Appendix A

This appendix (a) provides a formal justification for the claim that if $\lambda_1 - \lambda_0 > 0$ and the magnitude of this difference is large enough, *P* will maximize her expected utility by running in a midterm; and (b) shows that introducing a discount term does not change the gist of the results.

To simplify the exposition, let $\phi_0 = [\lambda_0 \pi_E(\theta_{q+1}, S_2) + (1 - \lambda_0) \pi_E(\theta_q, S_2)]$ be the probability that *P* wins the executive election conditional on being elected for the legislature at *t=0*, and $\phi_1 = [\lambda_1 \pi_E(\theta_{q+1}, S_1) + (1 - \lambda_1) \pi_E(\theta_q, S_1)]$ be defined in the same way conditional on running for the legislature at *t=1*. With no discount term, *P* prefers to run in a midterm if

$$E[U_P \mid concurrent] < E[U_P \mid midterm]$$

$$\pi_L(\theta_q)[R_L + \phi_0 R_E] < \pi_L(\theta_q)[½R_L + \phi_1 (R_E - ½R_L)]$$

$$0 < (\phi_1 - \phi_0) R_E - ½ R_L (1 + \phi_1).$$

Thus, running a midterm will only be *P*'s preferred choice if $\phi_1 - \phi_0$ is large enough, which in turn requires $\lambda_1 - \lambda_0$ to be sufficiently large.

Now let introduce a discount term $\delta \in (0, 1)$ such that *P* discounts her future utility by a factor of δ^t: that is, she discounts the payoffs received at *t=0*, *t=1*, *t=2* and *t=3* by $\delta^0 = 1$, δ^1, δ^2 and δ^3, respectively. Therefore, *P*'s discounted payoffs from winning office in a concurrent or midterm election will be

	(concurrent)	(midterm)
t=0	$½R_L$	0
t=1	$\delta ½R_L$	$\delta ½R_L$
t=2	$\delta^2 ½R_E$	$\delta^2 ½ (R_E - R_L)$
t=3	$\delta^3 ½R_E$	$\delta^3 ½R_E$

Then, *P* will prefer to run in a midterm election if

$$E\,[U_P \mid concurrent] < E\,[U_P \mid midterm]$$

$$\tfrac{1}{2}\,\pi_L(\theta_q)\,[R_L + \delta R_L + \phi_0\,\delta^2 R_E + \phi_0\,\delta^3 R_E] < \tfrac{1}{2}\,\pi_L(\theta_q)\,[\delta R_L + \phi_1\,\delta^2 (R_E - R_L) + \phi_1\,\delta^3 R_E]$$

$$0 < (\phi_1 - \phi_0)\,R_E\,(1 + \delta)\,\delta^2 - (1 + \phi_1\,\delta^2)\,R_L.$$

Although the math is considerably more complicated, the basic insight from the previous result remains: for *P* to prefer to run in a midterm election, $\phi_1 - \phi_0$ must be positive and sufficiently large in magnitude to offset the other advantages of running in a concurrent election. Certainly, an extremely low value of δ (*e.g.*, $\delta=0$) will make *P* prefer to run in a concurrent election, but the point is that introducing a discount factor does not change the basic insight of the model. The reason is pretty simple: since *P* can only run for an executive office at $t=2$, a discount factor makes holding a *legislative* position at $t=0$ more valuable, but it cannot affect the value of winning an *executive* position at $t=2$. To the extent that an executive office is sufficiently valuable, introducing a discount term does not change the model's main insight.