

Validation - Betting Parameters

These test cases can be found and run in the validation module of the project.

The results are based two AI agents playing against each other, with 10,000 hands played, per test case.

Process used to determine optimal values for parameters:

- Define a default range of values for the betting parameters.
- For each parameter, test against different value for that particular parameters and obtain value which seems to be performing the best.
- Create a new set of values for the parameters from these proposed values and test against previous default parameters.

The following series of tests are the tests I ran and documented to produce the set of parameters that are used within the project.

The test classes can be found in the com.saccarn.poker.tests package in the validation module of the project. The values can be found in com.saccarn.poker.betpassvalues package of the same module.

Test against random distribution of parameters to determine default set of parameters

| Test Case | Test Class (to run) | Values | Result |
|--|---------------------------------|-------------------------------------|---|
| Default Values (Player One) vs BetPassValuesTest1 (Player Two) | TestDefaultVsBetPas sValues1 | DefaultValues BetPassValuesTest1 | Player One won: 1.372 big blinds per hand |
| Default Values (Player One) vs BetPassValuesTest2 (Player 2) | TestDefaultVsBetPas sValues2 | DefaultValues BetPassValuesTest2 | Player One won: 1.53 big blinds per hand |

Conclusion: Default Values seem good enough to try and improve on.

Determining optimal pass parameter

| Test Case | Test Class (to run) | Values | Result |
|--|---------------------------------|-------------------------------------|--|
| Default Values (Player One) vs BetPassValuesTest3 (Player 2) | TestDefaultVsBetPas sValues3 | DefaultValues BetPassValuesTest3 | Player One won: 0.0762 big blinds per hand |
| Default Values (Player One) vs BetPassValuesTest4 | TestDefaultVsBetPas sValues4 | DefaultValues BetPassValuesTest4 | Player One won: 0.1025 big blinds per hand |

| | | | |
|------------|--|--|--|
| (Player 2) | | | |
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Conclusion: Default Pass Parameter seems to produce optimal results compared to other values

Determining optimal bet2 parameter

| Test Case | Test Class (to run) | Values | Result |
|--|-------------------------------------|--|--|
| Default Values (Player One) vs BetPassValuesTest5 (Player 2) | TestDefaultVsBetPassValues5 | DefaultValues BetPassValuesTest5 | Player Two won: 0.018 big blinds per hand |
| Default Values (Player One) vs BetPassValuesTest6 (Player 2) | TestDefaultVsBetPassValues6 | DefaultValues BetPassValuesTest6 | Player Two won: 0.1768 big blinds per hand |
| BetPassValuesTest5 (Player One) vs BetPassValuesTest6 (Player Two) | TestBetPassValues5VsBetPassValues6 | BetPassValues5 BetPassValues6 | Player One won 0.5283 big blinds per hand. |
| BetPassValuesTest5 (Player One) vs BetPassValuesTest7 (Player Two) | TestBetPassValues5VsBetPassValues7 | BetPassValues5 BetPassValues7 | Player One won: 0.0112 big blinds per hand |
| BetPassValuesTest6 (Player One) vs BetPassValuesTest7 (Player Two) | TestBetPassValues6VsBetPassValues7 | BetPassValues6 BetPassValues7 | Player Two won: 0.079 big blinds per hand |
| BetPassValuesTest5 (Player One) vs BetPassValuesTest8 (Player Two) | TestBetPassValues5VsBetPassValues8 | BetPassValuesTest5 BetPassValuesTest8 | Player Two won: 0.0095 big blinds per hand. |
| BetPassValuesTest8 (Player One) vs BetPassValuesTest9 (Player Two) | TestBetPassValues8VsBetPassValues9 | BetPassValuesTest8 BetPassValuesTest9 | Player One won: 0.1142 big blinds per hand |
| BetPassValuesTest8 (Player One) vs | TestBetPassValues8VsBetPassValues10 | BetPassValues8 BetPassValues10 | Player One won: 0.2283 big blinds per |

| | | | |
|----------------------------------|--|--|-------|
| BetPassValuesTest10 (Player Two) | | | hand. |
|----------------------------------|--|--|-------|

Conclusion: Bet2 Parameter of BetPassValuesTest8 seems to produce optimal results

Bet3 Parameter

| Test Case | Test Class (to run) | Values | Result |
|--|--|----------------------------------|--|
| DefaultValues (Player One) vs BetPassValuesTest11 (Player Two) | TestDefaultValuesVsBetPassValuesTest11 | DefaultValues BetPassValues11 | Player One won: 0.169 big blinds per hand. |
| DefaultValues (Player One) vs BetPassValuesTest12 (Player Two) | TestDefaultValuesVsBetPassValuesTest12 | DefaultValues BetPassValues12 | Player One won: 0.0781 big blinds per hand. |
| DefaultValues (Player One) vs BetPassValuesTest13 (Player Two) | TestDefaultValuesVsBetPassValuesTest13 | DefaultValues BetPassValues13 | Player One won: 0.0988 big blinds per hand. |

Conclusion: Default Pass Parameter seems to produce optimal results compared to other values.

All In Parameter

| Test Case | Test Class (to run) | Values | Result |
|--|--|--------------------------------------|--|
| DefaultValues (Player One) vs BetPassValuesTest14 | TestDefaultValuesVsBetPassValuesTest14 | DefaultValues BetPassValuesTest14 | Player One won: 0.1753 big blinds per hand. |
| DefaultValues (Player One) vs BetPassValuesTest15 (Player Two) | TestDefaultValuesVsBetPassValuesTest15 | DefaultValues BetPassValuesTest15 | Player One won: 0.1507 big blinds per hand. |
| DefaultValues (Player One) vs BetPassValuesTest16 (PlayerTwo) | TestDefaultValuesVsBetPassValues16 | DefaultValues BetPassValuesTest16 | Player Two won: 0.0665 big blinds per hand |

| | | | |
|--|--------------------------------------|--|---|
| BetPassValuesTest15 (Player One) vs BetPassValuesTest16 (Player Two) | TestBetPassValues15VsBetPassValues16 | BetPassValuesTest15 BetPassValuesTest16 | Player Two won: 0.1907 big blinds per hand. |
| BetPassValuesTest14 (Player One) vs BetPassValuesTest16 (Player Two) | TestBetPassValues14VsBetPassValues16 | BetPassValuesTest14 BetPassValuesTest16 | Player Two won: 0.0246 big blinds per hand. |

Conclusion: All in Parameter in BetPassValuesTest16 seems to produce optimal results compared to other values

Obtained values integrated together:

| Test Case | Test Class (to run) | Values | Result |
|---|--|--|---|
| DefaultValues (Player One) Vs ProposedDefaultValues1 (Player Two) | TestDefaultValuesVsProposedDefaultValues | DefaultValues ProposedDefaultValues | Player Two won: 0.1546 big blinds per hand. |

Conclusion: New Proposed values beats the previous default values and should be used in the project.