Online Appendix
"Environmental Conflict and Local Knowledge in Alaska Native Politics"

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A Formal proofs

Proof of Lemma 1. There are two cases to consider. First, $m = 0$ and O's expected utility from deviating by sending a message $\tilde{m} = M$ is

$$\text{(A.1)} \quad \int_0^{1/M} \left(\theta\beta - \alpha 0 - \frac{0}{2}(k-0)^2\right)\frac{1}{K}dk + \int_{1/M}^{\frac{1+2M\beta}{2M}} \left(\theta\beta - \alpha\left(k - \frac{1}{M}\right) - \frac{0}{2}\left(k - \left(k - \frac{1}{M}\right)\right)^2\right)\frac{1}{K}dk + \int_{\frac{1+2M\beta}{2M}}^{K} 0\frac{1}{K}dk = \frac{4M\beta(1+2M\beta)\theta - \alpha(1-2M\beta)^2}{8KM^2}$$

O prefers to send the truthful message when

$$\text{(A.2)} \quad \beta\theta \geq \frac{4M\beta(1+2M\beta)\theta - \alpha(1-2M\beta)^2}{8KM^2}$$

$$\text{(A.3)} \quad \theta \geq \frac{\alpha(1-2M\beta)^2}{4M\beta(1-2KM+2M\beta)}$$

Second, $m = M$ and O's expected utility from deviating by sending a message $\tilde{m} = 0$ is

$$\text{(A.4)} \quad \int_0^{K} \left(\theta\beta - \alpha 0 - \frac{M}{2}(k-0)^2\right)\frac{1}{K}dk = \beta\theta - \frac{K^2M}{6}$$

O prefers to send the truthful message when

$$\text{(A.5)} \quad EU_O^D(m = M) \geq \beta\theta - \frac{K^2M}{6}$$

$$\text{(A.6)} \quad \theta \leq \frac{12M\beta + 3\alpha(1-2M\beta)^2 - 4K^3M^3 - 2}{12M\beta(1-2KM+2M\beta)}$$

The following holds given Assumption 1:

$$\text{(A.7)} \quad \frac{\alpha(1-2M\beta)^2}{4M\beta(1-2KM+2M\beta)} < \frac{12M\beta + 3\alpha(1-2M\beta)^2 - 4K^3M^3 - 2}{12M\beta(1-2KM+2M\beta)}$$

Therefore, a parameter region exists between these bounds in which O does not have an incentive to deviate from sending a truthful message under decentralization. $\square$

Proof of Lemma 2. For purpose of contradiction, assume a fully revealing equilibrium exists in the centralized regime. In such an equilibrium, G_2 observes k and sends a message of $\tilde{k} = k$ to O, and O updates beliefs that $k = \tilde{k}$ with probability 1.

Consider the case in which $m = M$. O chooses t_O based on the following maximization problem:

$$\frac{\partial}{\partial t_O}\left(\theta\beta - \alpha\beta - \frac{M}{2}(k - t_O)^2 + \beta - t_O\right) = 0 \quad \Rightarrow \quad t_O = k - \frac{1}{M} \tag{A.8}$$

The second derivative with respect to t_O is $-M$, and hence the second-order condition holds.

O chooses $t_O^* = k - \frac{1}{M}$ when $k \geq \frac{1}{M}$. This implies the following utility for G_2 for $k \geq \frac{1}{M}$:

$$EU_{G_2}^C = -\frac{1}{2M} \tag{A.9}$$

Can G_2 increase their utility by sending a different value of k? Suppose G_2 sends $\tilde{k} = k + \epsilon$, where we assume $0 < \epsilon < min\{\frac{1}{M}, K - k\}$. This yields the following expected utility:

$$-\frac{M}{2}\left(k - \left((k + \epsilon) - \frac{1}{M}\right)\right)^2 = -\frac{(M\epsilon - 1)^2}{2M} \tag{A.10}$$

And $-\frac{(M\epsilon-1)^2}{2M} > -\frac{1}{2M}$ when $\epsilon < \frac{1}{M}$.

Because G_2 has an incentive to deviate from a truthful message for some values of k, this contradicts our initial assumption of a fully revealing equilibrium. Therefore, no fully revealing equilibrium exists in the centralized regime. $\square$

Proof of Proposition 1. From the main text, we have three cases for θ:

1. If $\theta < \theta^{T1}$, O's expected utility is zero.

2. If $\theta^{T1} \leq \theta < \theta^{T2}$, O's expected utility is

$$\rho\left(\theta\beta - \alpha\beta + \beta\right) + (1-\rho)0 \tag{A.11}$$

3. If $\theta \geq \theta^{T2}$, O's expected utility is

$$\rho\left(\theta\beta - \alpha\beta + \beta\right) + (1-\rho)\left(\frac{2}{3}\sqrt{\frac{2K}{M}} + \beta(1-\alpha+\theta) - K\right) \tag{A.12}$$

We compare the above to O's expected utility in the fully revealing equilibrium of the decentralized regime, which is

$$\frac{\left(-2 + 3\alpha(1-2M\beta)^2 - 12M\beta(-1+\theta+2M\beta\theta)\right)(1+\rho)}{24KM^2} + \beta\theta\rho \tag{A.13}$$

When $\theta < \theta^{T1}$, O's decision is trivial and O never chooses decentralization. When $\theta^{T1} \leq \theta < \theta^{T2}$, we determine when Equation (A.13) is greater than or equal to Equation (A.11). This occurs when

$$\theta \geq \frac{-3\alpha(1-2M\beta)^2 + 3(\alpha + 4M(-1+2KM)(-1+\alpha)\beta + 4M^2\alpha\beta^2)\rho - 2(-1+6MB+\rho)}{12M\beta(1+2M\beta)(-1+\rho)} \equiv \underline{\theta} \tag{A.14}$$

And when $\theta \geq \theta^{T2}$, we determine when Equation (A.13) is greater than or equal to Equation (A.12). This occurs when

$$\theta \leq -\frac{4}{3}\sqrt{\frac{2K^3M}{\beta^2(1-2KM+2M\beta)^2}} + \frac{24KM^2(-1+\alpha)\beta - 24K^2M^2(-1+\rho) + (-2+12M\beta+3\alpha(1-2M\beta)^2)(-1\rho)}{12M\beta(1-2KM+2M\beta)(-1+\rho)} \equiv \overline{\theta} \tag{A.15}$$

Where $\underline{\theta} \leq \theta \leq \overline{\theta}$, O prefers to decentralize decision-making. Conditions in Lemma 1 hold in this region. In the decentralized regime and the centralized regime (off path), strategies for O, G_1, and G_2 follow the analysis in the main text.

□

Proof of Proposition 2. Since G_1 is indifferent, we examine G_2's preference in either regime to assess preference conflict. We say that G_2 is "opposed" iff G_2's expected utility from the activity in equilibrium is strictly negative. Then, we look for a region of parameters in which G_2 is opposed under centralization and not opposed under decentralization.

Decentralization: G's expected utility for $t^*_{G_2} = k - \frac{1}{M}$ is $-k + \frac{1}{2M} + \beta$, and G_2 approves when this value is weakly greater than zero. G_2's expected utility is strictly positive when

$$k < \frac{1 + 2M\beta}{2M} \tag{A.16}$$

Centralization: O chooses $t^*_O = K - \sqrt{\frac{2K}{M}}$, and G_2 obtains zero if $k \leq t^*_O$. If $k > t^*_O$, G_2 obtains

$$-\frac{M}{2}\left(k - \left(K - \sqrt{\frac{2K}{M}}\right)\right)^2 \tag{A.17}$$

The above value is strictly negative.

Hence, when $K - \sqrt{\frac{2K}{M}} < k < \frac{1+2M\beta}{2M}$, G_2 is opposed to the commercial activity under centralization but not decentralization.

□