Correction to "Limit theorems for a generalized St. Petersburg game"

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Peter Kevei has drawn my attention to the fact that formula (3.1) in my paper [2] is not correct. The aim of this note is to point out this fact and to make the necessary corrections.

The model behind the game is a sequence of i.i.d. random variables X, X_1, X_2, ... with

$$P(X = sr^{(k-1)/\alpha}) = pq^{k-1}, \quad k = 1, 2, \ldots.$$

where $p + q = 1$, $s = p^{-1}$, $r = q^{-1} = (1-p)^{-1}$, and $\alpha > 0$.

The correct expression for the tail probability is

$$P(X > x) = q^{[\alpha \log_r (x/s)]+1},$$

instead of (3.1) in my paper [2]; see [1], formula (1). The tail probabilities are *not* regularly varying.

This invalidates Therorem 2.1(ii) and (iii) of [2].

For further results that in this context one may consult [3].

Finally, the limits in (6.2) and (6.3) should be $-\log_{1/q} b$ (not $-\log_{1/q} b/\alpha$).

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References

[1] Csörgő, S. (2007). Merging asymptotic expansions in generalized St. Petersburg games. *Acta Sci. Math. (Szeged)* **73**, 297-331.

[2] Gut, A. (2010). Limit theorems for a generalized St. Petersburg game. *J. Appl. Prob.* **47**, 752-760.

[3] Gut, A., and Martin-Löf, A. (2013). Generalized St. Petersburg games revisited (submitted).

[4] Matsumoto, K. and Nakata, T. (2013). Limit theorems for a generalized Feller game. *J. Appl. Prob.* **50**, 54-63.

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