

First-Turn Bias in Turn-Based Games

Turn-based games often give a systematic edge to one side. In perfect-information games this is formally captured by whether a game is “first-player-win” or “second-player-win” under perfect play ¹. For example, certain Nim setups are first-player wins while others are second-player wins, and Connect Four is *provably* a first-player win ². In practice, most popular strategy games give the first player a modest advantage. In chess, for instance, White (who moves first) scores about 54% on average ³, roughly a +5.9% win-probability edge ⁴. Checkers with perfect play is a draw ², and tic-tac-toe is a draw from any move ⁵ (so no bias). In many other board games the first player likewise wins more often (unless designers add balancing rules). Factors like randomness and hidden information can reduce or reverse this bias: for example in Scrabble the first-move advantage disappears when skilled play is compared ⁶.

- **Chess:** White (first move) wins more often – roughly 54% score ³ ⁴.
- **Go:** Black moves first, but standard komi (usually 6.5 points) compensates; without komi Black would have a strong advantage ⁷.
- **Connect Four:** Strong first-player advantage (first player can force a win) ².
- **Nim:** Some starting configurations are first-player wins, others second-player wins ².
- **Scrabble:** Simulations with strong AI players show *no* inherent first-move advantage ⁶ (win-rates for first-player hover ~50%).
- **Settlers of Catan:** The random board gives the first player a significant placement advantage ⁸ (even though the game has sold over 40 million copies worldwide ⁹).
- **Othello/Reversi and Hex:** First-move wins in perfect play (Hex is balanced by the “pie” swap rule to offset this) ¹⁰.

Figure: Classic strategy board games often favor the first player. For example, in chess the first-move (White) advantage yields roughly a +6% win probability ³ ⁴.

Card and Other Turn-Based Games

Competitive card games likewise grapple with first-turn bias. Tournament card games almost always include special rules to balance the turn order. For example, in **Magic: The Gathering**, the first player skips their opening draw (while the second player draws), and players may choose not to go first even if they win the coin flip ¹¹. Even so, statistical analyses show the first player still retains a small advantage ¹¹. Notably, some deck archetypes *prefer* going second: for instance certain “dredge” combo decks want the extra initial draw and thus choose to be on the play (second) whenever possible ¹². In **Hearthstone** (a popular digital TCG), the second player gets an extra card and a special “The Coin” (a one-mana resource) to counteract the tempo disadvantage ¹³. Many other collectible card games adopt similar measures – e.g. first-player penalty draws or second-player bonus cards – to mitigate the inherent edge of moving first.

- **Magic: The Gathering (MTG):** First player skips initial draw; second player draws. Studies show a slight first-player advantage remains ¹¹.
- **Pokémon TCG:** (Under later rules) the first player also skips their first draw; second player’s extra draw helps balance turns.

- **Hearthstone:** Second player starts with 4 cards (vs 3) and gains “The Coin” for one extra mana on the first turn ¹³.
- **Other TCGs:** Many incorporate “draw-ahead” for second player or limit first-player actions (often evolving via community playtesting).

Figure: In many card games players use turn-balance rules. For example, Magic: The Gathering gives the first player no initial draw but the first-player still has a slight edge ¹¹. Hearthstone’s design gives the second player one extra card and one free mana (“The Coin”) ¹³.

Balancing Techniques

Game designers use several common techniques to neutralize first-turn bias:

- **Komi / Extra Points:** In Go, White (second) is awarded about 6.5 points (komi) to offset Black’s first move ⁷. Other abstract games sometimes give score bonuses to the second player.
- **Swap/Pie Rule:** After the first move, the second player may choose to swap positions. This forces the first player to make a move that’s not too strong, balancing the initiative (common in Hex and other placement games) ¹⁰.
- **Skip-Draw or Extra Draw:** As in MTG, the first player skips drawing on turn 1 while the second player draws. This handicaps the tempo of the first move ¹¹. Some newer games (e.g. Disney’s Lorcana) also forbid the first player’s first draw.
- **Extra Resources for Second:** Games may give the second player additional resources (cards, mana, etc.). Hearthstone’s one-mana Coin is an example ¹³. Some strategy board games offer bonus actions or tokens to later players.
- **Turn Order Variations:** In multiplayer board games, designers often use “snake” turn order (last player also goes first on the next round) or let players bid or pass on being first. Many tournaments simply alternate who goes first each round to even out any bias.
- **Symmetric Design:** Some games randomize initial conditions or make moves symmetric so no inherent initiative exists (e.g. Scrabble’s symmetric board and equal rack draws eliminate turn bias ⁶).

Each mitigation comes with trade-offs. As one game design expert notes, “playing first is usually a pretty big advantage (especially in a symmetric game)” unless the rules explicitly compensate ⁷. Thus many games built around high-level competition deliberately include such balancing measures.

Empirical Findings and High-Level Play

Researchers and communities have measured first-turn effects in various games. For instance, AI simulations confirm Scrabble is essentially fair ⁶, while large databases of human play show White’s ~54% score in chess ³. Top-level play often accounts for first-turn bias by alternating roles: in chess and Go tournaments players switch colors, and Scrabble tournaments regularly alternate who goes first. In games like Catan, analysis showed that early placement by the first player can yield significant point leads ⁸, a factor that pros take into consideration.

Overall, the trend is that **first-turn advantage is common** in two-player turn-based games, especially those with perfect information. Designers of popular games (from Chess and Go to Magic and Hearthstone) recognize this and use a variety of rules to balance it. In top-tier competitive play, standardized

compensations (komi, draw-skips, alternating starts, etc.) are routinely applied so that neither player is unduly favored. The exact impact of turn order varies by game, but with careful design and rule adjustments, many modern games achieve roughly even win-rates for first vs second player ⁶ ¹¹ .

Sources: Analyses of specific games ² ³ ⁶ , design discussions ⁷ ¹¹ , and game studies ⁸ ¹⁰ illustrate these trends in first-turn bias.

¹ ² ⁵ First-player and second-player win - Wikipedia

https://en.wikipedia.org/wiki/First-player_and_second-player_win

³ CCRL

http://computerchess.org.uk/ccrl/404FRC/opening_report_by_eco.html

⁴ First move advantage - Chess Forums - Chess.com

<https://www.chess.com/forum/view/general/first-move-advantage>

⁶ faculty.cc.gatech.edu

<https://faculty.cc.gatech.edu/~riedl/pubs/tag18.pdf>

⁷ game design - Balance advantage of having the first turn - Game Development Stack Exchange

<https://gamedev.stackexchange.com/questions/177257/balance-advantage-of-having-the-first-turn>

⁸ ⁹ Seeding for Success: Skill and Stochasticity in Tabletop Games

<https://arxiv.org/html/2503.02686v1>

¹⁰ @joeldavidhamkins.bsky.social on Bluesky

<https://bsky.app/profile/joeldavidhamkins.bsky.social/post/3lo3c7tx4vc2v>

¹¹ ¹² In Magic, is the player going first advantaged? - Board & Card Games Stack Exchange

<https://boardgames.stackexchange.com/questions/27279/in-magic-is-the-player-going-first-advantaged>

¹³ The Coin - Hearthstone Wiki

https://hearthstone.fandom.com/wiki/The_Coin