

Errata: The Colonel Blotto Game [*Economic Theory*, **29**, 1-24 (2006)]

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This errata corrects two minor errors in Roberson (2006). First, in the statement of Theorem 2 the expression $(2/n) \leq (X_A/X_B) \leq 1$ should be replaced with $(2/n) < (X_A/X_B) \leq 1$ and in Theorem 3 the expression $(1/(n-1)) \leq (X_A/X_B) < (2/n)$ should be replaced with $(1/(n-1)) \leq (X_A/X_B) \leq (2/n)$. This correction fixes a typographical error concerning the portions of the parameter space corresponding to Theorems 2 and 3 respectively, and should be applied throughout the article.

Second, the statement of Theorem 3 should also be changed to read as follows:

Theorem 3. *Let X_A , X_B , and $n \geq 3$ satisfy $(1/(n-1)) \leq (X_A/X_B) \leq (2/n)$. The n -variate distribution function P_A^* is a Nash equilibrium strategy for player A in the game $CB\{X_A, X_B, n\}$ if and only if it satisfies the following two conditions: (1) $\text{Supp}(P_A^*) \subset \mathfrak{B}_A$ and (2) P_A^* provides the corresponding set of univariate marginal distribution functions $\{F_A^j\}_{j=1}^n$ outlined below.*

$$\forall j \in \{1, \dots, n\} \quad F_A^j(x) = \left(1 - \frac{2}{n}\right) + \frac{x}{X_A} \left(\frac{2}{n}\right) \quad x \in [0, X_A].$$

Sufficient conditions for P_B^ to be a Nash equilibrium strategy include: $\text{Supp}(P_A^*) \subset \mathfrak{B}_A$ and that P_B^* provides the corresponding set of univariate marginal distribution functions $\{F_B^j\}_{j=1}^n$*

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outlined below.

$$\forall j \in \{1, \dots, n\} \quad F_B^j(x) = \begin{cases} \frac{2x(X_A - \frac{X_B}{n})}{(X_A)^2} & x \in [0, X_A) \\ 1 & x \geq X_A \end{cases}.$$

In equilibria satisfying these conditions on P_A^* and P_B^* , the expected payoff for player A is $(2/n) - (2X_B/(n^2X_A))$, and the expected payoff for player B is $1 - (2/n) + (2X_B/(n^2X_A))$. Moreover, the equilibrium expected payoffs are unique.

This correction addresses an error in the statement of Theorem 3. For player A, the proof of the uniqueness of the univariate marginal distributions follows along lines similar to that for the Theorem 2 parameter range. However, for player B this line of argument does not extend to the Theorem 3 parameter range as continuity of the univariate marginal distribution functions is not necessary for player B once $(X_A/X_B) \leq (2/n)$.¹ Because this is a two-player constant-sum game, this does not affect the characterization of the unique equilibrium payoffs.

References

- [1] Roberson, B., & Kvasov, D. (2010). The non-constant-sum Colonel Blotto game. Purdue University Working Paper no. 1252.

¹For further details see the appendix of Roberson and Kvasov (2010), which examines a closely related game.