicit symmetry assumption, namely that women vs women is just like man vs man and that the advantage of a man incumbent (new candidate) over a woman is equivalent to the disadvantage of a woman incumbent (new candidate) with respect to a man is actually supported by the data.

Table 1 reports estimation results. Specifications (1) and (2) only use new candidates while specifications (3) and (4) use incumbents.[18] Specifications (1) and (3) control for the type of the opponent (either a new candidate, a 1997 loser, or a 1997 winner that was moved district): for (1) the excluded category is an incumbent opponent and for (3) it is a new candidate opponent. These dummies are jointly statistically significant (p-value < 0.1) in specification (1) but not in specification (3) (p-value > 0.1) and thus we also report (2) and (4) where those dummies are ex-

[17] Both are divided by 100 to make results easier to present.

[18] In specifcations (1) and (2), since we limit attention to new candidates, and since in each second round of each district election the race is 90% of the time between an incumbent and a new candidate, only 10% of the new candidates need to be dropped in order to avoid having two candidates from the same district (which would determine correlation between the error terms). However, the results are basically identical with or without such a restriction of the sample. When more than one new candidate ran in the same district, the selection rule was to first select male candidates if they ran against a woman, otherwise to select the loser.

cluded. For new candidates, these estimates suggest that it is better to run against any type of candidates than against an incumbent, but that effect is statistically significant only against 1997 losers. Own party score in 1997 and the party position are statistically significant in every specification. Not surprisingly, the effect of own party score in 1997 is positive.[19] The age difference between candidates only has a statistically significant impact on score for new candidates. However, as expected, age difference has a positive impact on score for both new candidates and incumbents. The key result is the statistically significant male bias, which is observed for both new candidates and incumbents irrespective of the specification. In the appendix we show in Table 3 this effect decomposed into its constituent parts, that is separating cases where a woman faces a woman, a woman faces a men, and a men faces a woman; from the baseline where a man face a man. We show that the hypothesis that woman vs woman is no different from man vs man and that the advantage of a man vs a woman equals the disadvantage of a woman against a man cannot be rejected (this is termed the symmetry hypothesis in the table).

Another way to see if there exists a male bias is to look for the impact of gender on the probability of winning. Table 2 presents logit estimates of the determinants of a win (win equals one and loose equals zero) using the same regressors as for the specifications presented in Table 2. In both specifications (5) and (7) the joint hypothesis that the effect of the type of opponent (new, 1997 loser, or was moved district) is equal to zero cannot be rejected (p-value > 0.1). For both new candidates and incumbents, all other regressors have the expected sign and are statistically significant. Namely the more popular a candidate's party is in 1997, the more likely (s)he is to win in 2002. For a male, to have an opponent of opposite gender increases the probability of winning and for a woman, it decreases it. The older the candidate, with respect to (her)his opponent, the more likely (s)he is to win, but this effect is decreasing as the age difference increases. Finally, all else being equal, the right was more likely to win in 2002.

One potential criticism is that experience in politics is historically correlated with

[19] One effect of the male bias could be to affect party allegience as a function of the gender of the candidates which would suggest to interact own party score in 1997 with gender. In all the regressions reported in the paper, doing so didn't affect overall results and the effect of own party score in 1997 interacted with gender never was statistically significant.

Candidates:	New		Incumbent	
	(1)	(2)	(3)	(4)
Own Party Score in 1997	0.545***	0.610***	0.504***	0.512***
	(0.054)	(0.049)	(0.043)	(0.043)
Male Advantage	0.014***	0.017***	0.013***	0.014***
	(0.005)	(0.005)	(0.004)	(0.004)
Age Difference /100	0.421**	0.464**	0.064	0.107
	(0.179)	(0.181)	(0.164)	(0.162)
Difference of Square of Age /100	-0.005**	-0.005***	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Party Right of Center	0.081***	0.079***	0.084***	0.083***
	(0.006)	(0.006)	(0.006)	(0.006)
Opponent is a New Candidate	0.015			
	(0.010)			
Opponent is a 1997 Loser	0.034***		-0.008	
	(0.012)		(0.005)	
Opponent was Moved	0.002		-0.027	
	(0.013)		(0.029)	
Constant	0.172***	0.150***	0.235***	0.227***
	(0.025)	(0.024)	(0.024)	(0.024)
Observations	248	248	290	290

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1: The Effect of Male Bias on Scores

Candidate:	New		Incumbent	
	(5)	(6)	(7)	(8)
Own Party Score in 1997	15.955***	18.265***	24.373***	24.486***
	(3.641)	(3.448)	(4.112)	(4.069)
Male Advantage	1.007***	0.992***	0.810**	0.893***
	(0.336)	(0.306)	(0.323)	(0.316)
Age Difference /100	25.635*	24.902*	27.072*	30.707**
	(14.087)	(13.737)	(15.083)	(14.951)
Difference of Square of Age /100	-0.265*	-0.258*	-0.285**	-0.317**
	(0.138)	(0.135)	(0.145)	(0.144)
Party Right of Center	3.779***	3.493***	5.389***	5.287***
	(0.698)	(0.581)	(0.892)	(0.885)
Opponent is a New Candidate	-0.145			
	(0.688)			
Opponent is a 1997 Loser	1.516*		-0.600	
	(0.879)		(0.373)	
Opponent was Moved	-0.747		-0.245	
	(0.882)		(1.486)	
Constant	-10.905***	-11.636***	-13.074***	-13.359***
	(1.922)	(1.845)	(2.240)	(2.218)
Observations	248	248	290	290

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 2: The Effect of Male Bias on Winning (Logit)

being male. At the same age, males are likely to have more experience in politics than female candidates do. To address this we interact the difference in age and the difference in the square of age with the male advantage variable. Those estimates for specifications similar to those reported in Table 1 can be found in the Appendix (Table 4). For none of the specifications (1c-4c) are either the age difference interacted with the male advantage or the square of the difference interacted with the male advantage statistically significant, nor are they jointly statistically significant (p-value > 0.1). This is not simply a result of the particular structure of the male advantage variable: if instead we interact the age difference and its square with one indicator variable for male candidate with female opponents, and separately interact it with an indicator for female candidate with male opponents, the results are the same: none of the interactions are individually nor jointly statistically significant.

To summarize, men have a statistically higher score when they face a female candidate. A man facing a woman gets about a one and a half percentage points boost in his score compared to a case where he faces a man. Although this advantage may seem small in magnitude, it has huge implications for the candidates probability of winning. Using specification (6) we compute the probability of winning for a new male candidate who runs against a female to be 22 percentage points higher than against a male (this is computed setting all other regressors at their sample mean values). Similar computations using specification (8) reveal that the equivalent gain for incumbent males is 10 percentage points.

The regression result indicates that new men candidates generally garnered about 1.5 percentage point higher score than new women candidates in 2002 election. We have now to argue that this coefficient illustrates the existence of some voters' bias rather than a party bias. Indeed, a party bias would take the form of a correlation between gender and the expected score of candidates: men would be sent to districts where the last score is higher. However the regressions indicate that even controlling for observables (the 1997 scores, age differences, and party position), there exists a male bias on the voters part. Nonetheless, we will further show that women were not victim of a party bias. In Figure 1, we divide the range of 1997 scores into intervals of 2.5% and present the ratio of new men candidates in districts falling in each interval. It turns out that women are sent to districts where the average 1997 score is equal to 44.72% while men average is 45.57%. Both

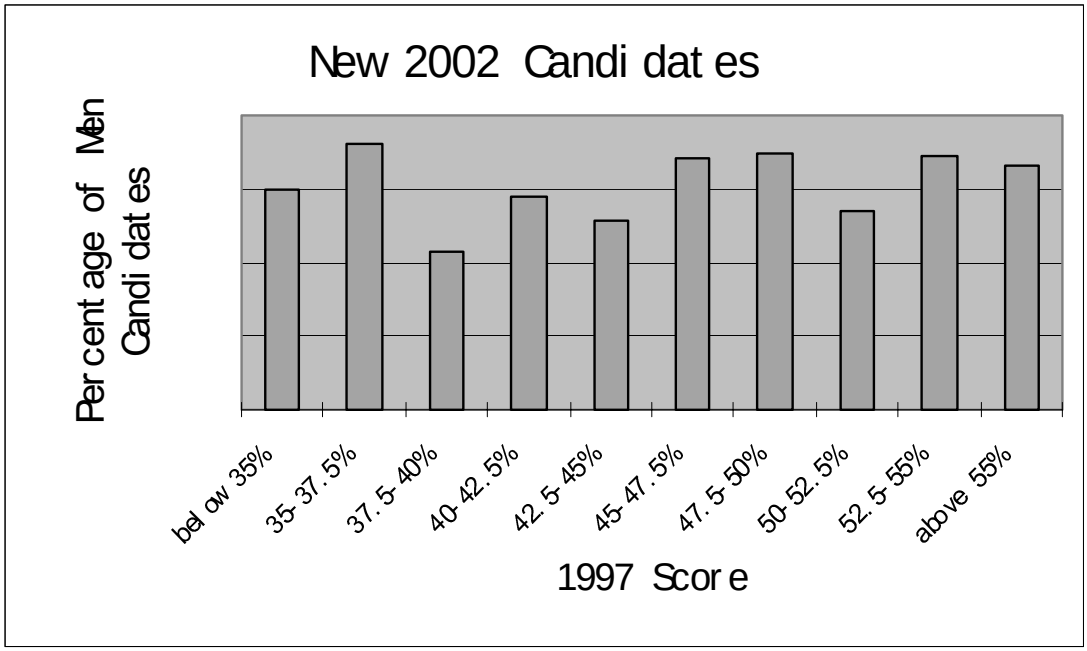

Figure 1: Figure 1: Ratio of Men Candidates

a t-test (p-value = 0.30) and a Wilcoxon/Mann-Whitney test (p-value = 0.16) cannot reject that the two are equal. This is a clear indication that the male bias we identified captures a voters' bias, not a party bias. This is confirmed by estimating a logit where the dependent variable is gender of new candidates and the regressors are the score in 1997, the age and age squared of the candidates.[20] Again, we find no evidence of a party bias in the assignment of districts to new candidates with the coefficient estimate on the 1997 score being statistically insignificant at the 10% level (as well as age and age squared).

3 Proportional representation

Let us now describe the rules of the senatorial elections. The senator office term is nine years, and a third of the Senate is recomposed every three years. The country is divided in districts, and, depending on the population of the district, a number

[20]These estimates are available from the authors upon request.

of senators, ranging from 1 to 11, are elected in each district. If only one or two seats have to be allocated, then a list majority system is in order and parity does not apply. If three or more senators are to be elected, then the system is one round closed list proportional. In this case, parity means that in a party list there cannot be two consecutive candidates of the same gender.

An essential feature of those elections, is that the set of voters is composed of grands electeurs only, and about 95% of them are municipality deputies. They had no say in the passing of the parity law, but they tried to influence it through their senators.

Municipal elections are two round list elections. A list can run in the second round if it obtains 10% or more in the first round. The seat allocation rule is proportional with a 50% seat bonus to the winner. For instance, if a party wins the second round elections with 40% of the votes and 60 seats are to be allocated, then it will get 30+(0.40*30)=42 seats and the remaining 18 seats are allocated among the other parties proportionally to their second round score. Parity at the municipal level means that the gender composition of each list has to satisfy this property: out of each set of subsequent six candidates, three have to be women. The only freedom which is left to the parties is the position of the women within each set of six candidates.

Given the electoral rule and the amounts of seats allocated in each district (varying between 29 and 67), parity cannot but have a huge effect on the gender composition of the municipal assemblies, and a lot of incumbents must loose their seat. A fraction of them must even be thrown away of the list. Senators obtained the amendment that parity would not apply in municipalities with less than 3500 inhabitants, whereas Assembly deputies first proposed it to apply to all municipalities with more than 2000 inhabitants. Senators also proposed to remove the three women out of six candidate rule, but it was maintained. The percentage of women elected in the more than 3500 inhabitants municipalities went up from 25,7% to 47.5% (thereby making the fraction of women elected in municipal councils rise from 21,7% to 33%).

But protecting their electorate was not the only concern of the senators: they also had to protect their own seats: out of the 74 incumbent senators looking for reelection under the PR system in 2001, for instance, 5 only were women. Before the law was passed, senators tried to obtain the amendment that no alternating

gender rule apply for the senatorial elections, but failed. Nevertheless, only 20 seats (28%) went to female candidates.

What did senators resort to, in order to circumvent the law, is illustrated by the Meurthe-et-Moselle district, where 4 seats had to be allocated. The two right-wing incumbents had been elected on the same list nine years before. They, then, split the list, created two new parties, ran on the top of their respective list (followed, as required by the law, by a woman) and got elected. Let us call that strategy *party proliferation*. Out of the 16 districts where proportional elections were held, party proliferation (in the sense of incumbents previously elected on the same list and running on different ones) took place in 13 of them.

Party proliferation explains the low effectiveness of parity in senatorial elections. However, since party proliferation cannot continue at the same rate, it was only a short-run strategy, and eventually parity will make gender representation more equal in the Senate, and this explains, together with the opposition of the grand-electeurs, the less than enthusiastic reaction of the senators to the introduction of parity law. In this section, we study strategic party proliferation under PR as it results from parity. First, we analyze the conditions under which party proliferation is most likely to happen. Then we study its effect on the party composition of the assembly.

3.1 Party proliferation

The cost of creating a party is particularly low for the senators. Given the grands electeurs system and the size of the districts, the actual number of votes needed to obtain a seat varies between 260 and 892. Moreover, those are councillors themselves and senators have regular opportunities to meet them. A key condition for party proliferation is therefore this special type of incumbency advantage, as it forms the main indicator of one candidate's ability to obtain votes for the list he would create and lead.

Let us consider a party likely to obtain a score of s and an associated number of k seats and having k male incumbents, k even. It seems reasonable to assume that the incumbent's advantage is decreasing among candidates from the leader of the list to the kth elected: popularity decreases with rank. Given parity, only $\frac{k}{2}$ incumbents can be given positions among the first k positions, those leading to a

seat with some likelihood. Therefore, the $\left(\frac{k}{2}+1\right)$th incumbent is pivotal in the proliferation process. His only chance of being elected is in creating his own list and diverting at least $\frac{s}{k+1}$ voters from the main party. This score is necessary, as the score of the main party, down to $\frac{ks}{k+1}$ is otherwise still superior to k times that of the dissident list. This may not be sufficient, however, since other parties may have a larger d'Hondt score for the last seat and obtain the formerly kth seat of that party. To illustrate this fact, let us consider a district where three parties compete for 8 seats and the distribution of scores is (45,27.5,27.5), so that the allocation of seats is (4,2,2). After parity, incumbent 3 of the first party is ejected from the first four positions on the list. By running on his own and obtaining 10 percent of the votes, which corresponds to scores (35,10,27.5,27.5), he would keep his seat. If we compare that result with the situation where there is only one opponent party and the scores are (45,55) before parity and (35,10,55) after proliferation by incumbent 3, we now have a distribution of seats going from (4,4) to (3,0,5). The lower bound in the second situation is now 11 and the scores (33.9,11.1,55) then lead to (3,1,4).

Let us also note that any two incumbents ejected from the main party list have no incentive to create a joint list, as, given parity, their joint list would have to win three seats for them both to be elected.

Now, let us assume that the $\left(\frac{k}{2}+1\right)$th incumbent is sure to keep his seat if he creates his own list. Then the probability that the $\frac{k}{2}$th incumbent be elected on the main list decreases, as the new score of the main party may no longer be sufficient to obtain $k-2$ seats. Moreover, if the $\left(\frac{k}{2}+1\right)$th incumbent is able to be elected by running on his own, then so is the $\frac{k}{2}$th incumbent, given the assumption that individual popularity decreases with the rank. The prudent strategy by candidate $\frac{k}{2}$ is therefore to create his own list too, which, in turn, decreases the probability of the $\left(\frac{k}{2}-1\right)$th incumbent to be elected.

¿From those simple arguments, we can infer that proliferation is the more likely the more popular is the $\left(\frac{k}{2}+1\right)$th incumbent. And, given that popularity decreases with the rank, or more precisely, that the party will offer top positions to more popular candidates, proliferation is more likely when (1) the incumbency advantage is more equal among candidates and (2) the number of incumbents on the list, and/or the number of seats expected by a list, is lower.

The example and the reasoning above all assume that the scores are perfectly

expected. Proliferation is also more likely when the uncertainty of being elected by running on one's own is lower. When the number of seats to be allocated in a district and the number of relevant parties are larger, then the competition for the last seats to allocate is larger, which increases the uncertainty.

This explains why, given that districts are on average relatively small, parity had low effect in the senatorial elections.

3.2 Assembly composition effect

Parity may also affect the assembly composition under proportional representation. There are two different effects. One is the large party effect, playing in a similar way as under SMD: if a party has more incumbents than half the total number of seats, then it has to loose the votes associated with the incumbency advantage of the incumbents it ejects from the list. Clearly, this may affect the score of the party, and, therefore, the number of seats it gets.

The second effect is directly associated to party proliferation. In the example above, proliferation by incumbent 3 led to a change in the assembly composition from (4,4) to (3,0,5) which means a shift of one seat from left to right. The example may look extreme, as the proliferation was a failure. Even if we can observe proliferation yielding to a mere waste of votes for a party, other examples may be given of successful proliferation affecting the assembly composition. Let us consider a district where two parties compete for 6 seats. The expected scores are (43,57), which would lead to a (3,3) allocation of seats. Assume that, indeed, there are three incumbents out of each platform. Again, we may think that incumbent 3 of the left party can profitably create his own list, thereby preventing incumbent 2 from keeping his own seat. The equilibrium list composition is therefore one where the left party has split into two lists, led by incumbents 1 and 2 respectively. Let us assume that the resulting distribution of votes is (24,19,57), the resulting seat allocation is (1,1,4): proliferation by left incumbent 2 is successful, but increases the number of seats obtained by the right party.

The composition effect arising from the conflicting interests of an incumbent seeking to keep his seat and a party seeking to maximize the number of seats obtained by candidates sharing its platform is likely to affect both large and small parties. It

is well known that under the d'Hondt system a party can never gain by splitting, as the d'Hondt coefficients cannot rise as a result of a splitting. As a consequence, the platform which looses is always the one where proliferation takes place. As it is clear from the example, proliferation is more likely to result in a loss of seats when the d'Hondt coefficient of the party as a whole is the lowest among all parties. After a small shift in the votes to (42, 58), the seat allocation would be (2,4): the left party's third seat was obtained through a tiny advantage over the right party, and proliferation has destroyed this advantage.

3.3 Remarks on electoral design

The main criterion used to evaluate the election reform in France is the effectiveness of the law: did it help increase the percentage of women elected? But our analysis forces observers to check for another criterion as well: is an increase in the number of women elected desirable? Let us briefly comment on how electoral systems could be reformed so as to meet either criterion.

Which electoral system would be more effective than the current ones? Of course, the municipal system is very effective but has the major drawback of allowing even small parties to obtain the majority of the seats (in the theoretically extreme case, a party with a little bit more than 10% of the votes in the first round can end up obtaining 100% of the seats).

Given our analysis of the proportional system, it is immediate to see how to design it to make it more effective. The key feature is to make successful proliferation less likely. The easiest way to do it is by enlarging the districts and, correspondingly, the number of seats to allocate in the districts. First, that reduces the expected incumbent's advantage of the pivotal incumbent. Second, as the number of competing parties is larger in larger districts, the competition for the last seats to allocate is larger, thereby increasing the sensitivity of the total number of seats obtained by a platform to the way the total number of votes is divided between the lists obtained by proliferation from one party.

A second change in the proportional system which would enhance effectiveness of the parity law is the introduction of legal thresholds. First, such thresholds would make successful proliferation more difficult, as the minimal percentage to obtain one

seat is increased. Second, even if lists proliferate as a consequence of self-interested behavior by incumbents, if the threshold is put sufficiently high so that once a party obtains seats, the number of seats is at least equal to 2, then the number of women elected cannot but rise.

On the other hand, there is no clear way of adapting the SMD system to increase effectiveness. But this leads us to our second criterion. Our analysis tends to show that parity has not been effective because voters have a male bias. From that point of view, we can say that parity in the SMD system has not prevented voters from expressing their gender bias. The almost constant number of women elected at the National Assembly illustrates that SMD makes parity effective only when the voters desire it, quite a nice feature of that system.

4 Comparative remarks on gender bias and gender quotas

Gender quotas in elections exist in many other countries, in various forms, but France was the first country where (1) quotas were imposed on parties at the list composition stage, rather than directly to the distribution of seats, and where (2) different elective bodies are elected with different electoral formulas. Legal quotas on candidates (without fees) were introduced afterwards in Belgium in 2003. Legal quotas on seats exist, for instance, in India (see Duflo and Chattopadhyay (2002)) and quotas on candidates based on voluntary commitments by parties exist, for instance, in Norway and Sweden (see ...). In future research we plan to analyze in detail the comparative history and genesis of gender quotas across countries. In this section we just note that our empirical results on male bias are in contrast with the results on American voters.

First of all, the parity law can have bite only in countries where parties are very powerful in determining the set of candidates. Countries with a closed list electoral system and strong parties are more likely than countries like the U.S. to consider such laws. Beside this institutional observation, the precondition for the politicians' incentive to pass a parity law is missing, according to our analysis above, when male bias does not exist. In chapter 3 of Darcy, Welch and Clark (1994)

survey work, page 65 and after, they found that new men candidates did as well as new women candidates for State legislatures (table 3.3). So the fact that the total percentage of women in state legislatures is still 20 percent is mostly due to the power of incumbents and to lack of supply. Voters' hostility to women is considered disappeared by the 70's. They also point out (table 3.4) that no voters' hostility exists in primaries. Evidence against slating and of no significant differences in fund raising should be also considered evidence against the male conspiracy theory (Duverger), which is the basis for the party bias hypothesis. In table 3.5 they show evidence that men are put in more uphill battles, and they consider it evidence of no-slating. In table 3.6 they show that there is a pattern of more women of party x running in states dominated by party y, but within the states the women are placed in good districts, hence again no evidence of slating. Finally in 3.7 they show that if anything women seem to be better at fund-raising.

In summary, they conclude, in our terms, that in the US states there seems to be no evidence of voters' hostility against women, nor any evidence in favor of the male conspiracy theory. So no "demand side" explanation for low number of women in politics. Implicitly this implies that they believe in a supply side story for the US.

In the subsequent chapter 4 they conclude that even at the congressional level no evidence can be convincingly put forward about voters' hostility or male conspiracy,[21] confirming that in the US the problem is on the supply side. Their conclusion was basically that "in the US if more women run more women will be elected".

This sharp contrast between our study on the French case and the earlier studies on the U.S. suggests an intriguing hypothesis to be tested in future research: Countries where no voters' gender bias exists have fewer women than men because of a "demand" bias, and are more likely to endogenously generate affirmative action laws; on the other hand, countries like the U.S. where no voters' demand bias exists, and where therefore the main problem seems to be a "supply" one, are unlikely to have the necessary conditions for the approval of a parity law.

[21] See in particular Darcy and Schramm (1977).

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5 Appendix

Candidate:	New		Incumbent	
	(1b)	(2b)	(3b)	(4b)
Own Party Score in 1997	0.533***	0.603***	0.497***	0.503***
	(0.054)	(0.049)	(0.044)	(0.044)
Male candidate with Female Opponent	0.027***	0.028***	0.011**	0.012**
	(0.010)	(0.009)	(0.006)	(0.006)
Female candidate with Male Opponent	-0.007	-0.010	-0.017**	-0.018**
	(0.007)	(0.007)	(0.008)	(0.008)
Female candidate with Female Opponent	-0.011	-0.008	0.012	0.014
	(0.011)	(0.011)	(0.012)	(0.012)
Age Difference /100	0.453**	0.495***	0.096	0.137
	(0.176)	(0.178)	(0.165)	(0.163)
Difference of Square of Age /100	-0.005***	-0.005***	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Party Right of Center	0.078***	0.077***	0.083***	0.082***
	(0.007)	(0.006)	(0.006)	(0.006)
Opponent is a New Candidate	0.010			
	(0.011)			
Opponent is a 1997 Loser	0.037***		-0.007	
	(0.012)		(0.005)	
Opponent was Moved	0.000		-0.027	
	(0.013)		(0.029)	
Constant	0.179***	0.153***	0.238***	0.232***
	(0.026)	(0.024)	(0.024)	(0.024)
Observations	248	248	290	290

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 3: The Effect of Male Bias on Scores

Candidate:	New		Incumbent	
	(1c)	(2c)	(3c)	(4c)
Own Party Score in 1997	0.543***	0.609***	0.504***	0.513***
	(0.054)	(0.049)	(0.043)	(0.043)
Male Advantage	0.015***	0.018***	0.012**	0.012***
	(0.006)	(0.005)	(0.005)	(0.005)
Age Difference /100	0.433**	0.481**	0.129	0.162
	(0.198)	(0.200)	(0.188)	(0.187)
Difference of Square of Age /100	-0.005**	-0.005**	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Age Difference x Male Advantage /100	0.049	0.074	-0.166	-0.137
	(0.295)	(0.297)	(0.270)	(0.270)
Difference of Square of Age x Male Advantage /100	0.000	-0.001	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Party Right of Center	0.081***	0.079***	0.083***	0.082***
	(0.007)	(0.006)	(0.006)	(0.006)
Opponent is a New Candidate	0.014			
	(0.010)			
Opponent is a 1997 Loser	0.034***		-0.008	
	(0.012)		(0.005)	
Opponent was Moved From Another District	0.001		-0.029	
	(0.013)		(0.029)	
Constant	0.173***	0.150***	0.235***	0.227***
	(0.025)	(0.024)	(0.024)	(0.024)
Observations	248	248	290	290

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: The Effect of Male Bias on Scores