Choice:

ECONOMICS MATERIALS FOR SUCCESS

STEFANI MILOVANSKA-FARRINGTON

What Game Theory Reveals About Airline Baggage Battles

Related news articles: Delta Air Lines Just Made a Surprising Offer to Southwest Customers, and It's the Smartest Idea I've Seen Yet (*Inc.com*, March 31, 2025) and Frontier steals Southwest's free bags perk for summer, Hints that it could be permanent (*Forbes*, March 18, 2025)

Essential Question: How did Delta and Frontier try to attract frustrated Southwest Airlines' customers after Southwest announced that it would drop its free checked bag brand-defining policy?

Summary: This worksheet can be used in class or as homework. Students will analyze excerpts from two articles about Delta and Frontier's strategic responses to Southwest Airlines ending its "two bags fly free" policy. Delta offered a temporary status match for Southwest flyers, while Frontier launched a summer promotion with free bags and flexible perks. Using these real-world examples, students will explore the difference between sequential and simultaneous-move games, with a focus on identifying dominant strategies and possible Nash equilibria. An answer key is included. **Answers are provided at the end of this document.**

Learning objectives: At the end of this worksheet, students will be able to:

- Explain the frustration of Southwest Airlines' customers when the airline ended its "two bags free" policy using the concept of loss aversion;
- Distinguish between simultaneous-move games and sequential games;
- Recognize real-world examples of the aforementioned two types of games;
- Understand that one could draw a decision tree to analyze a dynamic (sequential) game;
- Analyze a simultaneous-move game between Frontier and Delta to determine the dominant strategy of each player (if any);
- Analyze a simultaneous-move game between Frontier and Delta to determine the Nash equilibrium/equilibria of the game (if any).

National Voluntary Content Standards in Economics & Benchmarks: Standard 9 Competition and market structure

Microeconomics Topic 4 Imperfect competition (4.5 Oligopoly and Game theory)

Economics concepts: Game theory, Sequential (dynamic) game, Simultaneous-move game, Loss aversion, Decision tree, Payoff, Strategy, Payoff matrix, Dominant strategy, Nash equilibrium

Suggested excerpts:

Frontier steals Southwest's free bags perk for summer, Hints that it could be permanent (*Forbes*, March 18, 2025)[1]

"The ultra-budget carrier Frontier Airlines has pounced on free bags as a winning value proposition after Southwest Airlines angered loyal customers last week by dropping its "two bags free" brand-defining policy."

"Frontier Airlines is offering a free carry-on, seat selection, and flight changes for summer 2025 non-stop flights—plus a free checked bag for bookings made by March 24. The promo starts the same day Southwest ends its two free checked bags policy."

"Southwest's 'two bags fly free' policy was its main brand differentiator for decades, but under pressure from investor Elliott Management, the airline has adopted baggage fees and other major changes."

"$650 million. That's roughly what Frontier earned in baggage fee revenue in 2024, according to data from the U.S. Bureau of Transportation Statistics—translating to about 17% of the airline's total revenue of $3.8 billion. Comparatively, Southwest took in $62 million, a much smaller number as the carrier only charged passengers for checking more than two bags on a single flight."

"If demand for domestic air travel continues to soften coming into the summer season, expect multiple airlines to offer promotions with free bags as a perk."

Delta Air Lines Just Made a Surprising Offer to Southwest Customers, and It's the Smartest Idea I've Seen Yet (*Inc.com*, March 31, 2025)

"Delta Air Lines is responding [to Southwest Airlines' plan to start charging most customers a fee to check bags] by offering higher-tier frequent flyer status for Southwest customers who complete a status match challenge …"

"For decades, Southwest Airlines was known for its customer-friendly policies like allowing passengers to check two bags free of charge."

"Starting May 28, Southwest will charge for checked bags on new bookings, though some elite passengers will still get two free bags."

"Delta responded by enhancing its Status Match Challenge for Southwest customers, signaling it can outcompete on overall experience if low fares aren't the differentiator."

"Southwest A-List members can try Delta's Gold or Platinum status for 90 days, with perks like free upgrades and waived bag fees—extendable by meeting spending thresholds."

"Delta's status match allows Southwest customers to experience Delta's premium services firsthand, potentially converting them into loyal customers."

[1]Some excerpts have been paraphrased and shortened this week for clarity while preserving the original meaning.

Student Questions

Name: ____ Date: _____

1. What did Frontier do when Southwest announced the end of its “two bags free” policy?
    A. Frontier began to charge for seat selection, but waived the baggage fees for up to two bags for all flyers.
    B. Frontier offered Southwest’s frequent flyers to match their Southwest’s status which included waived baggage fees.
    C. Frontier started to offer a free checked bag promotion for 2025 summer travel.
    D. Frontier did not make any changes.

2. What did Delta do when Southwest announced the end of its “two bags free” policy?
    A. Delta began to charge for seat selection, but waived the baggage fees for up to two bags for all flyers.
    B. Delta offered Southwest’s frequent flyers to match their Southwest’s status which included waived baggage fees.
    C. Delta started to offer a free checked bag promotion for 2025 summer travel.
    D. Delta did not make any changes.

3. The article from *Inc.com* explains that many Southwest Airlines’ customers were “upset about the company’s plan” to remove its “Bags Fly Free” policy. Similarly, *Forbes* states that the airline “angered loyal customers.” How can the concept of loss aversion explain travelers’ dissatisfaction?
    A. Individuals dislike the perceived loss of the airline’s policy change more than they would like an equivalent gain.
    B. Plane tickets used to be expensive even before the policy change and the prices increased even further after the change, lowering travelers’ purchasing power.
    C. The way the information about the policy change was presented to the customers made them feel worse than the actual price change did.
    D. There will always be unhappy customers.

4. Frontier and Delta introduced new promotions only after Southwest Airlines announced it would end its free baggage policy. Which type of strategic interaction best describes this situation?
    A. *Simultaneous-move game* – when all players make decisions at the same time, without knowing others' choices
    B. *Sequential game* – when players make decisions one after another, with later players observing earlier moves
    C. *Non-cooperative game* – when players make decisions independently without collaborating
    D. *Coordination game* – when players benefit from making the same or compatible choices

5. Frontier and Delta chose their responses to Southwest Airlines’ baggage policy change at the same time. This scenario classifies the game between Frontier and Delta as a:
    A. *Simultaneous-move game* – when all players make decisions at the same time, without knowing others' choices

B. *Sequential game* – when players make decisions one after another, with later players observing earlier moves
C. *Non-cooperative game* – when players make decisions independently without collaborating
D. *Coordination game* – when players benefit from making the same or compatible choices

6. Which airline acted as the first mover in a sequential game, setting off a chain of competitive responses in the baggage policy market?
A. *Delta* – it launched a loyalty status match before the others made changes
B. *Frontier* – it preemptively introduced free bag perks to gain market share
C. *Southwest* – it triggered responses by ending its long-standing free bag policy
D. *None* – all airlines made strategic decisions at the same time

Imagine a simultaneous-move game between two players: Frontier and Delta. Delta can either offer status matching or not, and Frontier can either offer temporary bonuses (like free bags) or not—based on the strategies mentioned in the articles. Use the payoff matrix below to analyze their decisions, and then answer Questions 7 to 10.

Payoff Matrix (in millions of dollars) *The first number in each cell represents Frontier's profit. The second number represents Delta's profit.*		**Delta**	
		Match status with Southwest	Not match status with Southwest
Frontier	Offer bonuses	$70; $70	$85; $55
	Not offer bonuses	$55; $85	$60; $60

For simplicity, ignore the possibility that Southwest could make further changes that could influence the profits and decisions of its competitors.

7. What is Frontier's dominant strategy (if any)?

8. What is Delta's dominant strategy (if any)?

9. Does the game have any Nash equilibria? If yes, what is it/are they?

10. How does this game between Frontier and Delta illustrate real-world strategic decision-making in imperfectly competitive markets?

Answer Key

FEE.org Related Reading: 3 Rules of Rational Parenting Derived from Good Economics

1. What did Frontier do when Southwest announced the end of its "two bags free" policy?
   A. Frontier began to charge for seat selection, but waived the baggage fees for up to two bags for all flyers.
   B. Frontier offered Southwest's frequent flyers to match their Southwest's status which included waived baggage fees.
   C. **Frontier started to offer a free checked bag promotion for 2025 summer travel**.*
   D. Frontier did not make any changes.

Answer: C. The article from *Forbes* explains that "Frontier Airlines began selling "economy bundles" Tuesday [March 2025] for flights that include one free carry-on bag, free seat selection and free flight changes for non-stop flights through Aug. 18. Frontier is also offering a bonus of one free checked bag for summer travel booked directly on the airlines' website or app before Mar. 24 for travel May 28 through Aug. 18."

2. What did Delta do when Southwest announced the end of its "two bags free" policy?
   A. Delta began to charge for seat selection, but waived the baggage fees for up to two bags for all flyers.
   B. **Delta offered Southwest's frequent flyers to match their Southwest's status which included waived baggage fees**.*
   C. Delta started to offer a free checked bag promotion for 2025 summer travel.
   D. Delta did not make any changes.

Answer: B. The article from *Inc.com* states that "travelers who are A-List members in Southwest's program are eligible for [Delta's] Gold Medallion Status, which includes benefits such as unlimited complimentary upgrades, priority boarding, waived baggage fees, and more. Those with A-List Preferred status are eligible for Delta's Platinum Medallion status, offering enhanced perks, including higher upgrade priority and Choice Benefits like upgrade certificates or a travel voucher." Flyers are granted the matched status for 90 days but could extend it if they meet certain criteria.

3. The article from *Inc.com* explains that many Southwest Airlines' customers were "upset about the company's plan" to remove its "Bags Fly Free" policy. Similarly, *Forbes* states that the airline "angered loyal customers." How can the concept of loss aversion explain travelers' dissatisfaction?
   A. **Individuals dislike the perceived loss of the airline's policy change more than they would like an equivalent gain.***
   B. Plane tickets used to be expensive even before the policy change and the prices increased even further after the change, lowering travelers' purchasing power.
   C. The way the information about the policy change was presented to the customers made them feel worse than the actual price change did.
   D. There will always be unhappy customers.

Answer: A. In behavioral economics, loss aversion refers to the tendency of people to dislike losing more than they like winning something of the same value.

4. Frontier and Delta introduced new promotions only after Southwest Airlines announced it would end its free baggage policy. Which type of strategic interaction best describes this situation?

   A. *Simultaneous-move game* – when all players make decisions at the same time, without knowing others' choices
   B. *Sequential game* – when players make decisions one after another, with later players observing earlier moves
   C. *Non-cooperative game* – when players make decisions independently without collaborating
   D. *Coordination game* – when players benefit from making the same or compatible choices

Answer: B. In a sequential game, one player (airline in this example) makes a choice; then, another player chooses a strategy knowing what the first player has chosen, and so on. Southwest Airlines' competitors announced promotions after they had learned about Southwest's policy change. Therefore, this is an example of a sequential game.

5. Frontier and Delta chose their responses to Southwest Airlines' baggage policy change at the same time. This scenario classifies the game between Frontier and Delta as a:

   A. Simultaneous-move game – when all players make decisions at the same time, without knowing others' choices
   B. Sequential game – when players make decisions one after another, with later players observing earlier moves
   C. Non-cooperative game – when players make decisions independently without collaborating
   D. Coordination game – when players benefit from making the same or compatible choices

Answer: A. Frontier and Delta made choices simultaneously. Therefore, this is an example of a simultaneous-move game. Refer to the answer to Question 4 for descriptions of the other types of games mentioned above.

6. Which airline acted as the first mover in a sequential game, setting off a chain of competitive responses in the baggage policy market?

   A. *Delta* – it launched a loyalty status match before the others made changes
   B. *Frontier* – it preemptively introduced free bag perks to gain market share
   C. *Southwest* – it triggered responses by ending its long-standing free bag policy
   D. *None* – all airlines made strategic decisions at the same time

Answer: C. Southwest. In a sequential game, the first mover makes a decision that other players observe and respond to. Southwest's decision to end its long-standing free baggage policy served as the initial move, prompting strategic responses from competitors like Delta and Frontier. This makes Southwest the clear first mover in this scenario. Use this as an opportunity to discuss how first-mover advantage or disadvantage can influence market dynamics and competitor behavior in imperfectly competitive industries.

Imagine a simultaneous-move game between two players: Frontier and Delta. Delta can either offer status matching or not, and Frontier can either offer temporary bonuses (like free bags) or not—based on the strategies mentioned in the articles. Use the payoff matrix below to analyze their decisions, and then answer Questions 7 to 10.

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Frontier	Offer bonuses	$70; $70	$85; $55
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**For simplicity, ignore the possibility that Southwest could make further changes that could influence the profits and decisions of its competitors.*

7. What is Frontier's dominant strategy (if any)?
Answer: Offer bonuses. A dominant strategy is a strategy that is always the best for a player, regardless of what the other player(s) choose(s)Frontier's dominant strategy is to offer bonuses. Regardless of Delta's action, offering bonuses yields a higher profit for Frontier: If Delta matches status: $70 (vs. $55). If Delta does not match: $85 (vs. $60)Therefore, regardless of Delta's choice, Frontier is better off offering bonuses. This implies that Frontier has a dominant strategy, and it is to offer bonuses.

8. What is Delta's dominant strategy (if any)?
Answer: Match status. A similar analysis to the one in the answer to Question 7 suggests that Delta's best response, regardless of the choice of Frontier, is to match status with Southwest. Therefore, Delta has a dominant strategy, and it is to match status.

9. Does the game have any Nash equilibria? If yes, what is it/are they?
Answer: The game has one Nash equilibrium: (Frontier: offer bonuses; Delta: match status), because these strategies of Frontier and Delta are best responses to each other. For each of the other three combinations of strategies of the two airlines, at least one airline has an incentive to deviate. In this outcome, neither player has an incentive to deviate: Frontier earns more by offering bonuses regardless of Delta's choice. Delta maximizes profit (70) when Frontier offers bonuses by choosing to match.

10. How does this game between Frontier and Delta illustrate real-world strategic decision-making in imperfectly competitive markets?
Answer: This game shows how firms in imperfect competition make interdependent decisions, where one firm's pricing or marketing strategy affects the payoffs of its rivals. Frontier and Delta must anticipate each other's moves, balancing profit opportunities and customer retention. Game theory helps reveal the logic behind such responses, highlighting dominant strategies and equilibrium outcomes like those seen in the baggage policy changes following Southwest's decision.