SUPPLEMENTARY TECHNICAL APPENDIX

Valuing Diversity in Political Organizations:

Gender and Token Minorities in the U.S. House of Representatives

The Calculus of Inter-Group Valuation Decisions

Consider an organization that comprises two groups, which we will call Group A and Group B. These groups differ on some obvious and (for our purposes) dichotomous category, such as race (white or non-white) or, in the case most relevant to the current study, gender (male or female). It is commonplace for such political organizations to be characterized by a long-standing majority (or "in-group") -- henceforth referred to as Group A -- and a long-standing minority (or "out-group") – henceforth referred to as Group B. We explore the effects of variations in the respective sizes of the "in-group" (Group A) and "out-group" (Group B).[1] How does a change in "out-group" size affect how members of the group (both "in-group" and "out-group" members) value these "out-group" members vis-à-vis their "in-group" colleagues? We thus explore what happens as the relative size of the "out-group" continues to expand to the point of becoming the majority group. To that end, we analytically consider how members value colleagues of their own group, as well as colleagues of the other group. With no loss of generality, we begin with Group A's valuation of members of Group B.

We model the utility members of Group A derive from Group B members of size *w* using the following utility function:

$$U_{A \to B} = \pi_0 + \pi_1 w - \pi_2 w^2 + \pi_3 w^3, \qquad \text{(A-1)}$$

[1] We use the terms "in-group" and "out-group" for generality so that we do not limit our study only to those situations in which the "out-group" remains in the minority.

where U_A is the utility a Group A member derives from a given Group B member, w is the proportion of Group B members within the organization, and the π_i's are unknown parameter values. Given that we are attempting to model majority-minority group relations, we assume that $2\pi_2 = 3\pi_3$ is true, which ensures a symmetric relationship about $w = 0.5$.[2] At $w = 0.5$, both groups are exactly the same size; there is no majority or minority group. Failure to include this assumption would imply that there is something inherent about how groups value one another that would remain even as group size changes (for example, that Group A inherently values Group B more than Group B values A), an assumption that goes far beyond the current model.

The functional form above, complete with the signs on the coefficients, creates the cubic utility function (see **Figure A**), with a unique maximum occurring at low values of w and the unique minimum occurring at high values of w. The top half of **Figure A**, then, is the graph of (1) with coefficients selected so that a maximum occurs at $w=0.15$ and a minimum occurs at $w=0.85$, as implied by Kanter (1977).[3] Group A members accrue positive and increasing utility as Group B becomes a larger proportion of the organization. At this point, Group B is a 'token' out-group, novel enough to gain the attention of the in-group (Group A) but not yet a sizable threat to the latter group's majority status. Yet as Group B continues to increase in size, this out-group then becomes a legitimate threat to in-group (Group A). As this occurs, the utility Group A members derive from Group B members declines, ultimately reaching a point at which utility becomes negative. At this point, Group A members obtain negative utility from Group B members, and

[2] Due to symmetry, these analytical results also pertain to *between-group* marginal utility calculations for Group B members with respect to Group A.

[3] Note that the simulated parameters of interest are $\pi_0 = 0$, $\pi_1 = 1$, $\pi_2 = 3.92$, and $\pi_3 = 2.61$, but that the actual inflection point values do not affect our theoretical predictions.

would thus prefer to have fewer of the latter within the organization. Should the proportion of the "new" larger group (Group B) continue to increase, Group A eventually becomes a token minority group. At this point, Group A members derive benefits from the Group B, and thus now receive increasing utility as Group B increases in size. Note that although Group A members' utility rises, it does not, at least for the values implied by Kanter (1977), become positive.

What does this relationship imply for how Group A (in-group) members value Group B (out-group) members? To consider this question, we turn to the marginal utility (MU) derived from each additional member of the out-group (Group B). Taking the first derivative of (A-1) yields:

$$MU_{A \to B} = \pi_1 - 2\pi_2 w + 3\pi_3 w^2, \tag{A-2}$$

where both the parameters and variables are defined as above in (A-1).

We can use (A-2) to derive critical values of w*, the points at which valuation of group members begin to change. To do so, we set MU_A equal to 0 and use the quadratic equation to solve for the w^*'s. Obviously, the values of w^*'s are based on the values of the π_i parameters. The equations for the w*'s are solved accordingly:

$$w^{*-} = \frac{\pi_2 - \sqrt{\pi_2^2 - 3\pi_1\pi_3}}{3\pi_3} \quad , \quad w^{*+} = \frac{\pi_2 + \sqrt{\pi_2^2 - 3\pi_1\pi_3}}{3\pi_3} \tag{A-3}$$

These inflection points represent the minimum and maximum values in the top half of **Figure A** as well as the points at which the graph passes through MU=0 in the bottom half of **Figure A**, the points at which marginal utility for a member of Group A associated with having a colleague that is a member of Group B moves from positive to negative, then back again. This implies the graph depicted in the bottom half of **Figure A**. At low values for w, marginal utility is positive, but declining. At the inflection point of **Figure A**, w^{*-}, marginal utility becomes negative. In other words, for values of w below w^{*-}, in-group members face positive marginal utility from each additional member of the out-group. That is, in-group members prefer out-group members to members of their own group. This changes, though, at w^{*-}. At values higher than w^{*-}, utility associated with each additional member of the out-group is negative. At this point, in-group members prefer members of their own group to out-group members. Marginal utility reaches its lowest value at w^{**} (which necessarily occurs at 0.5 when the utility functions are symmetric). At this point, then, marginal utility rises with each additional member of the other group (the former minority group), but utility remains negative and members of the former majority group continue to prefer members of their own group. This changes, though, at w^{*+}, at which point marginal utility for each additional member of the other group means positive utility for a member of the former majority group. Here, then, members of that group (Group B) again prefer members of the other group (Group A) to their own group (Group B).

The Calculus of Intra-Group Valuation Decisions

Just as we previously considered how Group A (in-group) members value Group B members within an organization, we now examine how Group B (out-group) members value other Group B members. The valuations of Group B members are simply the mirror image of the Group A valuations. We model this relationship using the following utility function:

$$U_{B \to B} = \varphi_0 - \varphi_1 m + \varphi_2 m^2 - \varphi_3 m^3, \qquad \text{(A-4)}$$

U_B is the utility a Group B member obtains from a given fellow Group B member, w is again the proportion of Group B members within the organization, and the ϕ_i's are unknown parameter values.[4] We can see, then, that (A-4) is identical to (A-1), save for differences in the signs on the coefficients. It is this difference in the signs that makes **Figure B** the mirror image of **Figure A**. Here, utility begins negative and declining, then reaches its minimum, then rises to positive values and continues to increase until the final critical value when it again declines but does not approach negative values.

Again, we are interested in the marginal utility of each additional Group B member to other Group B members. To that end, we consider the first derivative of (A-4):

$$MU_{B \to B} = -\varphi_1 + 2\varphi_2 m - 3\varphi_3 m^2, \qquad \text{(A-5)}$$

where both parameters and variables are defined as above in (A-4).

As before, we can use the Group B's marginal utility function to derive values for m^*, the inflection points, the first of which indicates where member valuations of one's own group change from decreasing to increasing, the second, where member valuations change from increasing to decreasing. These inflection points for Group B members, derived by setting MU_B equal to 0, are solved accordingly:

$$m^{*-} = \frac{\varphi_2 - \sqrt{\varphi_2^2 - 3\varphi_1\varphi_3}}{3\varphi_3} \quad , \quad m^{*+} = \frac{\varphi_2 + \sqrt{\varphi_2^2 - 3\varphi_1\varphi_3}}{3\varphi_3} \qquad \text{(A-6)}$$

The bottom half of **Figure B,** then, represents the graph of (A-5), with critical values at the points expressed in (A-6). Here, marginal utility for a Group B member associated with each additional member of their own group is negative for very low values of *m*. In other words, for low values of *m*, Group B members prefer Group A members to members of their own group. This changes at m^{*-}, when Group B members begin to receive positive marginal utility for each

[4] Once again, due to symmetry, these analytical results also pertain to *within-group* marginal utility calculations for Group A members with respect to Group A.

additional member of their own group. This marginal utility continues to rise until $m = m^{**}$, when the marginal utility remains positive, but begins to decline. In other words, Group B members (whose group has now grown to majority status) continue to prefer members of their own group, but the difference in the level of valuation between the two groups is diminishing in *m*. After *m* becomes greater than m^{*+}, Group B members receive negative utility associated with each additional member of their own group, and thus prefer Group A members to Group B members.

Integrating Preference Divergence into the Logic of Tokenism

Although group members value *perspectives* different from their own, they do not value *preferences* different from their own, we model valuators as receiving disutility directly based on preference divergence (*PD*), where *PD* is defined simply as the squared distance between the "valuator" and the "valuatee" on some value scale --, i.e. a unidimensional ideological policy space. In other words, valuators simply prefer those who are more proximate to them than those who are less so. Therefore, ceteris paribus, for any particular value of *w* (or *m*), a valuator prefers a colleague exhibiting a smaller amount of preference divergence.

For *between-group* colleague valuation decisions, the effect of preference divergence is based, at least partly, on the size of *w*. For example, we directly model the effect of preference divergence on the marginal utility calculation for a Group A member using the following group size expression modified from (A-2):

$$MU_{A \to B \mid PD} = -PD + \left(1 - PD\right) \times (1 + \pi_1 - 2\pi_2 w + 3\pi_3 w^2) . \qquad \text{(A-7)}$$

Of course, (A-7) is simply the preference divergence (*PD*), plus the preference divergence times the marginal utility associated with each additional member of the out-group (Group B). This allows us to model the situation, whereby, Group A members receive diminishing marginal utility from Group B members as preference divergence increases. Furthermore, because *PD* does not vary with respect to *w*, we know that the inflection points derived in (A-3) apply to the marginal utility function in (A-7). We can see from **Figure 1** that as *PD* increases, a Group A member's marginal utility decreases, and does so at an increasing rate as the value for *w* diverges from w^*, which is the inflection point of the marginal utility function.

First, we show that Group A's marginal utility decreases as *PD* increases. In other words, when $PD_p < PD_q$, then the marginal utility derived from colleague *p* is greater than the marginal utility derived from colleague *q*. We can express this inequality as:

$$-PD_p + \left(1 - PD_p\right)\left(1 + \pi_1 - 2\pi_2 w + 3\pi_3 w^2\right) > -PD_q + \left(1 - PD_q\right)\left(1 + \pi_1 - 2\pi_2 w + 3\pi_3 w^2\right) \quad \text{(A-8)}$$

where the expression in (A-8) comes directly from (A-7). Multiplying the *PD* through, cancelling like terms and rearranging yields the following expression:

$$\left(-PD_p\right)\left(1 + \pi_1 - 2\pi_2 w + 3\pi_3 w^2\right) > \left(-PD_q\right)\left(1 + \pi_1 - 2\pi_2 w + 3\pi_3 w^2\right). \quad \text{(A-9)}$$

Cancelling like terms again and multiplying through by -1 yields the following inequality:

$$PD_p < PD_q, \quad \text{(A-10)}$$

which is true by assumption. Therefore, (A-10) directly implies (A-8), meaning that the marginal utility Group A members derive from Group B members decreases when preference divergence increases for all *w*.

Next, we show that when *w* is further from *w**, decreases in utility from preference divergence are greater. In other words, suppose that there are two values for *w*, $\left(w^* - L\right)$ and $\left(w^* - H\right)$, where $\left(w^* - L\right) > \left(w^* - H\right)$ and therefore, $\left(w^* - L\right)$ is closer to *w** than $\left(w^* - H\right)$ is. We now must show that marginal utility is greater at $\left(w^* - L\right)$ than at $\left(w^* - H\right)$ for all values of *PD*. Showing this is true implies by symmetry that the same is true for values greater than *w**.

Substituting $\left(w^{*}-L\right)$ and $\left(w^{*}-H\right)$ into (7), we can show that $\left(w^{*}-L\right)>\left(w^{*}-H\right)$ implies that the following is true:

$$\begin{aligned} &-PD+\left(1-PD\right)\left(1+\pi_1-2\pi_2\left(w^*-L\right)+3\pi_3\left(w^*-L\right)^2\right) > \\ &-PD+\left(1-PD\right)\left(1+\pi_1-2\pi_2\left(w^*-H\right)+3\pi_3\left(w^*-H\right)^2\right) \end{aligned} \qquad \text{(A-11)}$$

Both rearranging and cancelling terms yields:

$$\left(w^*-L\right)\left(-2\pi_2+3\pi_3\left(w^*-L\right)\right) > \left(w^*-H\right)\left(-2\pi_2+3\pi_3\left(w^*-H\right)\right), \qquad \text{(A-12)}$$

which is necessarily true if $\left(w^{*}-L\right)>\left(w^{*}-H\right)$ and $\left(-2\pi_2+3\pi_3\left(w^*-L\right)\right) > \left(-2\pi_2+3\pi_3\left(w^*-H\right)\right)$ are both true. The first expression is true by assumption and the second reduces to the first by cancelling like terms, so it is therefore also true by assumption.

A numerical illustration highlights the theoretical relationships among preference divergence, conditioned by gender group size, and colleague valuation decisions. Let us consider two values of *w*, where $w^H = 0.2$ and $w^L = 0.1$ and parameter values are those depicted in footnote 3. When Group B's size is 0.2, Group A members' valuation of a Group B member exhibiting zero preference divergence is 0 (*PD* = 0, or both members agree perfectly) is 0.75. When preference divergence between group members increases to 0.5, Group A's valuation decreases to -0.125. When *PD* = 1, Group A's valuation decreases to -1. But consider what happens when Group B's size is 0.1. When *PD* = 0, the Group A's valuation is 1.29, but when *PD* = 0.5, Group A's valuation falls to 0.145. Note that an increase in *PD* increases from 0 to 0.5 represents a decline in utility of 0.875 when Group B's size is 0.2, but the same increase in *PD* represents a decline in utility of 1.145 when Group B's size is 0.1 – the latter representing a larger precipitous decline in marginal utility for Group A members.

Like the cases above, the situation for the out-group (Group B) are simply the mirror image of the situation facing Group A members' colleague valuation decisions. Thus it follows, for instance, that the marginal utility attributable to preference divergence for a Group B member is represented by the following equation:

$$MU_{B \to B\,|PD} = -PD + \left(1 + PD\right) \times (1 - \phi_1 + 2\phi_2 m - 3\phi_3 m^2), \qquad \text{(A-13)}$$

where all terms are previously defined. Similarly, then, **Figure 2** (appearing in the manuscript) depicts (A-13) as a measure of colleague valuation among out-group members. We can show that this equation behaves exactly as (A-7). First, we show that marginal utility decreases as *PD* increases for all *m*. Second, we show that decreases in utility from *PD* are more dramatic when *m* is further from the inflection point, *m**. Again, we begin by showing that when $PD_p < PD_q$, then the marginal utility derived from colleague *p* is greater than the marginal utility derived from colleague *q*. We can express this inequality as:

$$-PD_i + \left(1 - PD_i\right)\left(1 - \phi_1 + 2\phi_2 m - 3\phi_3 m^2\right) > -PD_j + \left(1 - PD_j\right)\left(1 - \phi_1 + 2\phi_2 m - 3\phi_3 m^2\right), \text{(A-14)}$$

where (A-14) comes directly from (A-13). Multiplying through by *PD*, cancelling like terms and rearranging yields the following expression:

$$\left(-PD_p\right)\left(1 - \phi_1 + 2\phi_2 m - 3\phi_3 m^2\right) > \left(-PD_q\right)\left(1 - \phi_1 + 2\phi_2 m - 3\phi_3 m^2\right). \quad \text{(A-15)}$$

Cancelling like terms again and multiplying through by -1 yields the following inequality:

$$PD_p < PD_q, \qquad \text{(A-16)}$$

which is true by assumption. Therefore, (A-16) directly implies (A-14) is true, thus Group B members' marginal utility decreases when preference divergence increases for all *m*.

Next, we show that when *w* is further from *m**, decreases in utility from preference divergence are greater. In other words, suppose that there are two values for *w*,

$\left(m^{*}-L\right)$ and $\left(m^{*}-H\right)$, where $\left(m^{*}-L\right)>\left(m^{*}-H\right)$, and therefore, $\left(m^{*}-L\right)$ is closer to m* than $\left(m^{*}-H\right)$ is. We now must show that marginal utility is greater at $\left(m^{*}-L\right)$ than at $\left(m^{*}-H\right)$ for all values of *PD*. Showing this implies that the same is true for values greater than *w** by symmetry. Substituting $\left(m^{*}-L\right)$ and $\left(m^{*}-H\right)$ into (A-13), we can show that $\left(m^{*}-L\right)>\left(m^{*}-H\right)$ implies that the following is true:

$$\begin{gathered}-PD^{2}+\left(1-PD^{2}\right)\left(1-\phi_{1}+2\phi_{2}\left(m^{*}-L\right)-3\phi_{3}\left(m^{*}-L\right)^{2}\right)> \\ -PD^{2}+\left(1-PD^{2}\right)\left(1-\phi_{1}+2\phi_{2}\left(m^{*}-H\right)-3\phi_{3}\left(m^{*}-H\right)^{2}\right)\end{gathered} \quad \text{(A-17)}$$

Both rearranging and cancelling terms yields:

$$\left(m^{*}-L\right)\left(2\phi_{2}-3\phi_{3}\left(m^{*}-L\right)\right)>\left(m^{*}-H\right)\left(2\phi_{2}-3\phi_{3}\left(m^{*}-H\right)\right), \quad \text{(A-18)}$$

which is necessarily true when $\left(m^{*}-L\right)>\left(m^{*}-H\right)$ and $\left(2\phi_{2}-3\phi_{3}\left(m^{*}-L\right)\right)>\left(2\phi_{2}-3\phi_{3}\left(m^{*}-H\right)\right)$ are both true. The first expression is true by assumption and the second reduces to the first by cancelling like terms, so thus it is also true by assumption. Furthermore, these decreases in Group B members' utility nearly exactly mirror the decreases depicted for Group A members previously noted. Consider, for example, the more precipitous declines in utility when Group B's size is 0.2 versus when it is 0.1. At 0.2, Group B's utility when *PD* = 0 is 1.25, and 0.875 when *PD* = 0.5, for a decrease of 0.375, just as with Group A's valuation decisions. Similarly, when Group B's size is 0.1, this group's members utility when *PD* = 0 is 0.71, and 0.06 when *PD* = 0.5, for a decrease of 0.65.

Methodology: Double Hurdle Statistical Model of Colleague Valuation Decisions

We account for both left-censoring and sample selection problems that plague the statistical analysis of campaign contributions data through the use of a double hurdle model with independent errors between equations (Cragg 1971; Wooldridge 2002: 536-538). This particular maximum likelihood model consists of a binary *donation decision (DD)* estimated as a Probit equation, and a *donation amount (DA)* for those members making an affirmative donation decision estimated by a truncated normal regression equation. The double hurdle model is simply a generalized Tobit model that relaxes the restrictive assumption that artificially constrains coefficient equality between donation decision and donation amount (conditional on a positive donation being made) equations. Moreover, unlike the Heckman sample selection model, the double hurdle model does not make the restrictive *a priori* assumption that the discrete donation decision necessarily dominates the conditional positive donation amount decision (e.g., Jones 1989: 25-26).

The log-likelihood function for the double hurdle model with independent errors between equations can be characterized as comprised of two distinct stochastic processes:

$$LL = \sum_{0} \ln\left[1 - \Phi\left(\alpha Z'_{ij}\right)\left(\frac{\beta X'_{ij}}{\sigma}\right)\right] + \sum_{+} \ln\left[\Phi\left(\alpha Z'_{ij}\right)\left(\frac{1}{\sigma}\right)\phi\left(\frac{Y_{ij} - \beta X'_{ij}}{\sigma}\right)\right] \qquad , \qquad \text{(A-19)}$$

where the first additive expression, $\sum_{0} \ln[\bullet]$, represents the "*no contribution*" donation choice's stochastic component of the log-likelihood function; whereas, the second additive expression, $\sum_{+} \ln[\bullet]$, represents the "*positive contribution*" donation choice's stochastic component of the log-likelihood function, which accounts for both the probability of a positive contribution and also the amount of a positive contribution, conditional on a positive contribution being made. The double hurdle model is equivalent to the Tobit model when $\zeta_{\Pr obit} = \frac{\zeta_{Tobit}}{\sigma_{Tobit}}$ -- i.e., the coefficient vectors (adjusted for the standard deviation in Tobit model's residuals) are equal. A likelihood ratio (LR) test can be computed by differentiating between these two models (see Greene 2003: 770). This test statistic is computed as:

$$\Lambda = -2\left[\ln L_{Tobit} - \left(\ln L_{\Pr obit} + \ln L_{Truncated}\right)\right] \sim \chi_{\alpha}^{2}(k), \qquad \text{(A-20)}$$

where the null hypothesis of coefficient vector equality is rejected when $\Lambda > \chi_\alpha^2(\mathrm{k})$.

In terms of empirical testing of our unified theory of colleague valuation within political organizations, we estimate a pair of double hurdle models to test our theory's predictions concerning the joint consequences of preference divergence and gender group size for both *between-group* (*BG*) and *within-group* (*WG*) colleague valuation decisions:

$$\begin{aligned}\Pr\left(c_{D_{it}\to R_{jt}}^{BG} > 0\right) = {} & \alpha_0^{BG} + \alpha_1^{BG} PD_{ij_t}^{BG} + \alpha_2^{BG}\left\{2\left(1-PD_{ij_t}^{BG}\right) \times w_{D_{it}\to R_{jt}}^{BG}\right\} + \alpha_3^{BG} WD_{D_{it}}^{BG} \\ & + \alpha_4^{BG}\left(PD_{ij_t}^{BG} \times WD_{D_{it}}^{BG}\right) + \alpha_5^{BG}\left\{2\left(1-PD_{ij_t}^{BG}\right) \times w_{D_{it}\to R_{jt}}^{BG} \times WD_{D_{it}}^{BG}\right\} \qquad (A{-}21a) \\ & + \rho_k^{BG} X_{k_t} + \nu_{D_{it}\to R_{jt}}^{BG}\end{aligned}$$

$$\begin{aligned}\ln\left(c_{D_{it}\to R_{jt}}^{BG} + 1 \,\middle|\, \Pr\left(c_{D_{it}\to R_{jt}}^{BG} > 0\right)\right) = {} & \beta_0^{BG} + \beta_1^{BG} PD_{ij_t}^{BG} + \beta_2^{BG}\left\{2\left(1-PD_{ij_t}^{BG}\right) \times w_{D_{it}\to R_{jt}}^{BG}\right\} \\ & + \beta_3^{BG} WD_{D_{it}}^{BG} + \beta_4^{BG}\left(PD_{ij_t}^{BG} \times WD_{D_{it}}^{BG}\right) \qquad (A{-}21b) \\ & + \beta_5^{BG}\left\{2\left(1-PD_{ij_t}^{BG}\right) \times w_{D_{it}\to R_{jt}}^{BG} \times WD_{D_{it}}^{BG}\right\} + \lambda_k^{BG} X_{k_t} + \varepsilon_{D_{it}\to R_{jt}}^{BG}\end{aligned}$$

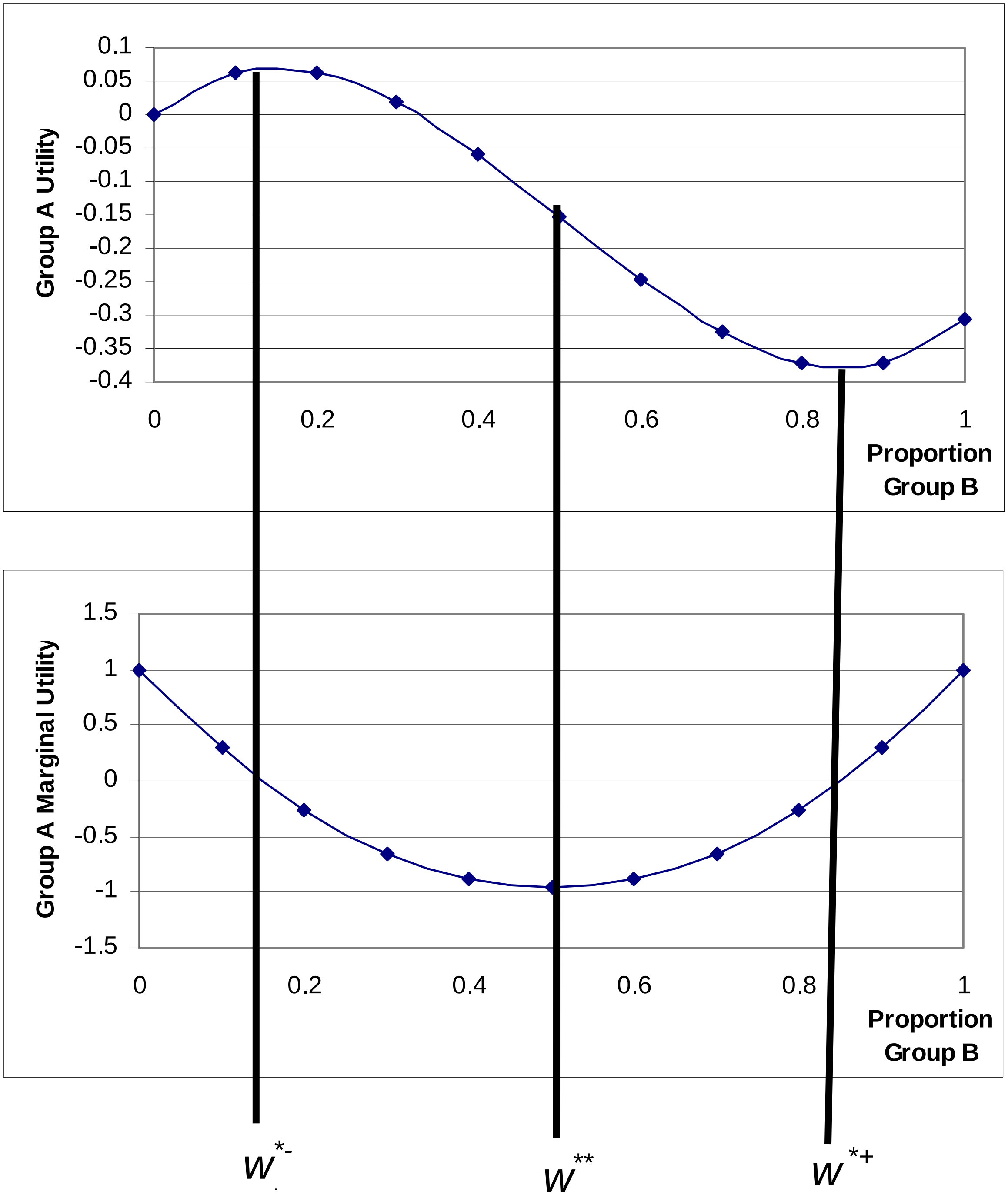
$$\Pr\left(c^{WG}_{D_{it}\to R_{jt}}>0\right) = \alpha^{WG}_{0}+ \alpha^{WG}_{1}PD^{WG}_{ij_t} + \alpha^{WG}_{2}\left\{2\left(1+PD^{WG}_{ij_t}\right)\times m^{WG}_{D_{it}\to R_{jt}}\right\} + \alpha^{WG}_{3}WD^{WG}_{D_{it}}$$
$$+\alpha^{WG}_{4}\left(PD^{WG}_{ij_t}\times WD^{WG}_{D_{it}}\right) + \alpha^{WG}_{5}\left\{2\left(1+PD^{WG}_{ij_t}\right)\times m^{WG}_{D_{it}\to R_{jt}}\times WD^{WG}_{D_{it}}\right\} \qquad (A-22a)$$
$$+\rho^{WG}_{k}X_{k_t} + \nu^{WG}_{D_{it}\to R_{jt}}$$

$$\ln\left(c^{WG}_{D_{it}\to R_{jt}}+1 \;\middle|\; \Pr\left(c^{BG}_{D_{it}\to R_{jt}}>0\right)\right) = \beta^{WG}_{0}+ \beta^{WG}_{1}PD^{WG}_{ij_t} + \beta^{WG}_{2}\left\{2\left(1+PD^{WG}_{ij_t}\right)\times m^{WG}_{D_{it}\to R_{jt}}\right\}$$
$$+\beta^{WG}_{3}WD^{WG}_{D_{it}} + \beta^{WG}_{4}\left(PD^{WG}_{ij_t}\times WD^{WG}_{D_{it}}\right) \qquad (A-22b)$$
$$+\beta^{WG}_{5}\left\{2\left(1+PD^{WG}_{ij_t}\right)\times m^{WG}_{D_{it}\to R_{jt}}\times WD^{WG}_{D_{it}}\right\}+\lambda^{WG}_{k}X_{k_t}+\varepsilon^{WG}_{D_{it}\to R_{jt}}$$

These model specifications are derived directly from our analytical model for the *between-group* and *within-group* cases, respectively [see equations (A-7) & (A-13)]. Equation (A-21a) models the probability of a positive donation decision being made between gender groups estimated via Probit; while equation (A-21b) models the expected value of the natural log of positive donations being made *between* gender groups estimated by truncated normal regression; and equations (A-22a) and (A-22b) represent analogous specifications for the *within-group* gender composition models. Colleague valuation decisions are represented as a complex combination of the percentage of recipient gender group members (denoted by *w* [(A-21a) & (A-21b)] and *m* in [(A-22a) & (A-22b)] and preference divergence between the donor and recipient such that it equals the squared normalized ideological distance between these members' 1st dimension DW-Nominate scores (Poole and Rosenthal 1997) – i.e., $PD_{ij_t}=\left(x_{D_{it}}-x_{R_{jt}}\right)^2$, the interaction between these theoretical causal variables, a binary dummy variable accounting for women-men donor differences (denoted by *WD*) predicted by our theory, where *WD* = 1 for women donors, *WD* = 0 for men donors) and its interaction with relative group size and preference divergence variables;

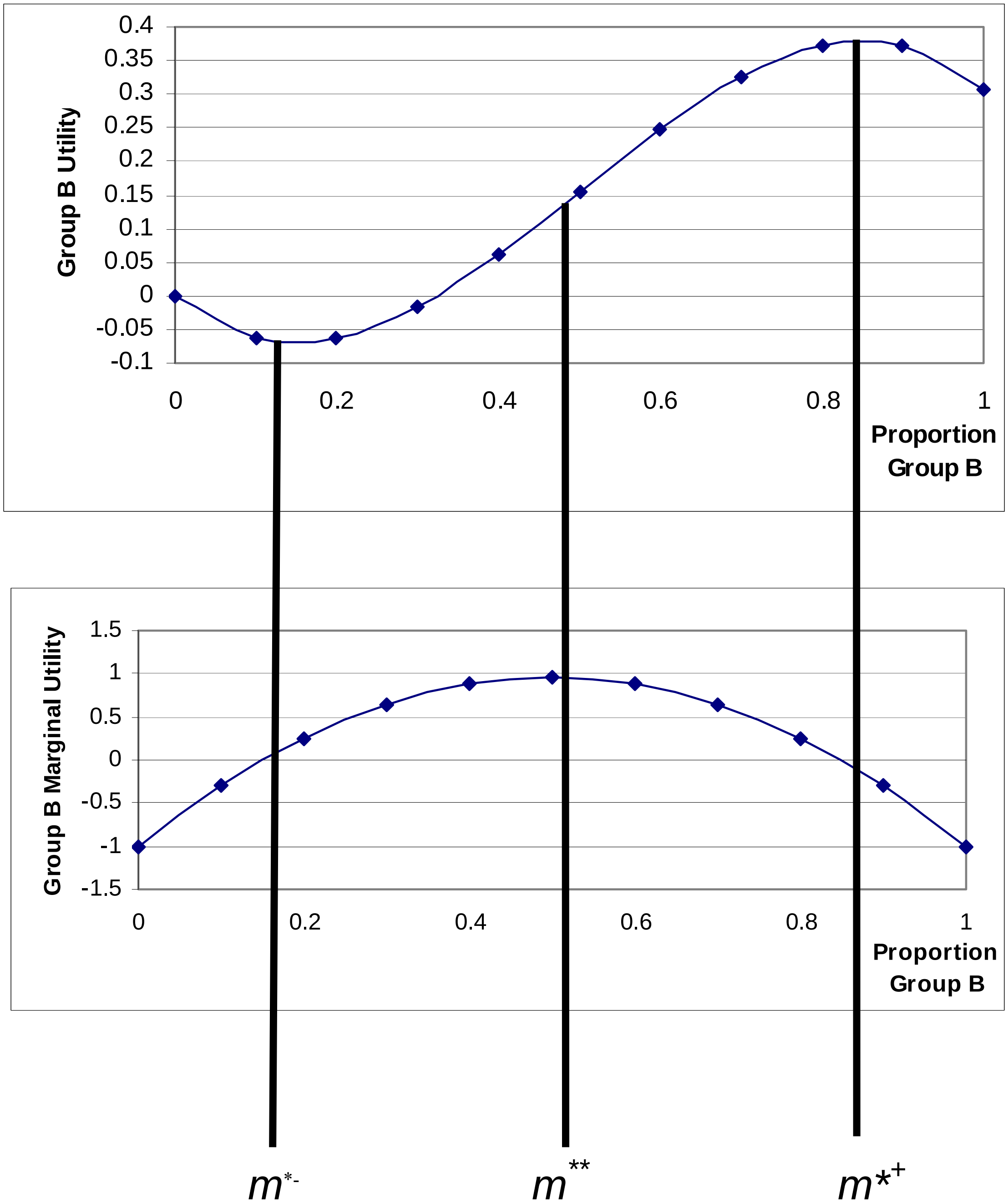
a generic k^{th} dimension X vector of ancillary control variables at election cycle *t* which comprise of donor-specific effects, recipient-specific effects, donor-recipient dyadic specific effects, plus a disturbance term.

Figure 1:
Theoretical Group A Utility and
Marginal Utility from Members of Group B



Note: Consult equations A-1 and A-2 for derivations of the utility and marginal utility calculations, respectively.

**Figure 2:
Theoretical Group B Utility and
Marginal Utility from Members of Group B**



Note: Consult equations A-4 and A-5 for derivations of the utility and marginal utility calculations, respectively.

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