William Blair

Case Study
May 2013

How We Apply Game Theory
Fiscal Cliff Post-Election

WHAT IS GAME THEORY?

- Events, geopolitics, and policy changes affect market prices in ways that can seem uncertain or random.
- William Blair's Dynamic Allocation Strategies team uses game theory in its analysis to provide clarity on investment opportunities.
- Game theory considers the interests and incentives of the "players"—in this case, governmental and economic leaders.
- Today's leaders are engaged in a multilateral bargaining game where players devise a strategy and demonstrate various powers as they interact with other players to achieve a desired outcome.
- In order for us to assess investment opportunities and risks, we examine four strategic powers.

Game Theory Powers and Behaviors

Strategic Powers	Examples	Demonstrated Behaviors
Endowment	Political capital, nuclear warheads	Confidence, aggression
Threat	Lob some bombs, sacrifice collateral	Bluffs, aggression, sacrifice
Risk tolerance	Willing to accept "no agreement"	Bluffs, disinterest, 11th hour
Coalition	"Merkozy" (Merkel & Sarkozy), media	Solidarity, adaptability

Our Investment Process

Step 1:
Identify Value to Price Discrepancies

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Fundamental analysis identifies *where* value/price discrepancies exist

Step 2:
Understand Macro Themes

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Game theory helps explain *why* prices deviate from values

Step 3:
Design Portfolio and Integrate Risk Exposures

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Dynamic risk capital allocations help determine *how* best to capture investment opportunities

CASE STUDY: MARKET EVENT OVERVIEW

- U.S. elections on November 6, 2012, raised questions of how politicians might address the fiscal cliff
- Game theory provided a framework within which the William Blair Dynamic Allocation Strategies team was able to interpret politicians' incentives, motivations, and behaviors

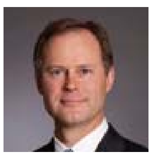
GAME THEORY ANALYSIS HIGHLIGHTS

- Republican Party strategic powers declined *substantially*
  - Post-election internal conflict among Republicans may leave their endowment power severely pared
  - A trouncing during a weak economy depletes threat power
- Democratic Party power increased *marginally*
  - Despite an election more lost by Republicans than won by Democrats, the Democrats added House and Senate seats, slightly boosting endowment power
  - Risk tolerance is neutral: Obama has less to lose now that he doesn't have to concern himself with re-election, but we believe he will now be concerned about his legacy, reducing his risk tolerance

See back page for Strategy Implications

"We strongly believe that broad macro themes increasingly will dominate portfolio performance. Robust investment processes will need to include a greater focus on integrating the disciplines of game theory, macroeconomic theory, and geopolitical science – the tools required to fathom the behaviors of these players and understand the ramifications of their decisions."

-Brian D. Singer, CFA



- Started in Industry: 1981
- Head of Dynamic Allocation Strategies Team
- M.B.A., University of Chicago
- B.A., Northwestern University

WHY MACRO MATTERS

- Historically, over 90% of portfolio return variation has been attributable to top-down allocation decisions[1]
- Global interconnectedness has increased the relevance and pace at which macro political and economic factors affect investment results
- Traditional asset allocation/portfolio rebalancing may not be dynamic enough to fully reflect opportunities and risks as they unfold

1 Source: Determinants of Portfolio Performance II: An Update Brinson, Gary P.; Singer, Brian D.; Beebower, Gilbert L. Financial Analyst Journal; May/June 1991; 47, 3; ABI/INFORM Global pg. 40.

Power Balance Has Shifted

	Republican Party	Democratic Party
Endowment Power	↓↓	↑
Threat Power	↓↓	↑
Risk Tolerance	↑	--
Coalition Power	↓↓	--
Net Change in Party Power	↓↓↓↓↓	↑↑

2 arrows = significant strategic power change
1 arrow = minimal strategic power change

STRATEGY IMPLICATIONS

- While we expected increased market volatility leading up to the deadline, we anticipated less brinkmanship and more fiscal progress than was priced into domestic assets
- Thus, we bought put options on U.S. equity in December 2012 that enabled return participation while providing risk protection

Put option: A financial contract that gives the buyer the right, but not the obligation, to sell the security at a specified price within a specific time. Put options provide the potential to profit from falling prices without taking on unlimited risk.